GO-PEG WORKFLOWS AND DATA REQUIREMENTS FOR DATA HARMONISATION

"A step towards High Value Datasets"

GO-PEG | Generation Of crossborder PanEuropean Geospatial Datasets and Services

With the support of the European Commission
Funded by the Innovation and Networks Executive Agency (INEA)
under Action No 2018-EU-IA-0093

geoCOVID Watch Use case

- Investigate the benefits that integration of geospatial data and State-of-the-Art technologies/standards can bring to a common understanding of the different phases of the Covid 19 pandemic and its impacts.
- Create a repository of known initiatives providing data relevant to COVID-19
    - Expose information on initiatives available through OGC API - Features
      (OGC standard to create, modify and query features on the Web).
- Create an aggregator collecting COVID-19 related data across Europe
    - Expose COVID-19 data via SensorThings API (STA)
      (OGC standard to interconnect IoT (Internet of Things) sensing devices, data, and applications over the Web).

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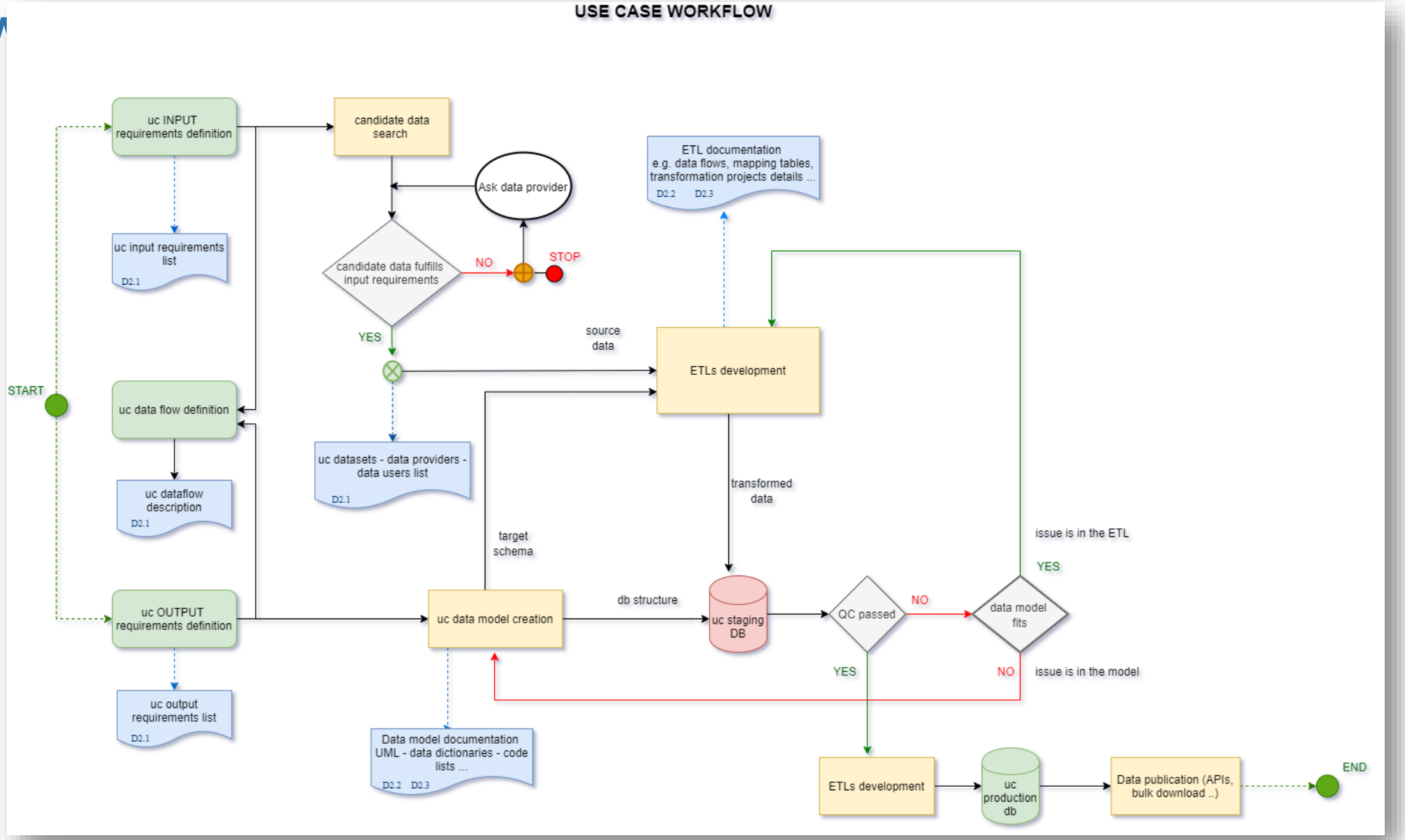
Workflow



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Current Status

Actual cases Vienna: ~600

Nationally reported cases Vienna: ~800

We live in a world of **big data**, with **artificial intelligence** and machine learning permeating all aspects of our lives. We have **smart factories** and **smart cities**; we have self-driving cars and machines trained to exhibit human intelligence… **BUT**

Excel /csv are still most used for COVID-19 data collection & data sharing !!!!

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Current Status

Lack of agreement:

- *statistical metrics*
  …*died OF Covid-19* vs *died WITH Covid-19*?

- *data aggregation process*
  little provenance data + no clear methodology for data derivation

- *country response measures*
  comparability of national testing strategies
  …test all first level contacts or just put them in quarantine?

Lack of transparency!

EUROPEAN COMMISSION
DIRECTORATE-GENERAL FOR HEALTH AND FOOD SAFETY

Public health, country knowledge, crisis management
Health Security and Vaccination

There is a great diversity between countries concerning the implementation of testing strategies for **asymptomatic cases**[8].

EU health preparedness:

Recommendations for a common EU testing approach for COVID-19

Agreed by the Health Security Committee on 17 September 2020

Concerning the testing of people admitted to hospitals or requiring specific treatments, nine countries (AT, DE, DK, FR, IE, LV, PT, SK, and BIH) test all **admitted patients** to hospitals, regardless of whether they are displaying symptoms or not.

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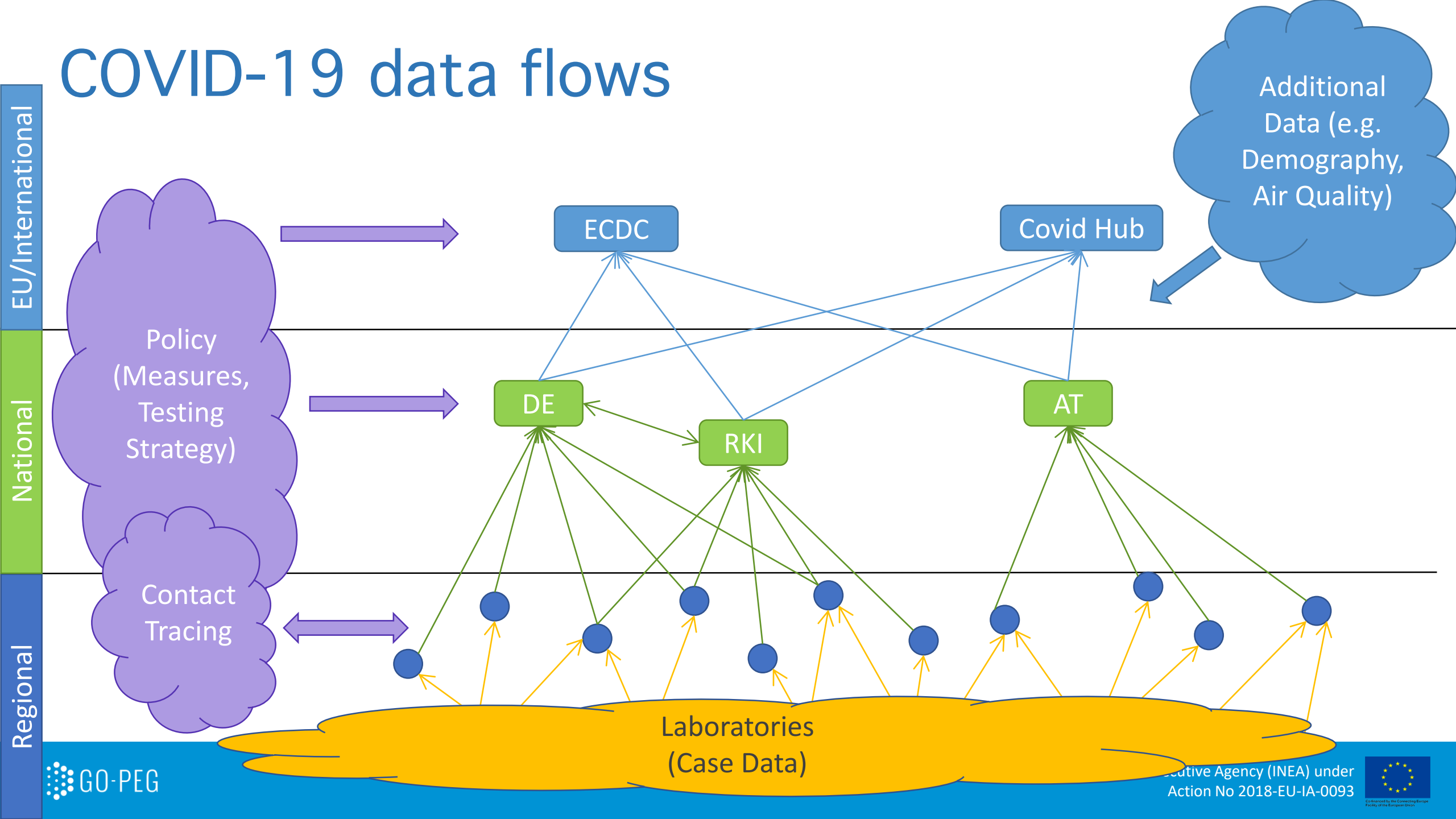
COVID-19 data flows



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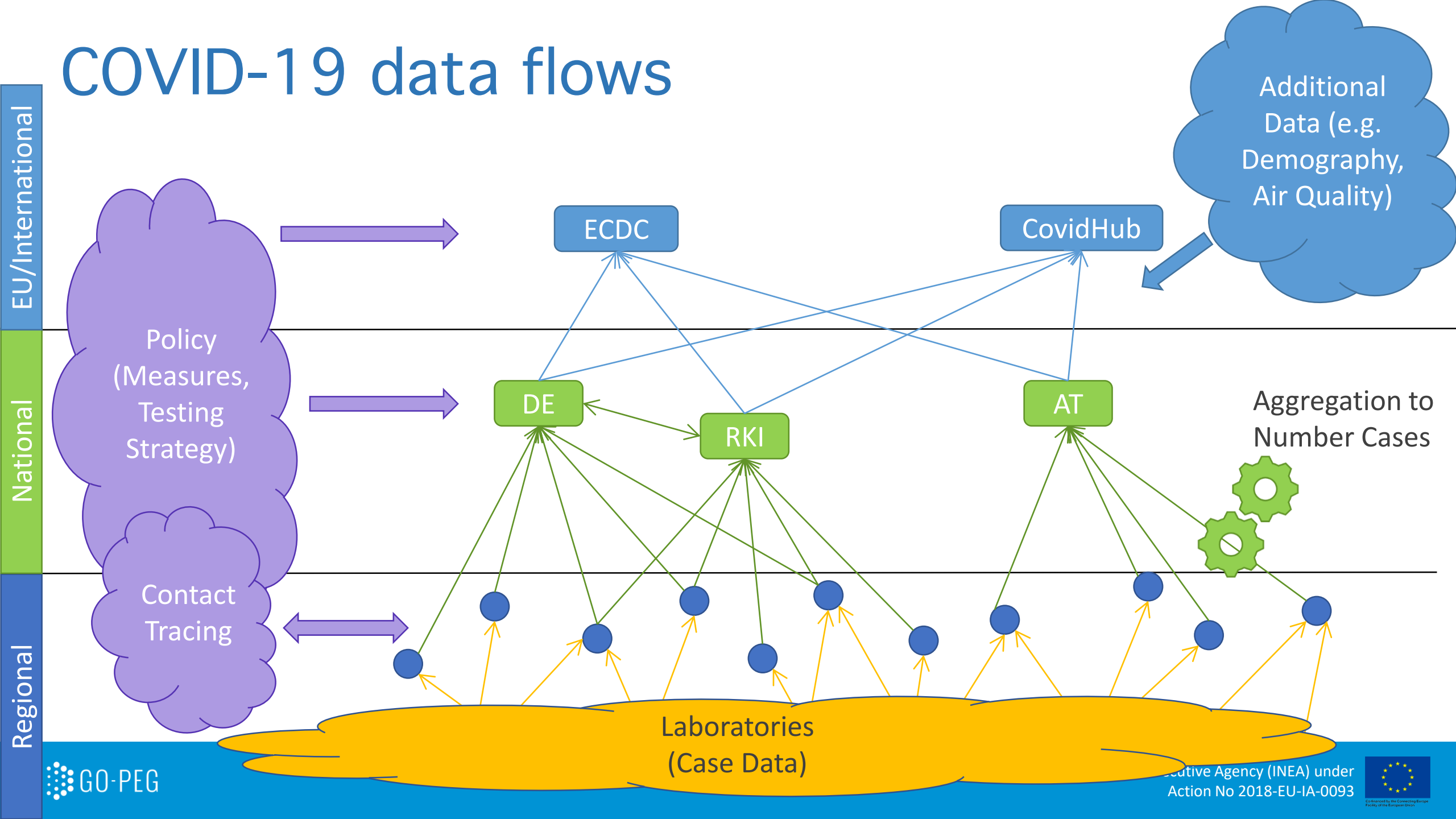
COVID-19 data flows



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Potential Solutions

- Define clean & automated data flows
  - more advanced systems for data management and data flow
  - sharing of methodologies
  - leverage standards
- Enrich with additional data sources to make data comparable :
  - Demography /Population
  - Hospital Beds
- Expose data using cutting edge technology
  - Open data provision via APIs
  - Distributed development of APPs
  - Leverage AI / BI

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Some underlying standards information

- **Open Geospatial Consortium (OGC)**: defines spatial standards for ISO
- **OGC API - Features**: RESTful API standard from OGC for basic spatial objects
- **OGC Observations & Measurements (O&M)**: ISO standard for the provision of spatial observation data
- **OGC SensorThings API (STA)**: RESTful API standard from OGC utilizing O&M

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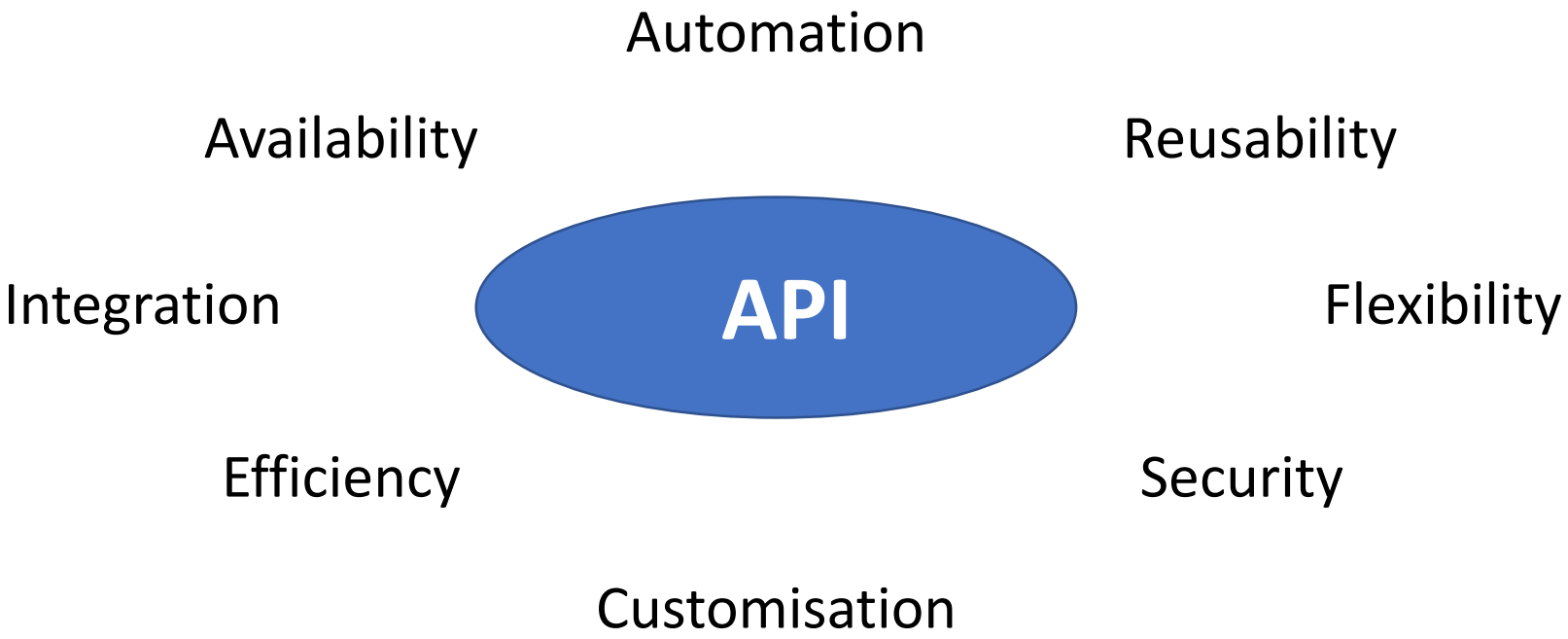
Leveraging new technologies for data sharing: Why APIs



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geoCOVID Watch Data Flows

EU/International

National Govt.

Regional Govt.

Laboratories

Initiative

Information

Initiative DB

OGC API

Use by applications

Initiative DB - Information on:

STA Case DB - Information on:

- Cases
- Policy measures

Policy measures

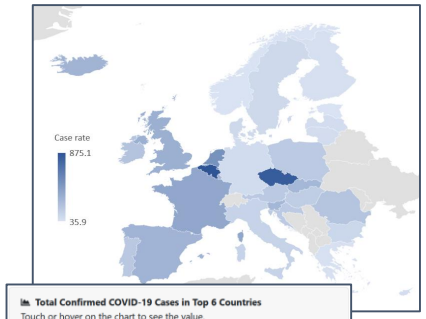
Cases

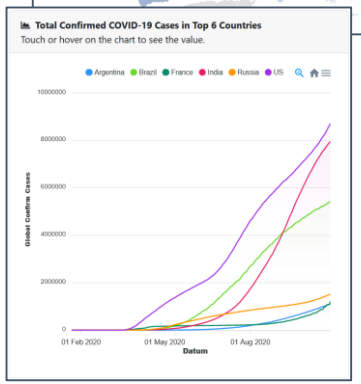
Importer

STA Case DB

STA

Provision via standardized APIs





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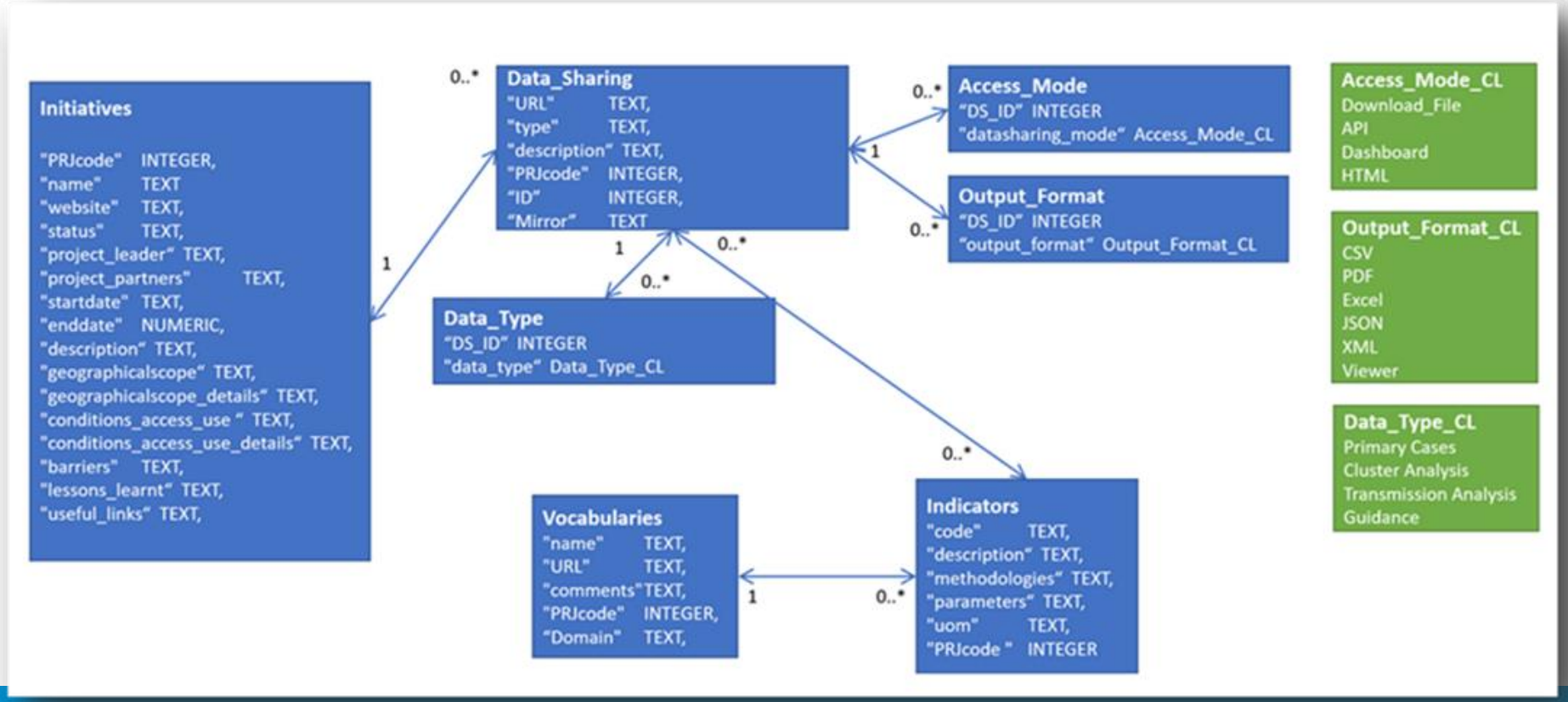
geoCOVID Watch Initiatives

Collection of initiatives: a single endpoint to access the different initiatives



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geoCovid Watch Initiatives API
what we ALREADY have

- Initiatives with all their endpoints:
  https://service.datacove.eu/geoserver/ogc/features/collections/gcw:Initiative/items?f=application%2Fgeo%2Bjson&limit=50

- Vocabularies with their contents:
  https://service.datacove.eu/geoserver/ogc/features/collections/gcw:Vocbulary/items?f=application%2Fgeo%2Bjson&limit=50

- Individual Indicators:
  https://service.datacove.eu/geoserver/ogc/features/collections/gcw:Indicator/items?f=application%2Fgeo%2Bjson&limit=50

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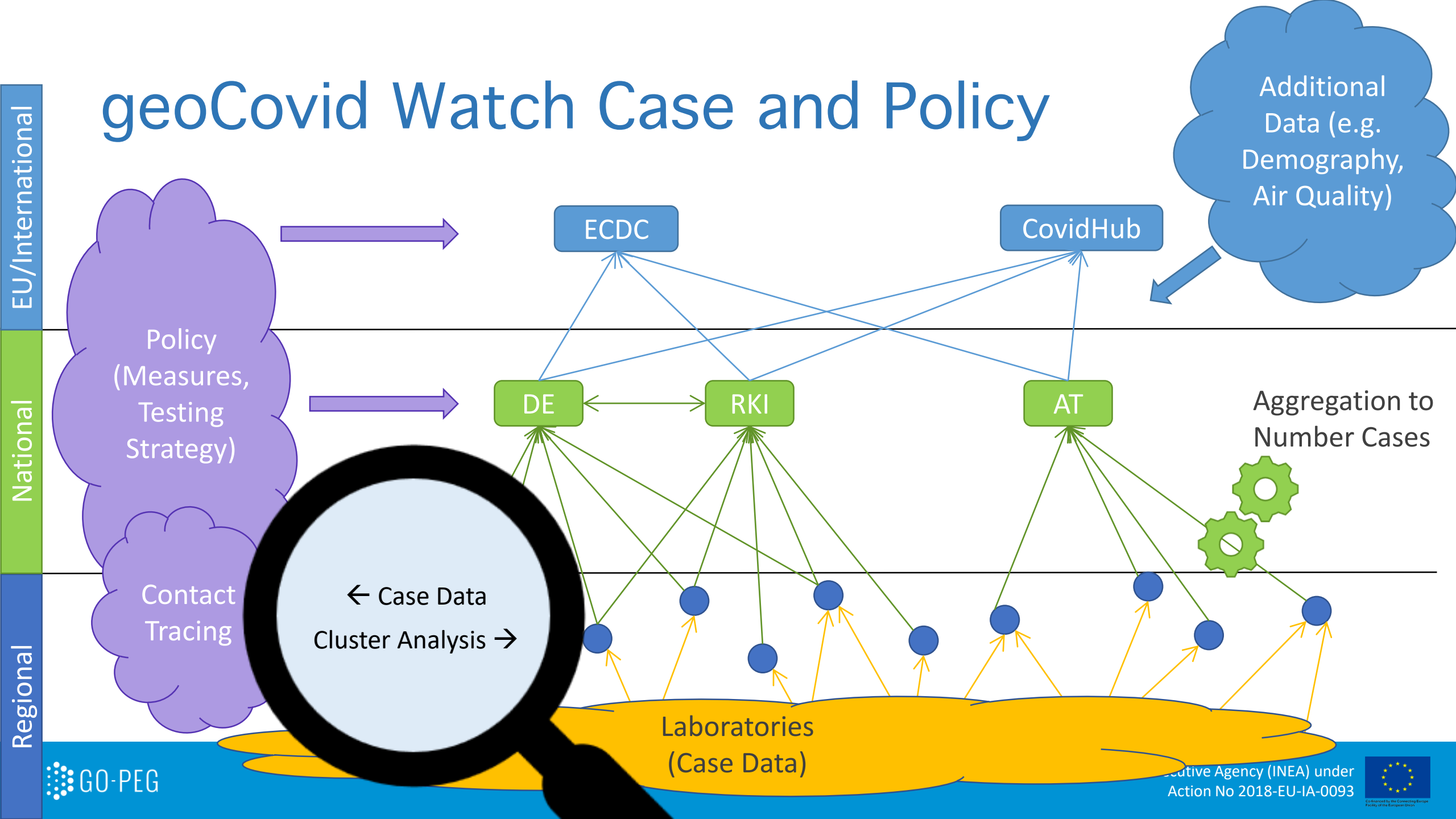
geoCovid Watch Case and Policy



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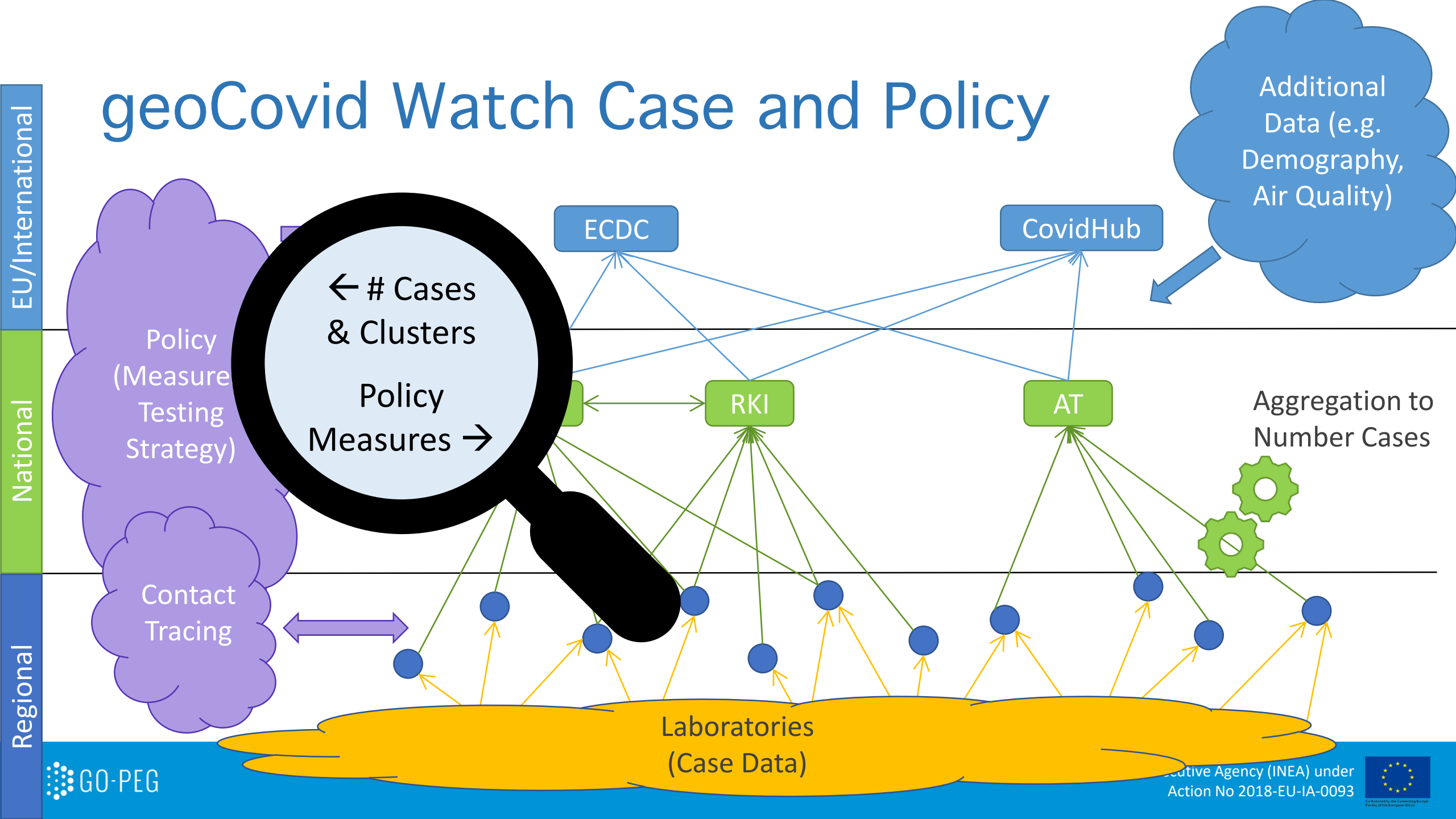

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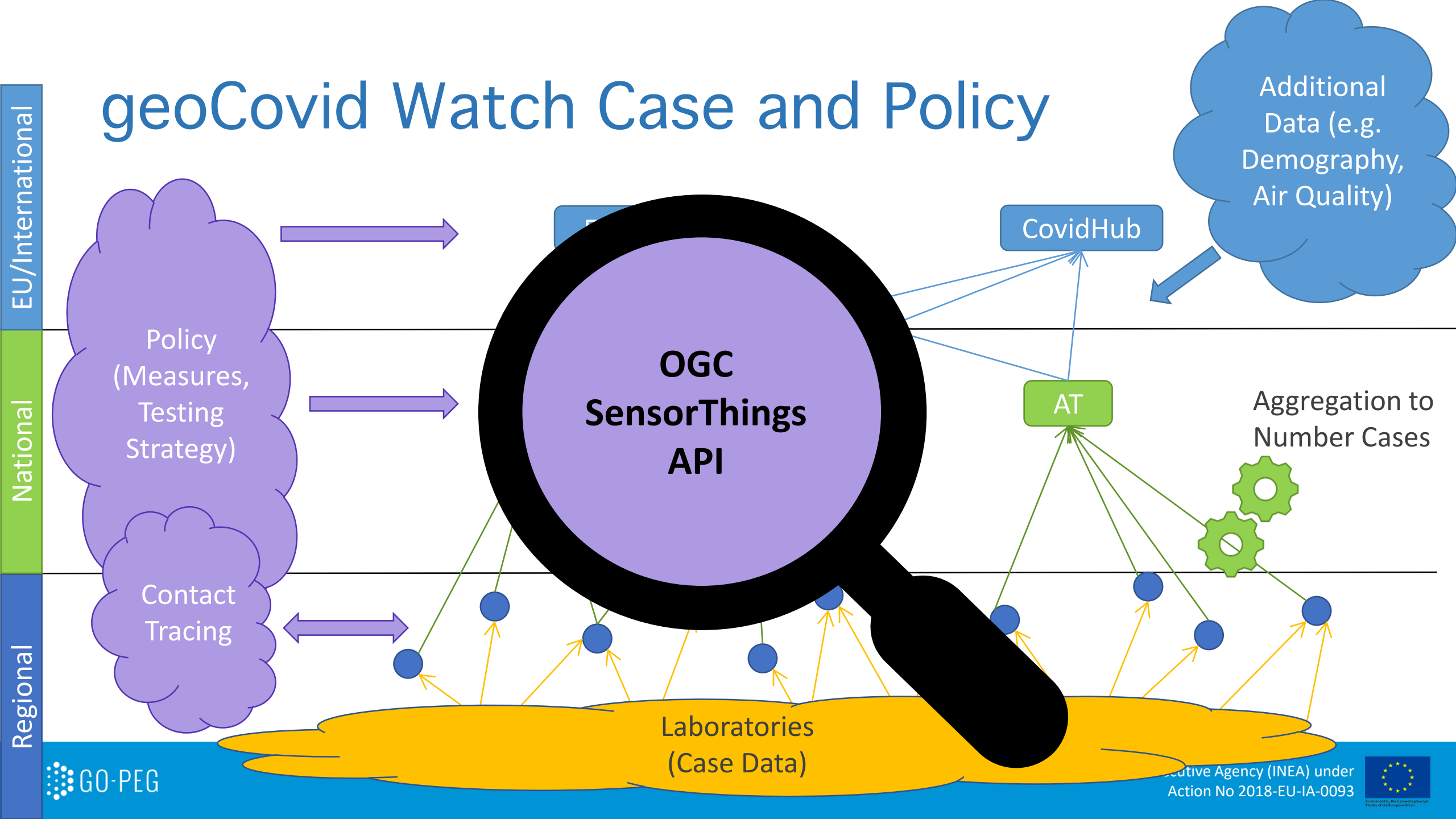

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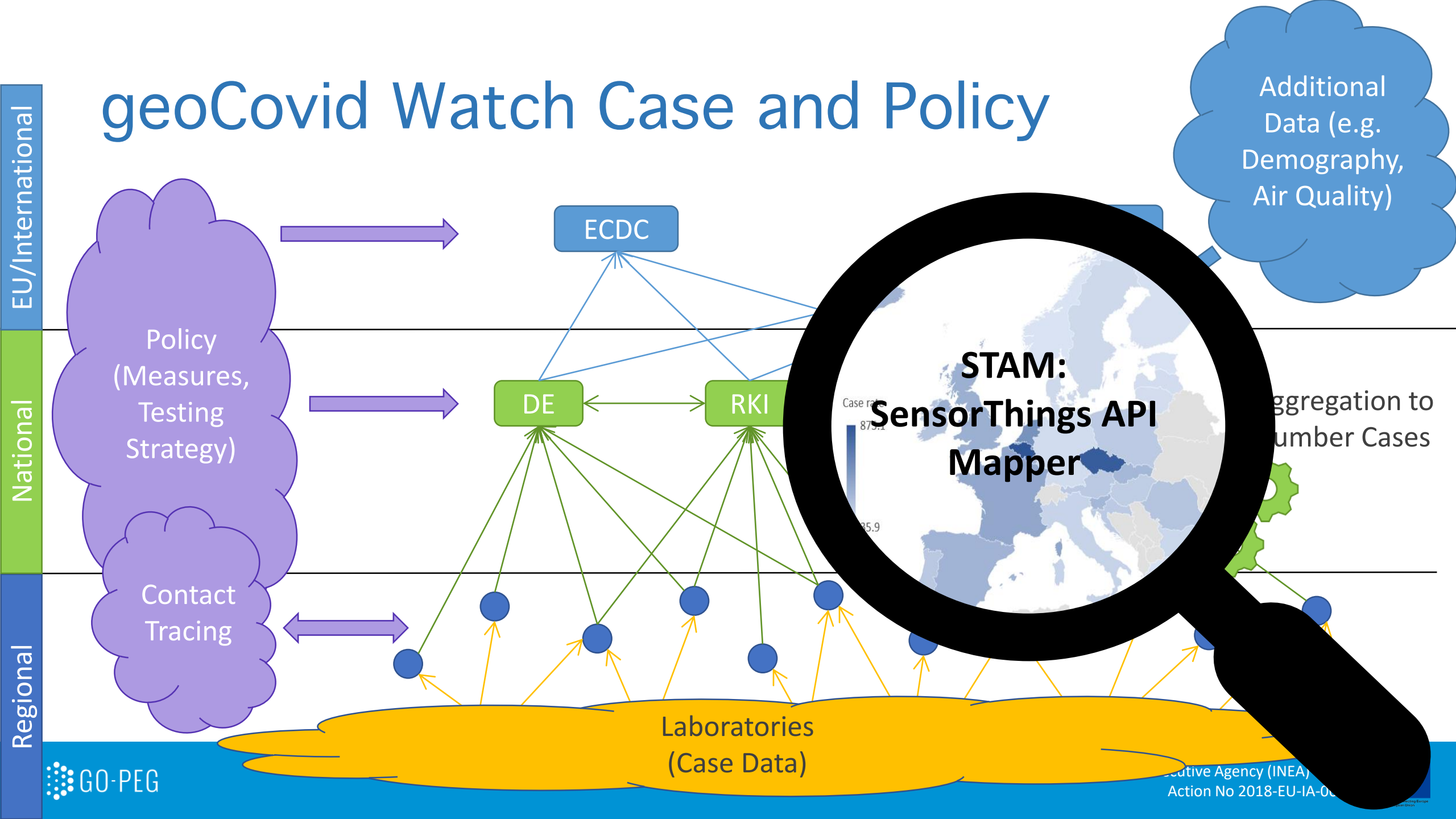

Exploitation: potential access Tools

- Basic numbers
  - Access data directly
  - STAM Viewer
- More complex values
  - Integrate data from multiple sources, e.g. demography
  - Do calculations across sources
    - Allow user to select multiple datastreams
    - Allow user to define algebraic formulas across the selected data streams
    - e.g. DS1 / DS2

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Conclusions

Clear governance and data flow are essential for high value data provision

- definition of reliable sources
- maintenance of hub content
- utilization of standards

Observational standard-based data models:

- ensure data completeness, enhance performance, increase interoperability

RESTful APIs allow:

- browser based access
- simple application development

Utilization of existing standards-based tools vastly enhances effectivity!

- OGC API – Features utilized for initiative data
- OGC SensorThings API well suited for case data

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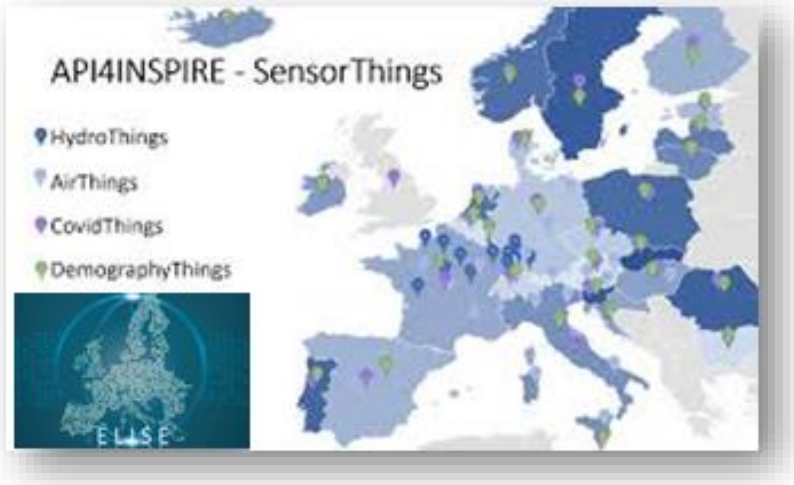
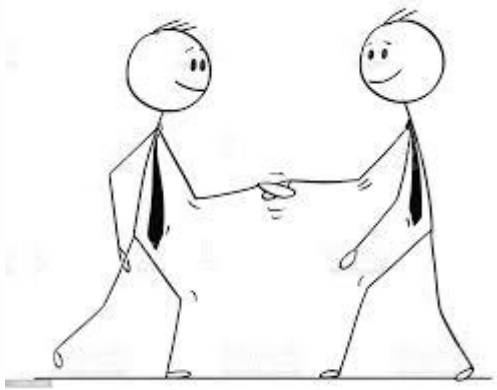
Conclusions

Building on what is already available is a win-win deal !





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Open issues

- What can be automated, what needs manual intervention?
  - e.g. Policy bits will have to be kept up-to-date manually?
- Collected Data Governance strategies

Should the presented approach form the core of a more generalized European Epidemiological reporting system?

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THANK YOU

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