ENERGY TRACK&TRACE

Energy Track and Trace

Partner Meeting 4

European partnership on next generation energy tracking.

September 15. 2022

elia group
Elia | 50Hertz | EGI

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www.energytrackandtrace.com

Agenda

- Welcome
- Update on progress
- Concepts:
    - GO/GC co-existence
    - XB principles and test
    - Storage
- Status of development
- Partner's role going forward

Stay Alert for the Next Meeting on December 15th

Update on progress

Progress

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System architecture design

Q1/2022: System architecture published (version 1)

Detailed architectural questions

Concepts for new features (ie. locational matching, GO integration, storage integration) and accompanying analyses

Demonstrator implementation

Q4/2022 Alpha release: Local registries open APIs and front-end for testing

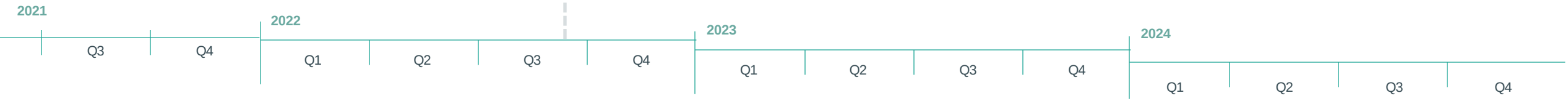
Implementation of new features: Locational matching (cross-border), GO integration, storage integration

Q4/2023: MVP release: functional international solution that co-exists with GO scheme

Scaling up & continuous improvement

Phase 1: Product testing

Phase 2: Product on the market (co-existence with GOs)



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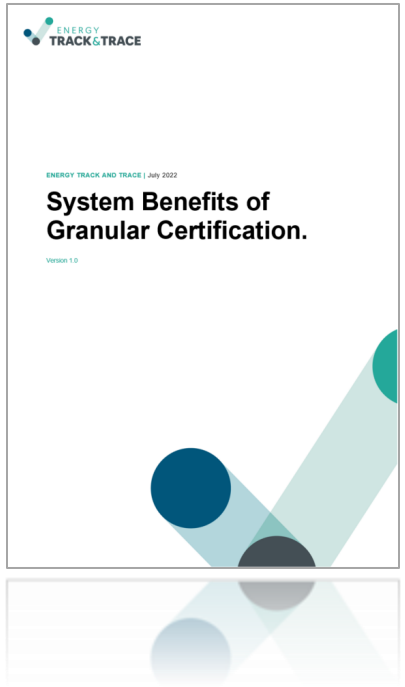
accompanying analyses

Energy System Benefits

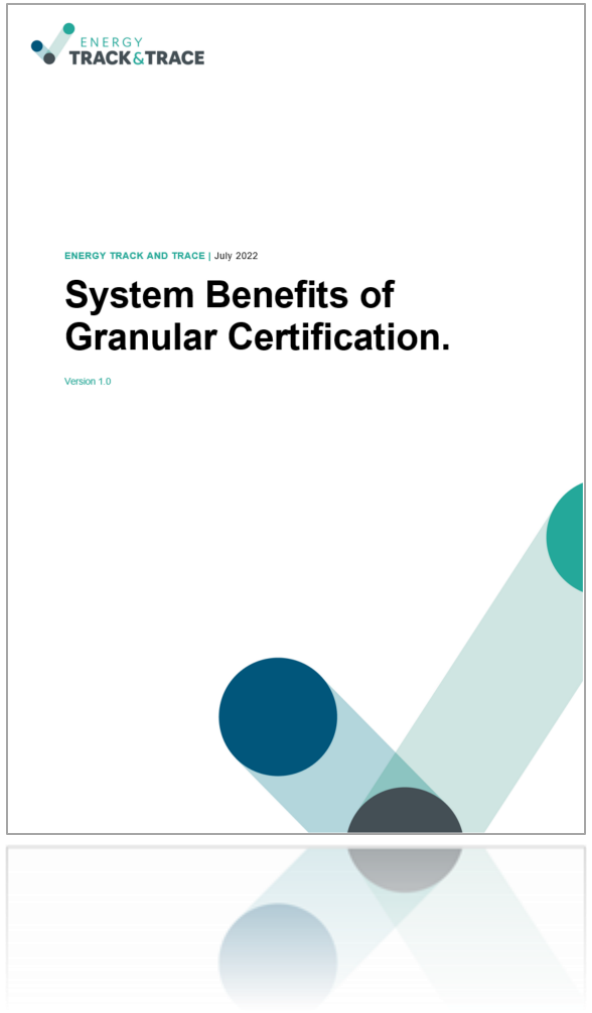
System Benefits – 5 Distinct Categories



- Additional investments in renewable assets and diversification
- Incentives to develop and activate flexibility
- Driving DSM and energy storage down the “learning curve”
- Improved spatial allocation of renewables and flexibility
- Reduced dispatch costs and CO2 emissions

Quantitative analysis

System Benefits of Granular Certificates



Qualitative analysis the contribution of Granular Certification to the RES development and integration.

Quantitative deep dive into the short-term dispatch behavior and it's impact on the system costs/emissions.

Energy Track and Trace "System Benefits Paper" released in **July 2022**.

Energy Track and Trace (energytrackandtrace.com)

Further Research and Publications

Views on a Future-Proof Market Design for Guarantees of Origin. Released **20th of July 2022**

New study that will be released **15th of September 2022** by Princeton's ZERO lab on the system and buyer impacts of a T-EAC trading market and 24/7 carbon-free energy procurement.

Concepts:

- **Co-existence with Guarantees of Origin (GO)**
- Locational matching
- Storage

Co-existence with Guarantees of Origin (GO)

- Necessary in order to mitigate double counting
- Possibly important for some customers, as the current GO system is the “official” claim
- Important for issuing bodies as some legal aspects have to me met

GO/GC Implementation following EnergyTag's Standard

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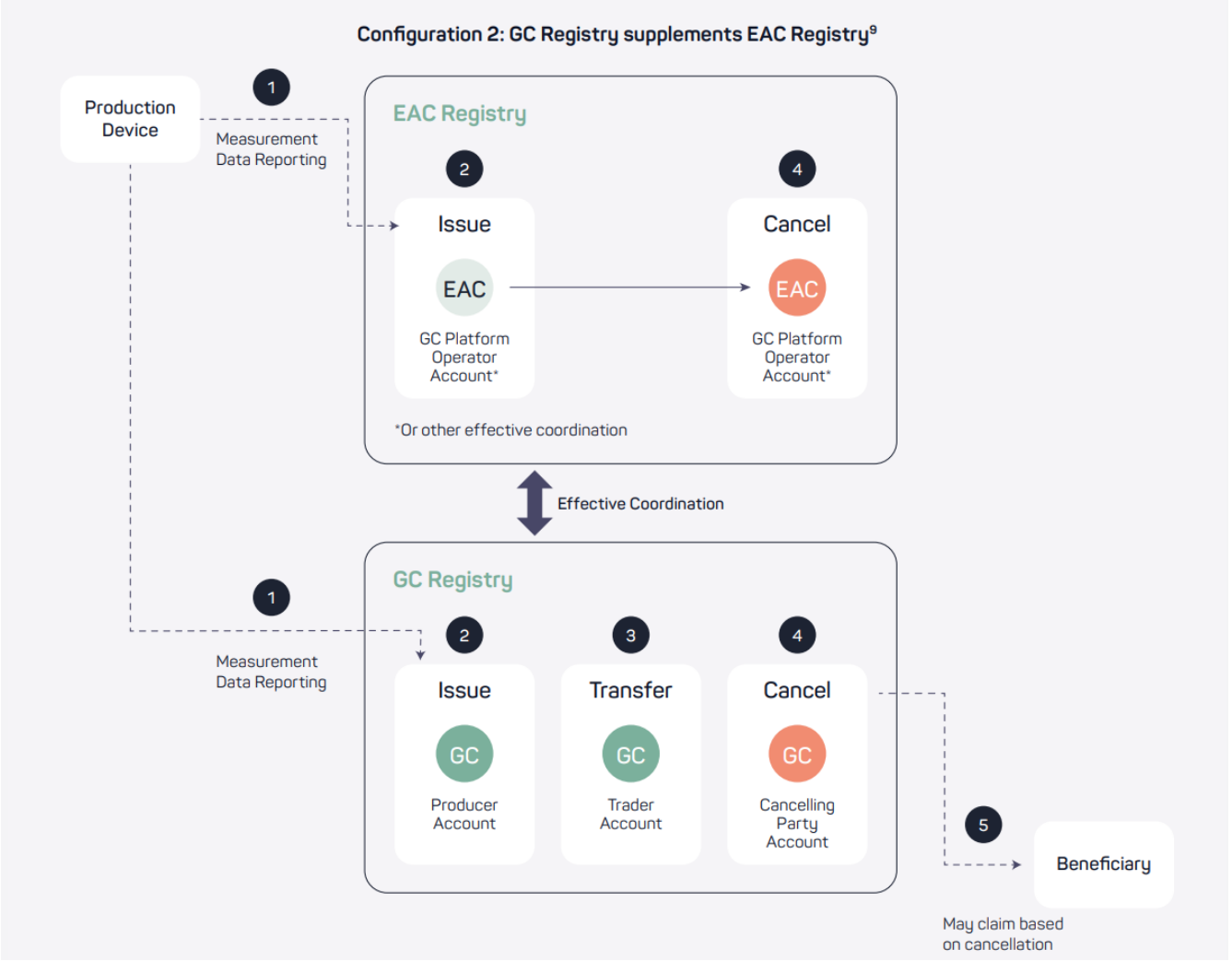
- We are aiming at creating a mechanism, that follows EnergyTags description

  GO's will be issued and put on the GC Platform operators account

  GC's will be issued and canceled/transferred/matched

  The GO will be cancelled after the GC's are matched



Still open questions

- How can a switch between both systems be established
- Can GC's be issued before GO's, how can a reference to the GO then be established?
- Will it be possible to have GC's that don't have a reference to a GO
- How to treat the different roles (only TSO vs TSO&issuing body)

GC/GO paper is currently under preparation

Concepts:

- Co-existence with Guarantees of Origin (GO)
- **Locational matching**
- Storage

What is locational matching?

- Locational matching is the mechanism by which production- and consumption certificates are matched (or “cancelled”) **across bidding zone borders.**
- We provide locational matching in order to satisfy our customers with a **credible tracking solution** and create **benefits in the energy system** as a whole.

Open Question:

- What is the **optimal set of rules** for the ETT system?

3 Different Locational Matching Options under Investigation

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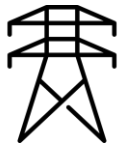


Option 1: Locational matching rules based on **physical interconnector** capacities.

- \+ Plannability, credibility and simplicity
- − Long distance load-generation matching

Option 2: Locational matching rules based on **measured/calculated power flows**.

- \+ Most realistic method
- − No plannability, limited liquidity and long-distance load-generation matching

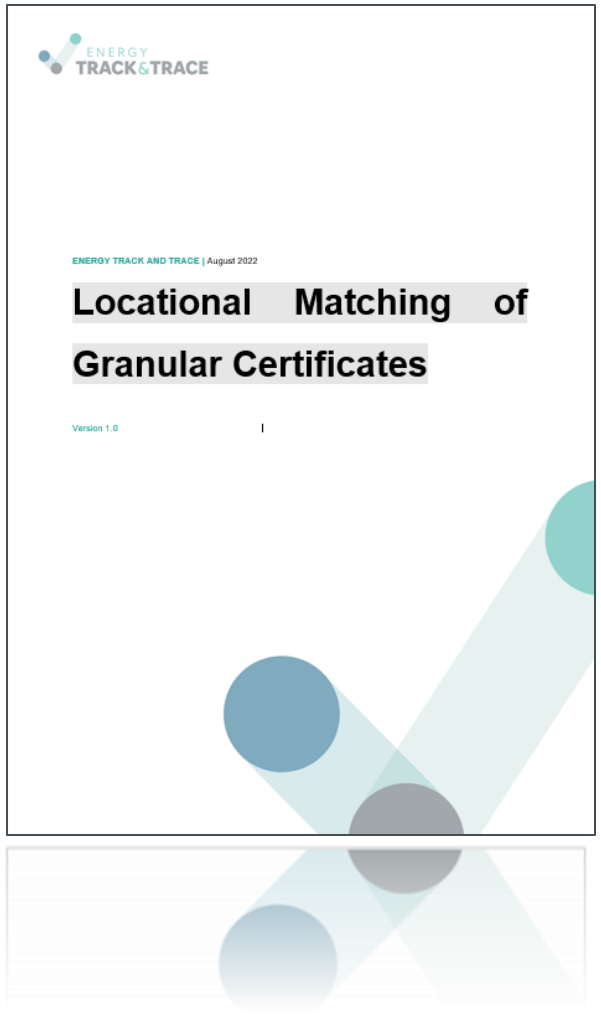
Option 3: Locational matching rules based on **price correlations** (RFNBO method)

- \+ Compliant with delegated act, energy system benefits
- − No plannability, not an energy tracking instrument (designed for system optimization only)

Conclusions on Locational Matching

- **Unclear system implication** of each locational matching method.
- In the first product phase (testing period in 2023): **No mandatory locational matching.**
- First enabled **voluntary locational matching** option**: Option 1:** Locational matching rules based on physical interconnector capacities.
- Data acquisition of the testing period will be used to **identify optimal locational matching option for the next product phase (2024).**

Locational Matching of Granular Certificates



Analysis of locational matching methods for Granular Certificates – aiming at the best compromise between credibility, feasibility and impact on the energy system.

Energy Track and Trace ”Locational Matching of Granular Certificates” released in **September 2022**.

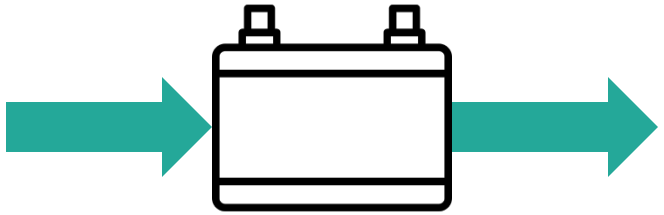
Energy Track and Trace (energytrackandtrace.com)

Concepts:

- Co-existence with Guarantees of Origin (GO)
- Locational matching
- **Storage**

Integration of Energy Storage is an Essential Element of Granular Certification Systems

- Tracking energy storage (charge and discharge) is not relevant in existing EU GoO scheme, since temporal aspects are neglected.
- Energy storage is an essential component to **improve temporal matching score**, since it allows to shift Granular Certificates (GCs) in time. It becomes necessary to **track GCs through storage units, including conversion losses.**
- Arbitrage with GCs becomes a **new revenue stream** for storage operators (with only limited options today).



High Level Concepts to Integrate Storage (Based on EnergyTag Standard and Guideline)

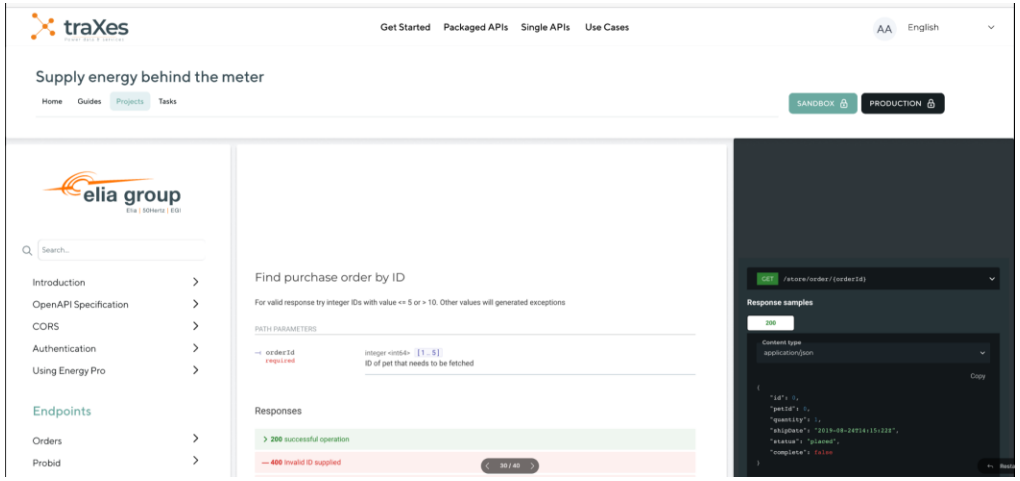
Necessary tracking operations:

- ETT tracks the charging history of a storage device (time, volume).
- ETT tracks the discharging history and issues **Storage Discharging Records** (SDRs)
  - Each **SDR is allocated to a charging history**, via First-in-First-out method.
  - As part of this allocation, a **loss factor** is applied.
  - **Main attributes on an SDR:** Time of charge (same 15 min. intervals as for GCs), time of discharge (same 15 min. intervals as for GCs), input volume, applied loss factor.
- Each SDR can be combined with a production GC, in order to **shift its time-interval.** Essentially a SDR is a “time-machine” for GCs.

Status of Development

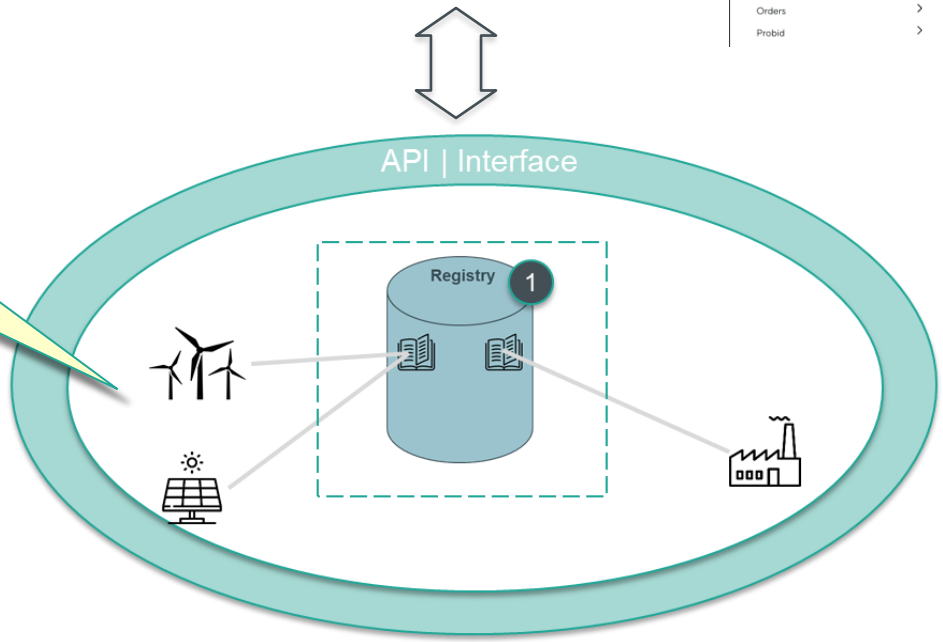
Elia group implements first version of ETT granular certification service

Portal for Energy Service Providers



Local registry, generating granular certificates for production and consumption assets.

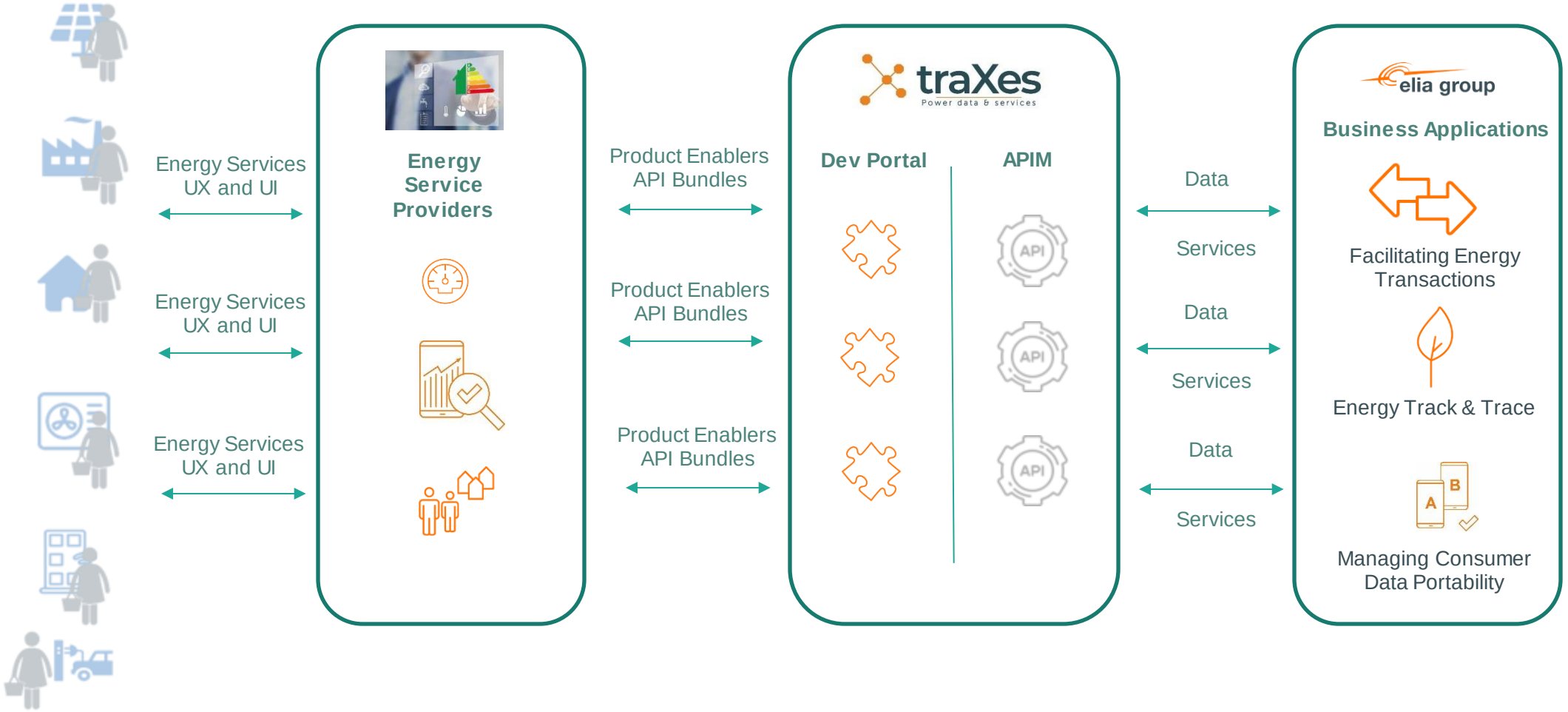
Matching logic



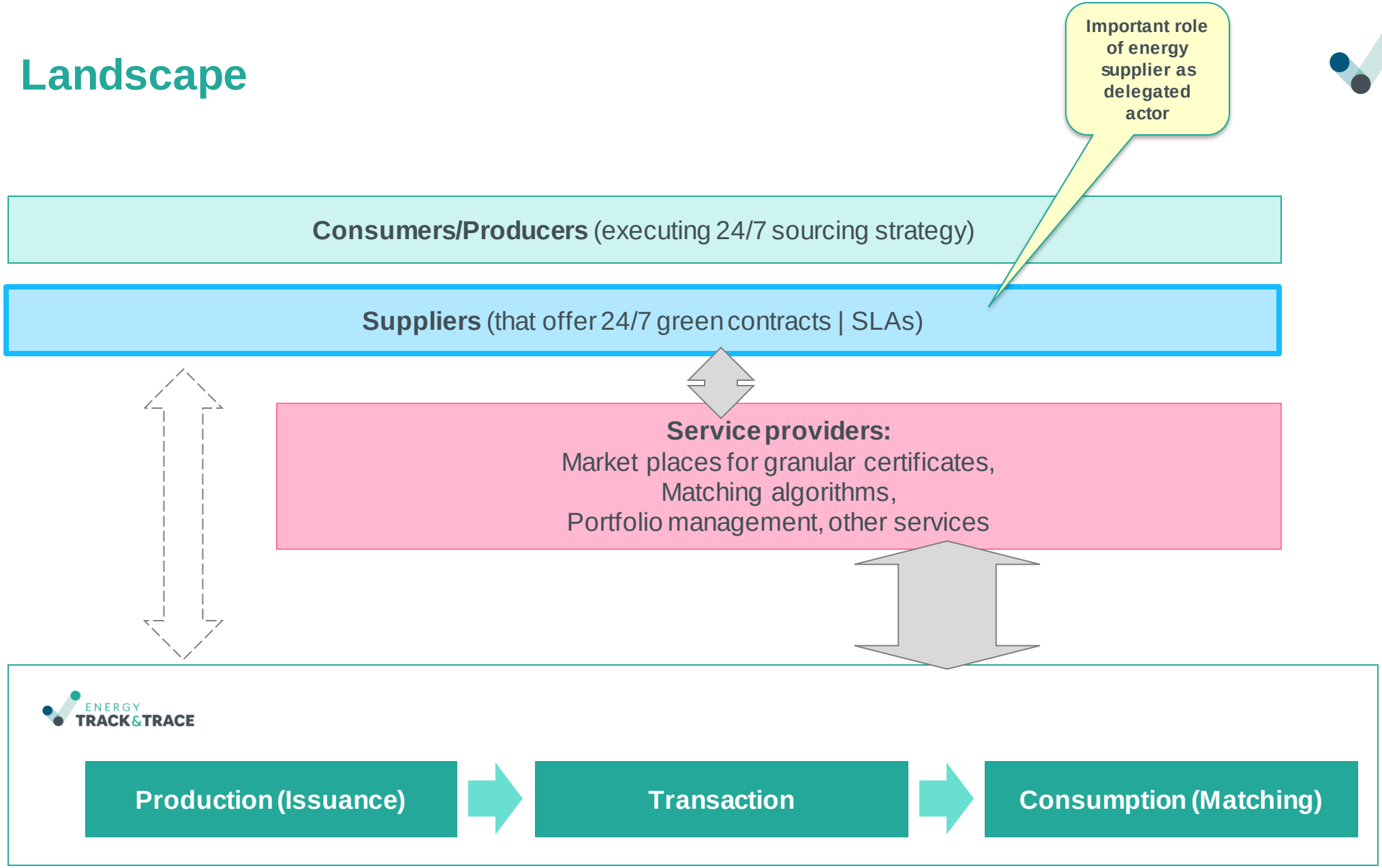
Energy Service Providers subscribe to TRAXES development portal & get access to the energy track & trace API

Release of Alpha version:
Early Nov 2022

Elia Group: TraXes is the ESP's one stop shop to enabling products



Landscape


Important role of energy supplier as delegated actor
Consumers/Producers (executing 24/7 sourcing strategy)
Suppliers (that offer 24/7 green contracts | SLAs)
Service providers:
Market places for granular certificates,
Matching algorithms,
Portfolio management, other services
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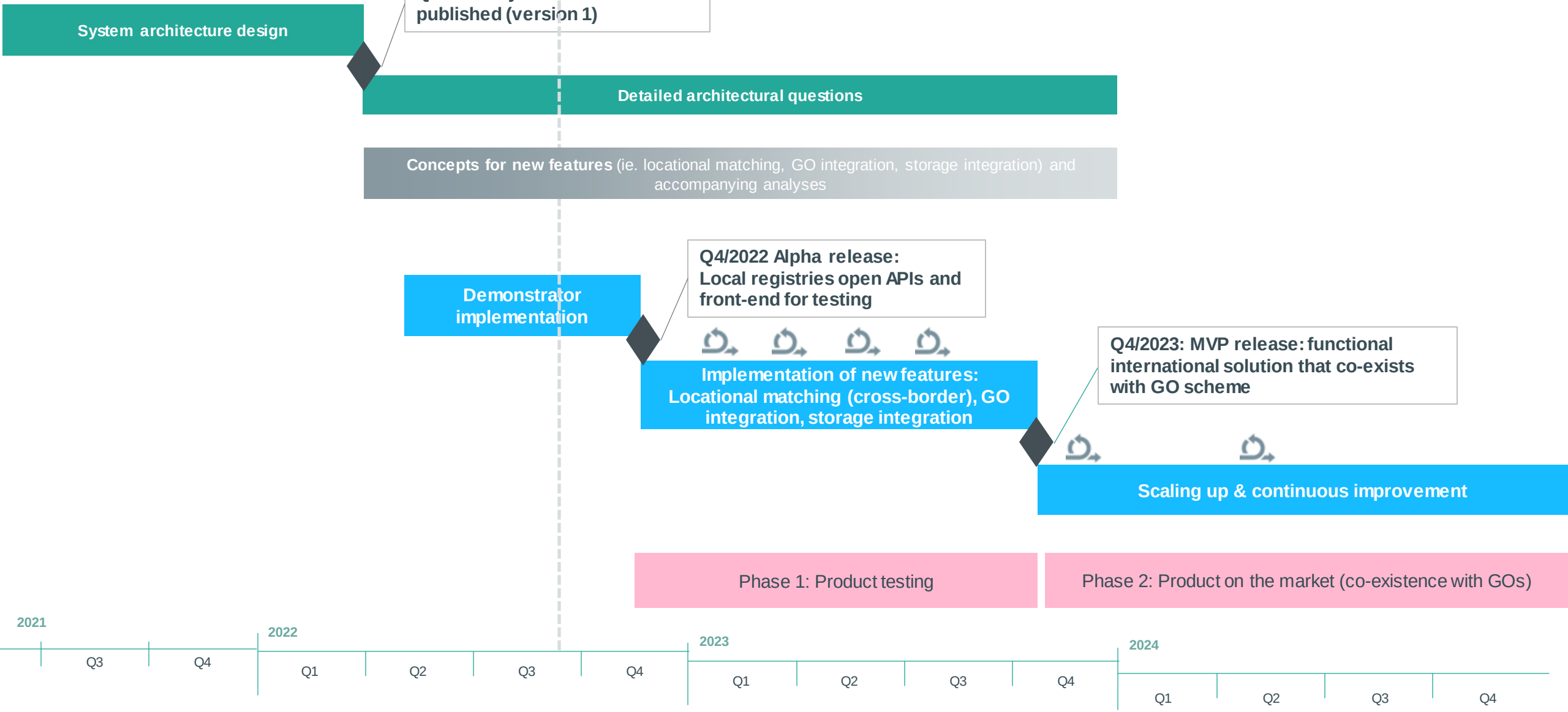
Production (Issuance)
Transaction
Consumption (Matching)

Product testing phase



Partner's role going forward

Going forward

We need **user input and feedback** to grow and improve Energy track & Trace.

End-users (consumers/producers) interested in 24/7 granular certification:
please talk to your energy supplier to get them involved into Energy Track & Trace.

We are engaging with service providers in the domain of granular certification to set up joint pilots for testing. These pilots need energy suppliers & their end-users.
Pilot with Granular Energy in BE and Eastern GER is being defined.

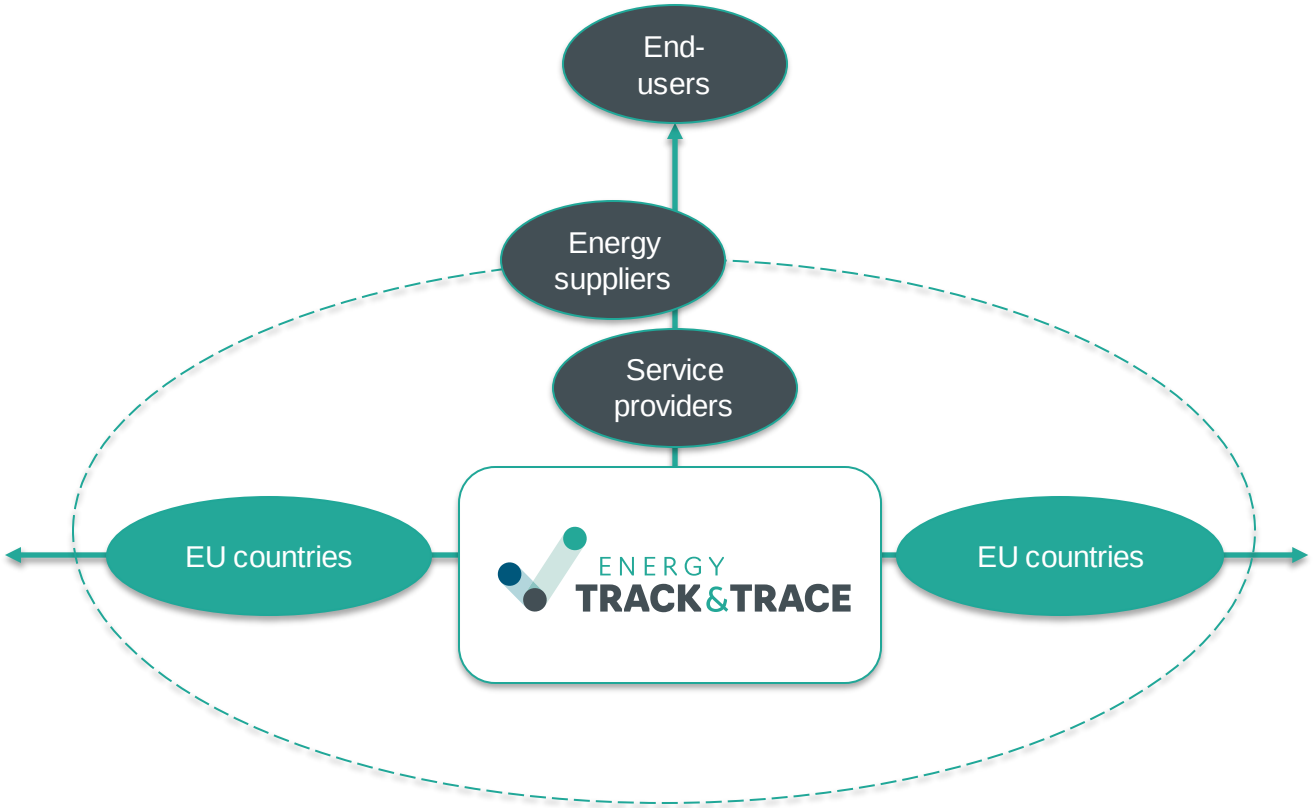
GRANULAR

More to come.

<u>Horizontal scaling:</u>
Energy Track & Trace is a **European solution** for granular certification.

We will gradually increase coverage throughout Europe:

- Considering the inclusion of other countries in the initiative
- Making the IT product pluggable, allowing other issuing bodies to easily implement an ETT registry.



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Thank you very much for your interest and feedback

See you again on December 15th

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