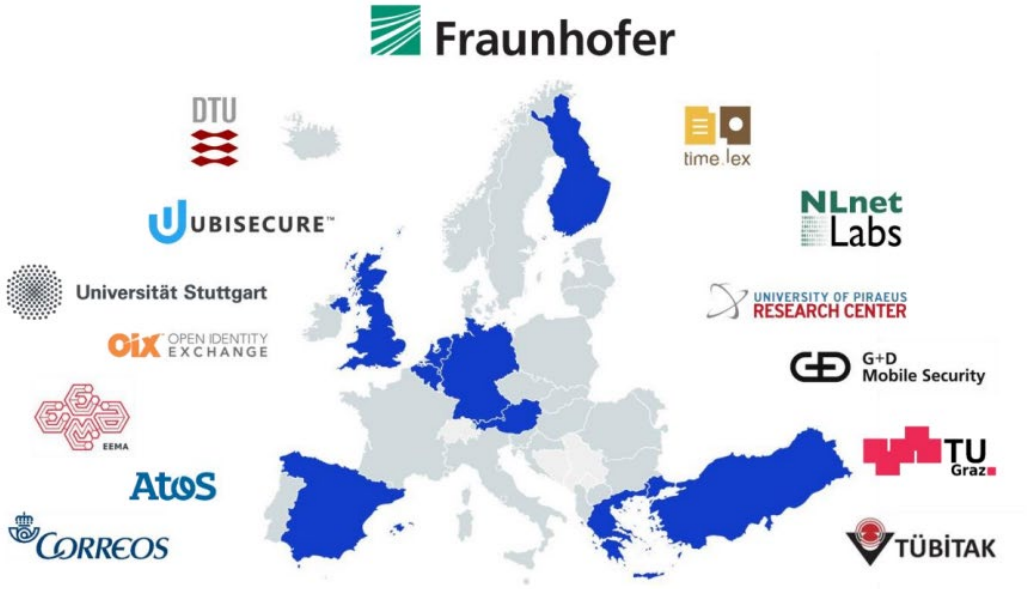
Trust establishment in Peppol using LIGHTest

A Lightweight Infrastructure for Global Heterogeneous Trust Management



Lightweight **I**nfrastructure for **G**lobal **H**eterogeneous **T**rust management in support of an open **E**cosystem of **S**takeholders and **T**rust schemes

Andriana Prentza, Jerry Dimitriou
UPRC

LIGHTest has received funding from the European Union's Horizon 2020 research and innovation programme under G.A. No. 700321

Agenda

- What is LIGHT*est* ?
- What does LIGHT*est* do?
- LIGHT*est* pilot overview in eProcurement
- How LIGHT*est* can be used for Trust Establishment in PEPPOL

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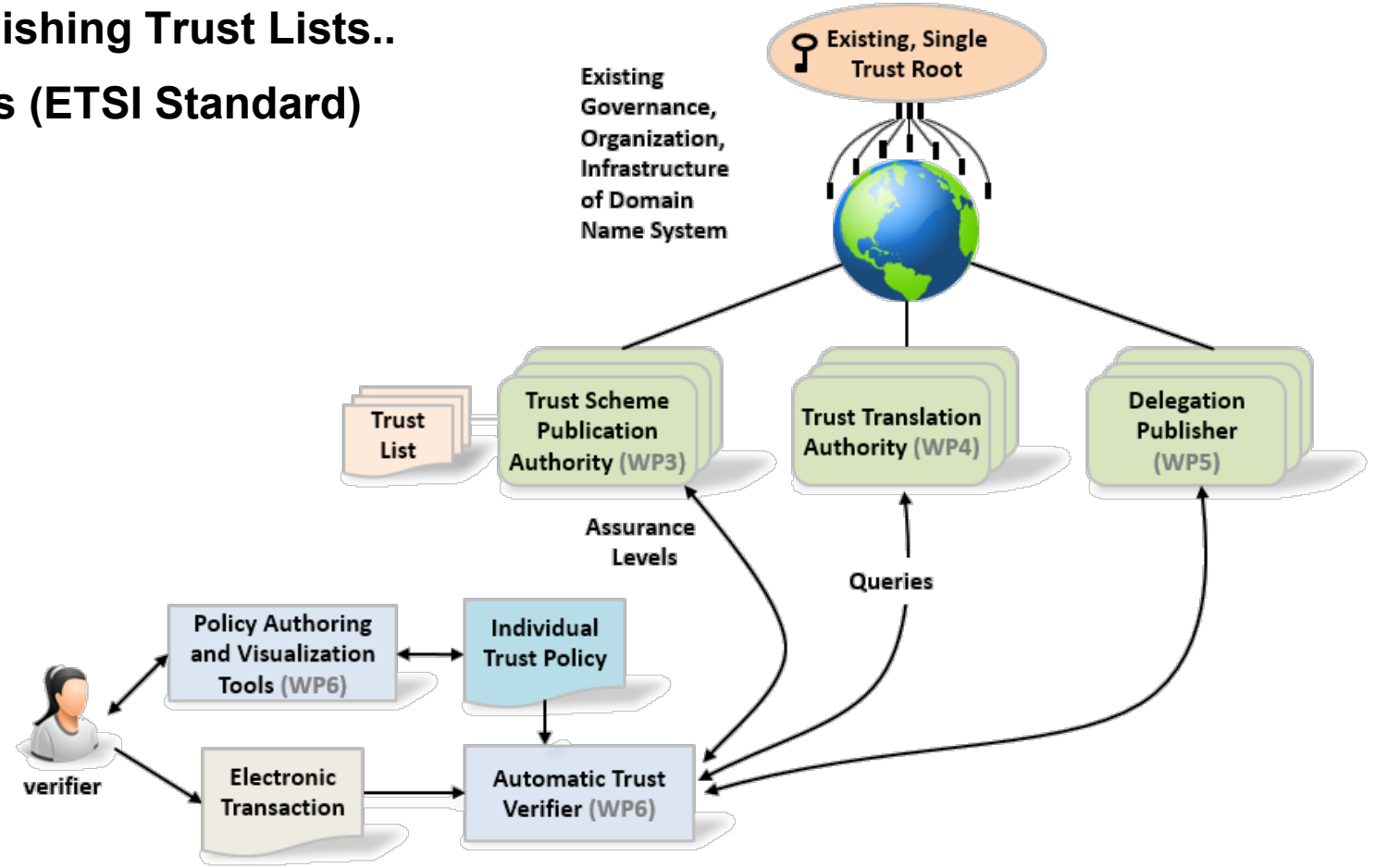
What is LIGHT*est*?

Infrastructure for Publication and Querying of Trust Schemes

- Create a global Standard Way for publishing Trust Lists..
  - Using Trust Service Status Lists (ETSI Standard)
- ..on a global Trust Infrastructure
  - DNS using DNSSEC



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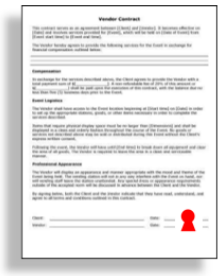
What does LIGHT^{est} do? Trust Policy and Automatic Trust Decisions

- Make it automatic for Verifiers to **query Trust Lists**
- Combine multiple queries to **validate**
  - an **Electronic Transaction**
  - against an easy to author **Trust Policy**

Our Policies

Transaction



Is it trustworthy? YES/NO

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LIGHT*est* pilot overview in eProcurement

- Trust Establishment between pre-award Service Providers (SPs)
  - Investigating the use of LIGHT*est* infrastructure in a HealthCare Procurement Scenario
  - Trust Establishment and Delegation between Service Providers
- Trust Establishment on eDelivery Access Points (APs)
  - Investigating the change of PKI on a closed Trust Environment

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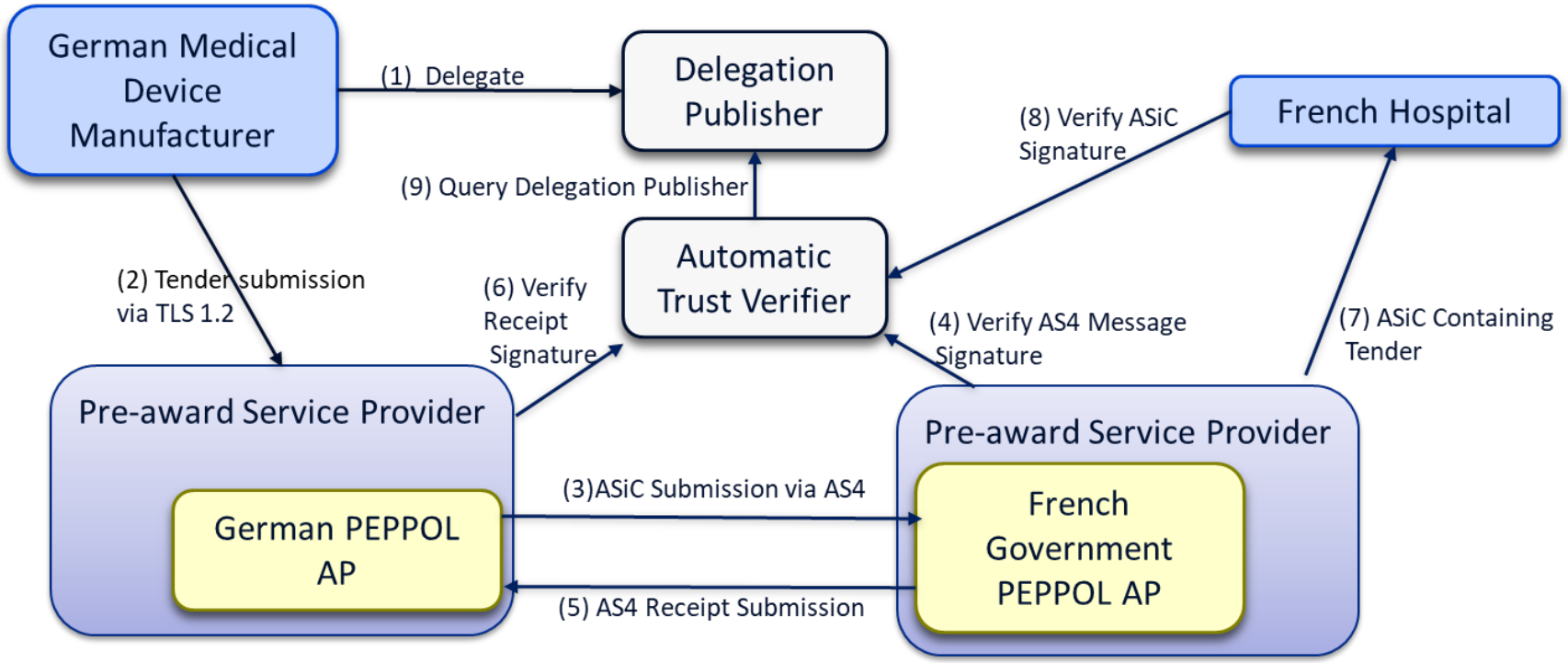
Pre-award Service Provider Use Case
Multi-layered Trust Establishment



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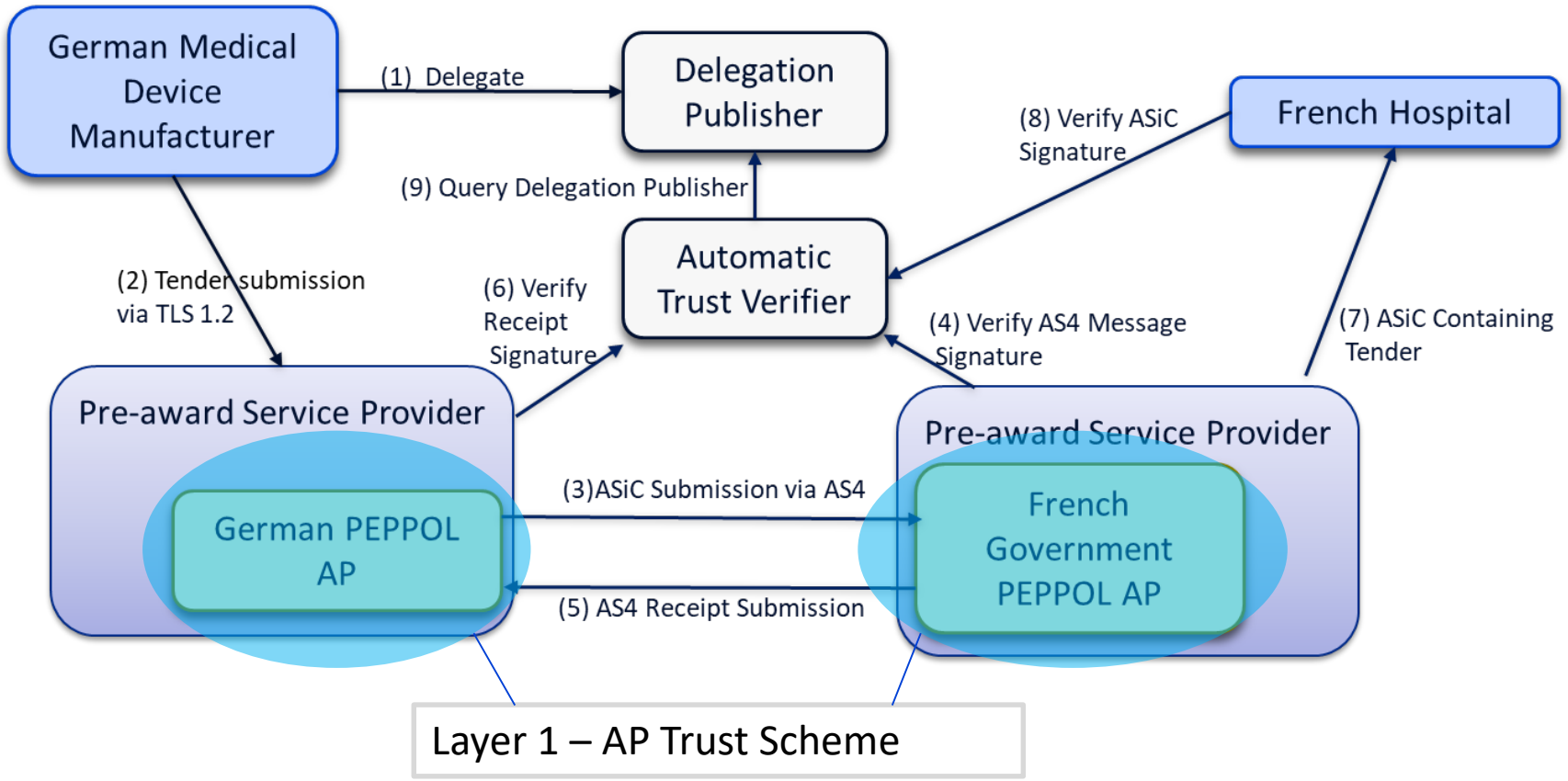

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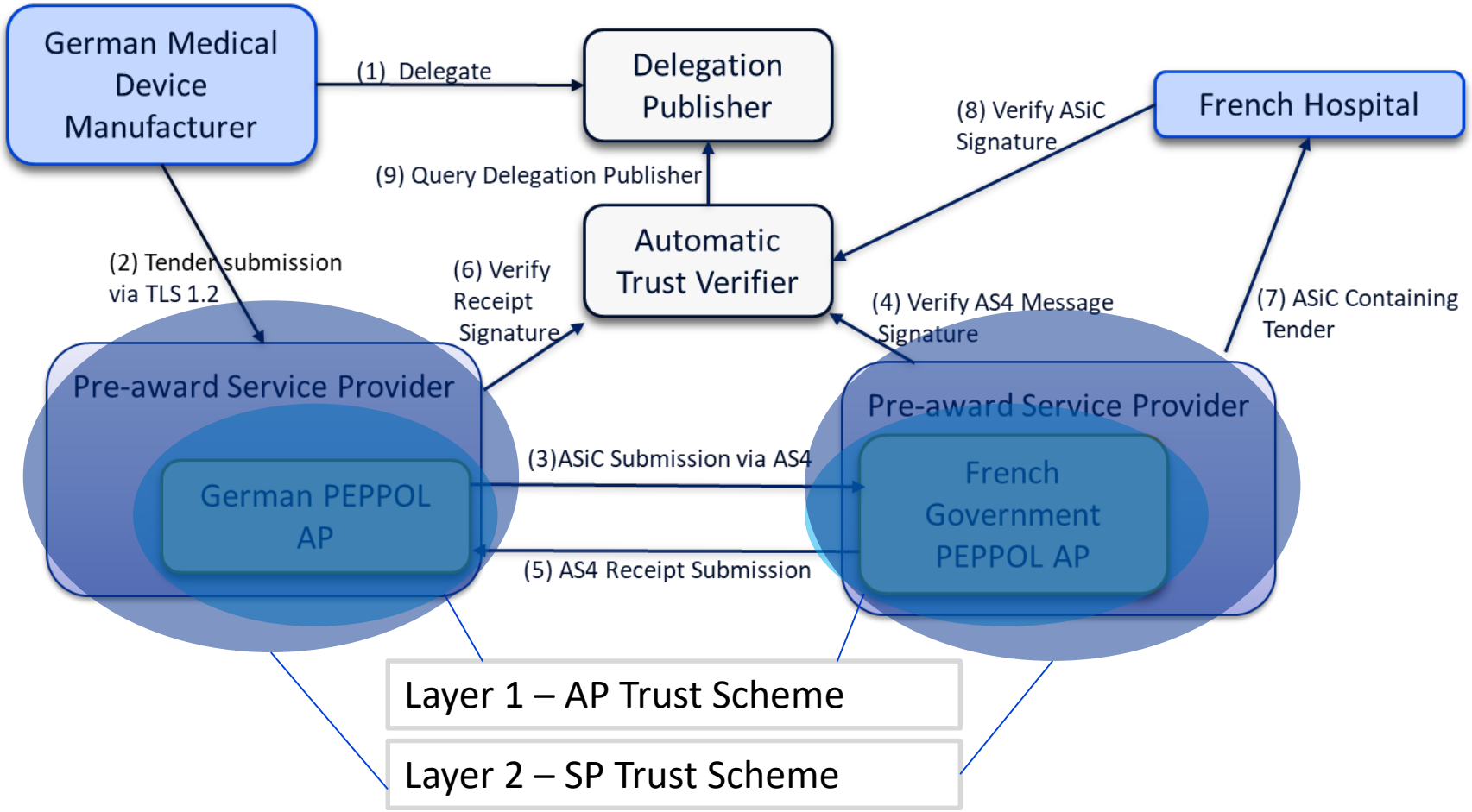

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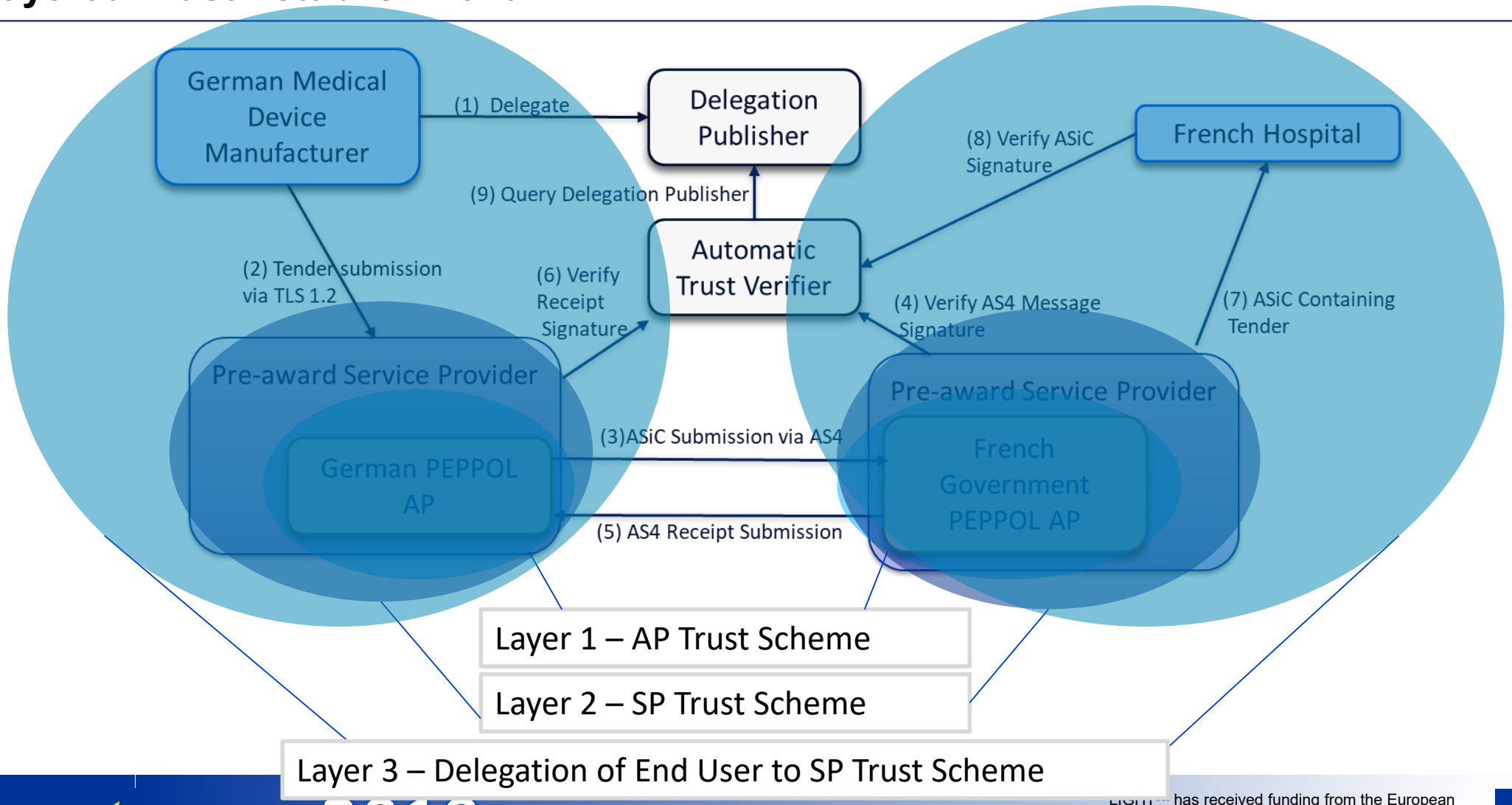

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Trust Scheme Publication Examples
Publication to DNS

- LIGHT*est* uses DNS(SEC) for the publication of the Trust Schemes
- Access Point Trust Scheme:
  - DNS Record: _accesspoint_._trust_.peppol.eu
  - Points to: https://trust.peppol.eu/accesspoint
  - Contains a Trust List with the AP CA (Issuer) or the AP certificates themselves
- Pre-award Access Point Trust Scheme:
  - DNS Record: _accesspoint-preaward_.trust_.peppol.eu
  - Points to: https://trust.peppol.eu/accesspoint-preaward
- Service Provider Trust Scheme:
  - DNS Record: _serviceprovider-preaward_.trust_.peppol.eu
  - Points to: https://trust.peppol.eu/serviceprovider-preaward

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Trust Scheme Publication Examples
Verifying (1)

- Using LIGHT*est* tools like Automatic Trust Verifier (ATV):
  - When an AP receives a Message from another AP
  - Validates the certificate against a policy stating that the certificate should be a pre-award PEPPOL Access Point (Trust Claim)
  - Using DNS, the ATV:
    - Resolves the Trust Scheme from the Claim
    - Fetches the Trust List and validates it
    - Checks that the certificate used for signing the message is verified against the Trust Scheme (e.g. Issuer is in the Trust List)

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Trust Scheme Publication Examples
Verifying (2)

- Any updates on the Trust Schemes do not affect the configuration of the ATV and the AP
  - New CAs are added as trusted or new AP certificates are added as trusted (or removed as non-trusted)
- Granularity of the Trust Scheme can be arbitrary
  - Trust scheme on AP able to send orders
  - Trust scheme on an SP able to send specific BISes

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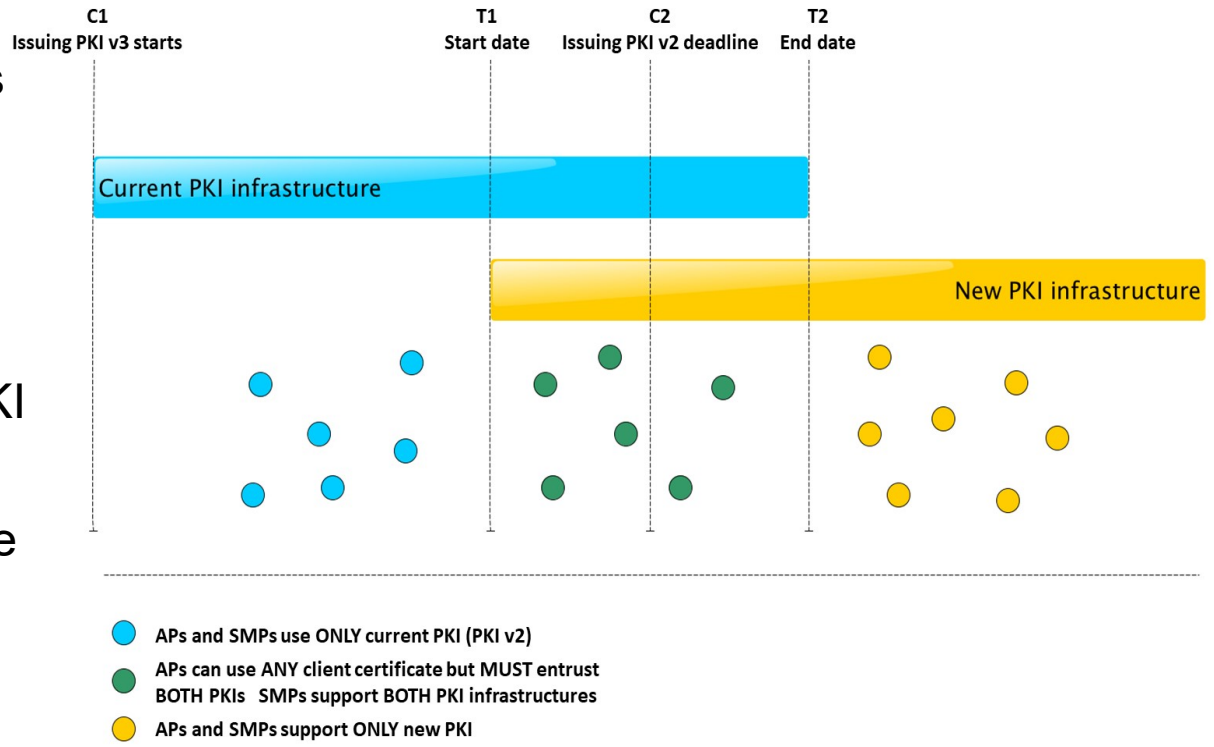
Trust Establishment on eDelivery APs
PKI Migration using LIGHT*est*

- APs use LIGHT*est* Infrastructure for Trust Establishment
  - Before T1:
    - A Trust Scheme containing the old PKI CAs
  - After T1 and Before T2:
    - A Trust Scheme containing both PKI CAs
  - After T2:
    - A Trust Scheme containing only the new PKI CAs
- OpenPEPPOL APs **automatically** get **updated** on the **updated trust schemes** using **LIGHT*est*** and the **ATV**



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Thank You

Questions?

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