A Lightweight Infrastructure for Global Heterogeneous Trust Management

Lightweight Infrastructure for Global Heterogeneous Trust management in support of an open Ecosystem of Stakeholders and Trust schemes
Agenda

- European Project and Global Initiative (organizational)
- The Problem
- What LIGHTest does
- Vision and Major Selling Point
- Going Global
- Invitation to Collaborate
LIGHT$^\text{est}$ is a Global Initiative set up by an EU-Funded Project

Objective: **Creation of a Global Trust Infrastructure**

- **Global Initiative**
  - LIGHT$^\text{est}$-trust.{org, net, com}
  - LIGHT$^\text{est}$.info
  - Global community open to all stakeholders

- **EU Project**
  - LIGHT$^\text{est}$-trust.eu
  - LIGHT$^\text{est}$.eu

**LIGHT$^\text{est}$ Consortium**
- builds a global community
- creates open standards
- provides open source software

Open invitation for collaboration to all interested stakeholders
- Any geographic region
- Any application field
The European LIGHTest Project

- Horizon 2020
- Innovation Action
- Call: H2020-DS-2015-1 Trust eServices
- Starts September 1, 2016
- 36 months
- Estimated cost of 8.7 Mio Euros
- 14 partners from 9 countries
- Coordinated by Fraunhofer
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Trust in a changing world

In the old days
- our world was smaller
- we knew our business partners
- Deals were sealed in personal contact

Increasingly
- we operate Europe- or World-wide
- we don’t know our business partners
- Deals are sealed remotely through Cyberspace
Transactions are increasingly conducted Virtually

We have virtual transactions with..

- People
- Organizations
- Devices/Things
But who is really behind the electronic identity?

As expected from the appearance: Trustworthy -- legitimate
But who is really behind the electronic identity?

**Not** what we expect!!!
Untrustworthy -- fraud
How can we know whether a remote someone/s.thing is trustworthy?

We need Help:

- Trusted **Authorities**
- Trusted Third Parties that publish **Reputation** Ratings

Regulation and Supervision

Certifies Trustworthiness

Trust List
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The LIGHTest Architecture
The LIGHTest Architecture
DNS: The Internet Phone Book

- **Root Servers**
  2016: 558 DNS root server instances.

- **Top-Level-Domain Name Servers**
  genericTDLs: com, org, edu, info… de, it, at, us, ca,…

- **Most Organizations have existing Name Servers**
  ec.eu, gov.it, daimler.com, fraunhofer.de

- **Organization can define lower-level names**
  - Existing or dedicated name servers
  - trust.ec.eu, eIDAS.trust.ec.eu, signature.eIDAS.trust.ec.eu
What does LIGHT\textsuperscript{est} do? (WP3)

Infrastructure for Publication and Querying of Trust Schemes

- Create a global Standard Way for publishing Trust Lists..
- ..on a global Trust Infrastructure

- Across domains
- Accommodate diverse perceptions of trust
  - No global agreement needed

Authorities:
- EC and MS for qualified signature and trust services
- Business registers
- Professional registers (health, justice, law-enforcement, ..)
- Corporate internal registers
- …
What does LIGHTest do? (WP6)

Trust Policy and Automatic Trust Decisions

- Make it automatic for Verifiers to **query Trust Lists**
- Combine multiple queries to **validate**
  - an **Electronic Transaction**
  - against an easy to author **Trust Policy**
What does LIGHT\textsuperscript{est} do? (WP5)

Infrastructure for the Publication and Querying of Delegations

Delegation:

- Organization publishes Trust List on...
- ..who can sign/act in its name for which purposes

Authorizes employees to act/sign in its name
What does LIGHT\textsuperscript{est} do? (WP4)

Infrastructure for the Translation across Trust Domains

Authority publishes Trust List on..

- ..which authorities from other trust domains are trustworthy
- ..how to translate foreign into native trust schemes
  - NIST: Level “3” == EC eIDAS: Level “substantial”

Bilateral agreements, etc.
What does LIGHT$^{est}$ do? (WP7)

Trust Propagation of Derived Mobile IDs

- Trustworthy through secure enrollment
  - Birth and population registers
  - in person issuance
- Often unfit for mobile use

- Derive mobile identities from eIDs

- How does trust propagate???

- Currently lacks highly trusted electronic identities
What does LIGHT\textsuperscript{est} do? (WP9)

Pilot Demonstrations

**e-Correos** (by Correos)
- Spanish Postal Service, one of largest world-wide
- electronic registered delivery service
- Identities of users
- Citizens and businesses receive official notifications from various administrations

**PEPPOL e-Invoicing** (by IBM)
- e-Invoicing in OpenPEPPOL environment
- Approach applicable to other PEPPOL applications
- Demonstrates easy of integration of LIGHT\textsuperscript{est} in existing product
- Demonstrates “delegation-enabling” an application with LIGHT\textsuperscript{est}.
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The Vision of LIGHT\textsuperscript{est}

- Out of Reach:
  - Setting up and funding a global server infrastructure
  - Setting up a global organization (Registries)
  - Consensus on the Governance of a global Single Trust Root

- By using the existing Domain Name System:

  \textbf{LIGHT}^{est} \textit{is the ONLY possible way to create a global, cross-domain trust infrastructure}
THE Unique Selling Point

- A multitude of Trust Anchors is very difficult to provision
- LIGHT\textsuperscript{est} uses the Single Trust Root of the DNS

The single trust root of LIGHT\textsuperscript{est} brings multi-faceted trust decisions in the realm of the feasible
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Going Global
Community Building

- We need to go beyond the limits of the Consortium
- Build up a global community around the vision of LIGHT\textsuperscript{est}
- Go “Viral”

Global community in support of LIGHT\textsuperscript{est}
Potential sub-community/application field
Activated sub-community/application field
Going Global Approach

- Global Players in the Consortium
  - OIX, GlobalSign, IBM
- Members of Existing Communities in Consortium
  - IETF Dane
- Advisory Board
- Associate Partners
- Loosely linked Web-based Community
Going Global
Community Based Dissemination

Empower the Community to Disseminate the LIGHTest Vision/Technology

- Open Source and (International) Open Standards
- Open Document Licenses for Dissemination Material
  - Empower Others to Disseminate the Vision
    - Adapt to new application fields
    - Translate
    - …
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Invitation to Collaborate

- First Focus: **Inventories**
  - Discussion later in same session
  - Help us solve YOUR problem!

- Requirements

- Later: An open, global LIGHT\textsuperscript{est} Community. (stay tuned)
  - Use LIGHT\textsuperscript{est} results and software to solve your trust problems!
  - Open Source, Open (international Standards), Support from Community
  - Make sure today that your problem is on our radar!
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