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 LIGHT\textsuperscript{est} does
- Vision and Major Selling Point
- Going Global
- Invitation to Collaborate
LIGHT\textsuperscript{est} is a Global Initiative set up by an EU-Funded Project

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

**Global Initiative**
- LIGHT\textsuperscript{est}-trust.{org, net, com}
- LIGHT\textsuperscript{est}.info

Global community open to all stakeholders
- builds a global community
- creates open standards
- provides open source software

**EU Project**
- LIGHT\textsuperscript{est}-trust.eu
- LIGHT\textsuperscript{est}.eu

LIGHT\textsuperscript{est} Consortium

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
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The LIGHTest Architecture

Trust Scheme Publication Authority (WP3)
Trust Translation Authority (WP4)
Delegation Publisher (WP5)

Existing, Single Trust Root
Existing Governance, Organization, Infrastructure of DNS

Assurance Levels
queries

Policy Authoring and Visualization Tools (WP6)
Individual Trust Policy
Automatic Trust Verifier (WP6)
Electronic Transaction

verifier
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
eec.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

**Trust policy:**
List of Authorities that I trust, ...

**Trustworthy?** (yes/no)

**Electronic Transaction**
e.g. signed document

ISSE, Paris, France
November 16, 2016

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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\textsuperscript{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 LIGHTest 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 LIGHTest in existing product
- Demonstrates “delegation-enabling” an application with LIGHTest.
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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}^{\text{est}} \text{ 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 LIGHTest
- Go “Viral”
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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ISSE, Paris, France
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Bud P. Bruegger (Fraunhofer IAO)
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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 LIGHTest Community. (stay tuned)
  - Use LIGHTest 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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