



# PaaSword

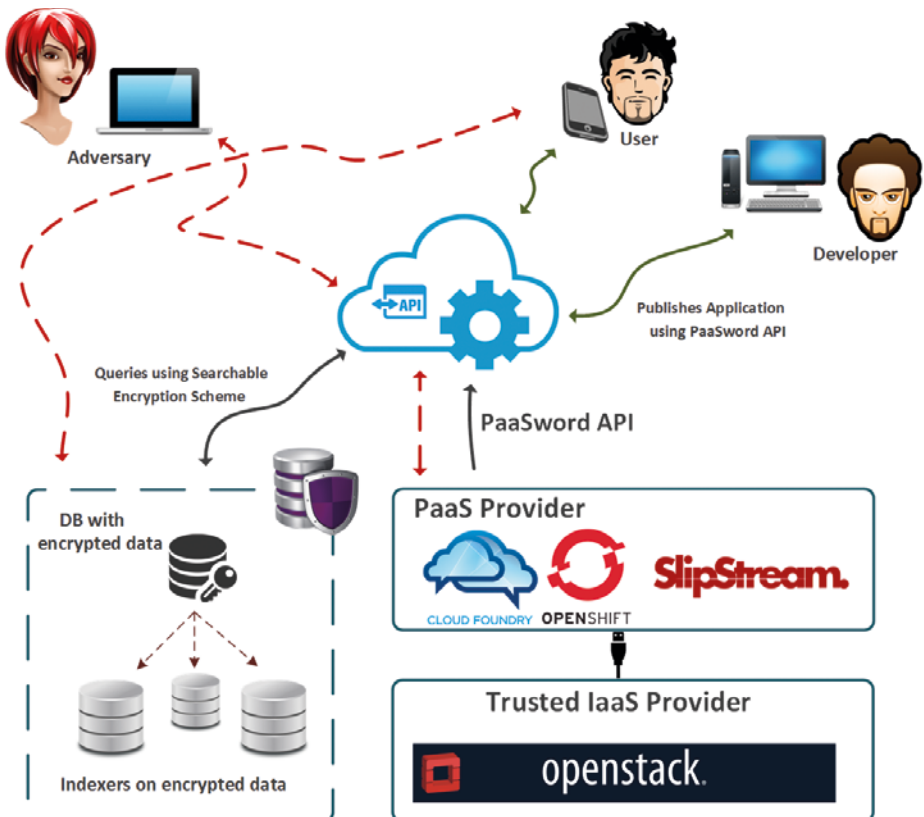
**PaaSword - A Holistic Data Privacy and Security by Design Platform-as-a Service Framework Introducing Distributed Encrypted Persistence in Cloud-based Applications**



Despite its compelling benefits, only few enterprises make use of cloud computing. Security and data privacy concerns impede its wide adoption. The EU research & innovation project **PaaSword** addresses these challenges by developing a holistic security and privacy preserving framework.

## Context, Motivation and Challenge

Current cloud applications and storage volumes often leave information at risk to theft, unauthorized exposure or malicious manipulation. Thus, the benefits of **cloud computing** are still underexploited by many businesses and individuals. In order to unlock these valuable business benefits, security and data privacy concerns as main **barriers in cloud adoption** must be effectively addressed in a holistic way. **PaaSWord** aims at fortifying the **trust** of individuals and corporate customers in cloud services and increasing the adoption rate of cloud-based solutions by securing the most critical target, the data persistence layer and the database itself. The focus is on **safeguarding both corporate and personal data** for **cloud infrastructures** and **storage** services. The project addresses the current major data security challenges, posed by the Cloud Security Alliance, and provides essential knowledge to organizations that wish to **securely migrate** to the cloud.



## Solution

PaaSword introduces a holistic **data privacy** and **security** by design **framework** with main aim to protect users' sensitive data stored in the cloud. The framework is based on a **searchable encryption scheme** enhanced with sophisticated **context-aware access control mechanisms**. An innovative approach for **key management** maximizes customers' control over their data. PaaSword extends the Cloud Security Alliance's cloud security principles by capitalizing on recent innovations in **virtual database middleware technologies** that introduce a scalable secure cloud database abstraction layer with sophisticated data distribution and encryption methods.

The implementation of **enterprise security governance** in cloud environments is supported by a novel approach towards context-aware access control mechanisms that incorporate dynamically changing contextual information into access control policies and context-dependent access rights to data stored in the cloud. Finally, PaaSword supports developers of cloud applications through **code annotation techniques** that allow specifying an appropriate level of protection for the application's data.

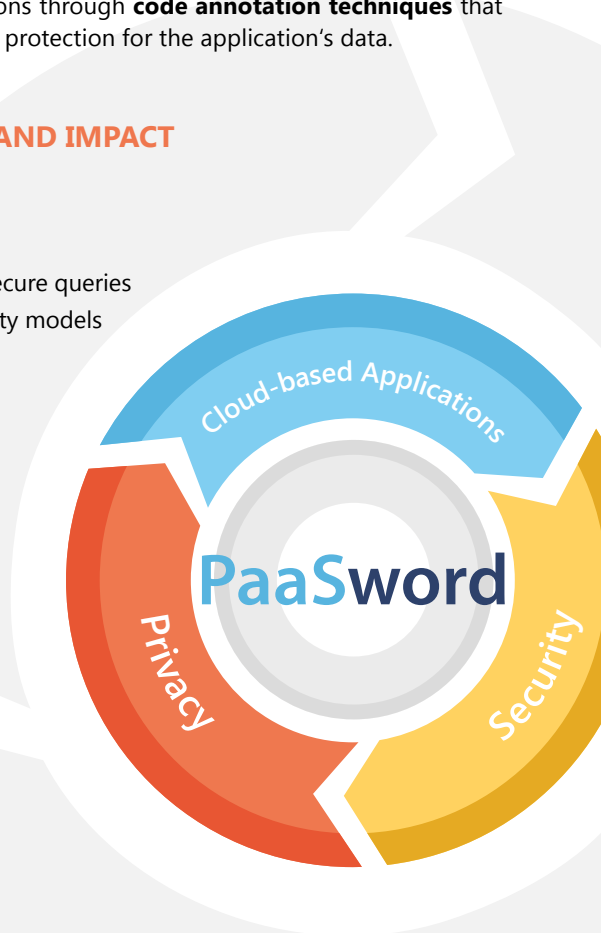
## IN BRIEF: EXPECTED RESULTS AND IMPACT

- PaaSword holistic framework
- Reference architecture
- Searchable encryption scheme for secure queries
- Policy access & context-aware security models
- Policy enforcement middleware
- Dedicated IDE plug-in
- PaaSword demonstrators

Thus, PaaSword enables European enterprises to unlock valuable business, economic and operational benefits of migrating to the cloud.



PaaSword has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement no. 644814.



PaaSword has a growing industrial focus group on cloud security with partners from industry and academia. If you are interested in joining, just visit the website or contact us directly at [www.paasword.eu](http://www.paasword.eu)



@PaaSwordEU



PaaSword

### Project Coordination

Dr. Simone Braun, CAS Software AG,  
[simone.braun@cas.de](mailto:simone.braun@cas.de)

### Scientific & Technical Management

Dr. Christian Gehrman, SICS Swedish ICT AB,  
[chrisg@sics.se](mailto:chrisg@sics.se)

### Consortium:

- 1 CAS Software AG (DE)
- 2 SICS Swedish ICT AB (SE)
- 3 Karlsruhe Institute of Technology (DE)
- 4 Institute of Communications and Computer Systems (GR)
- 5 INTRASOFT INTERNATIONAL SA (LU)
- 6 South East European Research Centre (GR)
- 7 SixSq Sàrl (CH)
- 8 UBITECH Ltd (GR)
- 9 SIEMENS SRL (RO)
- 10 SingularLogic Cyprus Ltd (CY)

**Duration:** 01/01/2015 - 31/12/2017

**Total Costs:** 4.461.513 €

**EC Contribution:** 3.984.575 €

**Programme:** H2020-ICT-07-2014

