

## CLARUS – Enabling privacy and security in the cloud for users of sensitive data

Cloud computing is ultimately about innovation, agility, confidence and trust. Trust is the key for Europe to truly benefit from cloud computing across all sectors, especially in those sectors where Europe has a major interest and leadership such as health. Recent security breaches of well-known cloud services have drawn attention to the risks of uncontrolled data outsourcing. Users with really sensitive and personal data like healthcare data have become even reluctant to use cloud services.

CLARUS is a new European initiative that sets out to change this by allowing users to retain control over their personal data and the best of the cloud: plenty of storage and computational power while avoiding major risks linked to sensitive data. This model change will give control back to data owners and will also encourage cloud services based on standards that can be certified as compliant with security and privacy.

*"CLARUS will allow users to retain the best of the cloud without having to surrender their sensitive information to the cloud", says Josep Domingo-Ferrer, CLARUS coordinator and UNESCO Chair of Data Privacy. "CLARUS will provide a transparent solution for users to regain the control and privacy over their sensitive data outsourced to the cloud without losing the benefits of cost efficiencies and agility of cloud computing services", he adds.*

CLARUS focuses on enhancing trust in cloud services by developing a secure framework for storing and processing data outsourced to the cloud. It will enable end users to monitor, audit, and control the stored data without impairing the functionality and cost-saving benefits of cloud services.

CLARUS brings a competitive advantage by enabling cloud service providers to build trusted cloud services that are standardised and therefore transparent with regard to data and security properties.

*"CLARUS provides a valuable test bed for establishing the suitability of a range of new security techniques designed to secure data being processed in the cloud. The ability to evaluate these technologies against real application requirements is exciting and innovative", Prof. Keith Martin, Royal Holloway, University of London.*

*"CLARUS will strengthen European research on secure cloud concepts and algorithms. Ultimately, this will give the European economy a competitive advantage. At the social level, CLARUS will play a key role in raising awareness of retaining user's privacy", Stefan Janacek*

**OFFIS**, a German research institution.

*By offering user and privacy-friendly services leveraging CLARUS, cloud service providers will gain the trust and confidence of customers, **Melek Önen, EURECOM.***

*“Montimage, a French SME, sees CLARUS as a really important opportunity to work with widely recognised experts in cloud ecosystems. This collaborative work will enable the extension of Montimage’s Monitoring Tool to provide security enhancements and performance monitoring to cloud-based solutions”, **Antonio Ortiz, Montimage***

CLARUS contributes towards a chain of confidence-building steps that create trust in cloud solutions. This chain starts with the identification of an appropriate set of standards that can be certified to give public and private sector procurers confidence in meeting compliance obligations and in choosing a solution that truly meets their needs. A comprehensive analysis of the EU legal framework for the protection of sensitive data and new technological solutions designed and developed in CLARUS are other pillars to finally complete the chain and have a privacy-by-design solution for cloud services.

### Case studies

**Medical data:** The management of different types of mainly sensitive medical data with privacy-preserving mechanisms will serve as an ideal benchmark to test CLARUS security mechanisms. As an end user, the Spanish Foundation for Biomedical Research will play a key role in defining data and security requirements as well as the types of services that CLARUS can support.

**Geo-referenced data:** Large amounts of environmental data owned by providers is extremely sensitive information when used for mission critical applications for public safety or when there is considerable business potential. CLARUS will cover a wide range of users and requirements related to security, mitigate threat risks and facilitate the usage of a proxy based solution that could potentially be integrated into mobile applications.

*“The case studies are just two ways in which CLARUS will open up new opportunities in the global marketplace by broadening the number of potential users of cloud services. We are honoured to be leading the future exploitation of CLARUS and helping to shape its go-to-market strategy”,* says Silvana Muscella, CEO of Trust-IT Services.

### CLARUS Consortium

The CLARUS Consortium is an excellent mix of highly regarded research institutions, small firms and large corporations:

Universitat Rovira i Virgili, Spain (coordinator), Royal Holloway University of London, UK, Katholieke Universiteit Leuven, Belgium, EURECOM, France, OFFIS, Germany; Montimage, France, Trust-IT Services Ltd, UK; AKKA Informatique et Systèmes, France, Thales, France and end-user, Fundació Clínic per a la Recerca Biomèdica, Spain.

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