Coco Cloud: Confidential and Compliant Clouds

Marinella Petrocchi
IIT CNR, Pisa

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General Project Data

- FP7 (2007-2013)
- November 1, 2013 – October 31, 2016
- Partners:
  - Industry
  - Academia
  - Pilots owners
  - Legal firm
Coco Cloud: Data Protection as a Service

- Coco Cloud allows cloud users to **securely** and **privately** store and share their data in the **Cloud**

- Provides a framework to store and exchange data by defining and enforcing **data protection policies**
- Supported by the concept of **Data Sharing Agreement**
Pilots

- **Assessment** of Coco Cloud solutions through the three pilots use cases

- **Public Administration**
  - Civilian Data Sharing (Cloud)

- **Healthcare**
  - Clinical Reports Sharing (Cloud)

- **Corporate Environments**
  - Highly Confidential Data Sharing (Mobile)
Main Pillars

Legal Aspects

- Identifying and considering **legal issues in data management**

Definition, Analysis, Enforcement & Dismissing of Electronic Contracts

Data Usage Control uniformly applied in Cloud and Mobile

- DSA
Main Pillars

- **Legal aspects**

- **Definition, Analysis, Enforcement, and Dismissing of electronic contracts**
  - Expressing DSA at different level of abstraction

- **Data Usage Control uniformly applied in Cloud and Mobile**
Main Pillars

Legal aspects

Definition, Analysis, Enforcement & Dismissing of DSA

Data Usage Control uniformly applied in Cloud and Mobile

- Develop the technical infrastructure for **seamless data protection** cloud/mobile
Data Sharing Agreements & Data Management

Coco Cloud: from DSA Definition to their Enforcement

Gathers input from Legals and Pilot owners

The Coco Cloud lifecycle

- Template definition
- Authoring
- Analysis
- Mapping
- Enforcement

Increases trust towards and wide spread adoption of Cloud services

Template definition

Authoring

Analysis

Mapping

Enforcement

DSA

UPOL
Data Sharing Agreements & Data Management

Coco Cloud: from DSA Definition to their Enforcement

Template definition | Authoring | Analysis | Mapping | Enforcement

Gathers input from Legals and Pilot owners

Increases trust towards and widespread adoption of Cloud services

The Coco Cloud lifecycle

Authoring Tool | Analyser | Mapper & Conflict Solver (DSA → UPOL) | Enforcement Engine

DSA Lifecycle Manager

DSA & UPOL
DSA Lifecycle Manager

The orchestrator managing the DSA stages

Conveniently guiding the users in the **creation, editing, analysis and mapping** of DSA
DSA Authoring Tool

So easy to create and customize your DSA!

Parties, Purpose, Data Classification...

Authorizations, Prohibitions

Obligations:

Temporal constructs definition
Geographical coordinates definition
Specific IDs definition
...

Contextual help and user manual
download

I18N support (for Italian, Spanish,
French)

Specific rules for expiration,
revocation, updates
DSA Analysis Tool

Let us spot conflicts and mistakes in the DSA!

Automatic tool helping the editor spotting wrong rules, inserted by mistake

Highlight inconsistencies between different authoring phases

Spot **conflicts** among DSA rules
- Applicable rules with **opposite effect**
- Contradictions (exactly the same rules)
- Correlations (attributes intersection)
- Exceptions (one rule comprises the other)

Able to deal with **redundancies**

Reveal **gaps**

The user is guided for easily understanding the outcome of the analysis
DSA Mapper

Let us make the data sharing rules really applicable!

From the **high level**, natural language **CNL**
to the **low level**, machine-enforceable **UPOL**

- Refinement of the terms of the vocabulary
- Mapping of both syntax and semantics of the language

The Quick Brown Fox Jumps Over The Lazy Dog

The mapper function translates all rules in the DSA (auth, prohibit, obl)
Take care of implicit rules (like, e.g., DSA validity)
Full integration into the DSA subsystem
DSA Enforcement

Seamless data access and usage control, compliant to DSA rules

Whenever someone tries access to data...

- Access Control Engine
  - **Permits or denies the access** (standard access control)
- Continuous Authorization Engine
  - **Interrupts the ongoing access** as soon as the policy is violated (usage control)
Thanks for your attention!

www.coco-cloud.eu

Coco Cloud aims at allowing the cloud users to securely and privately share their data in the cloud. This will increase the trust of users in the cloud services and thus increase their widespread adoption with consequent benefits for the users and in general for digital economy.