

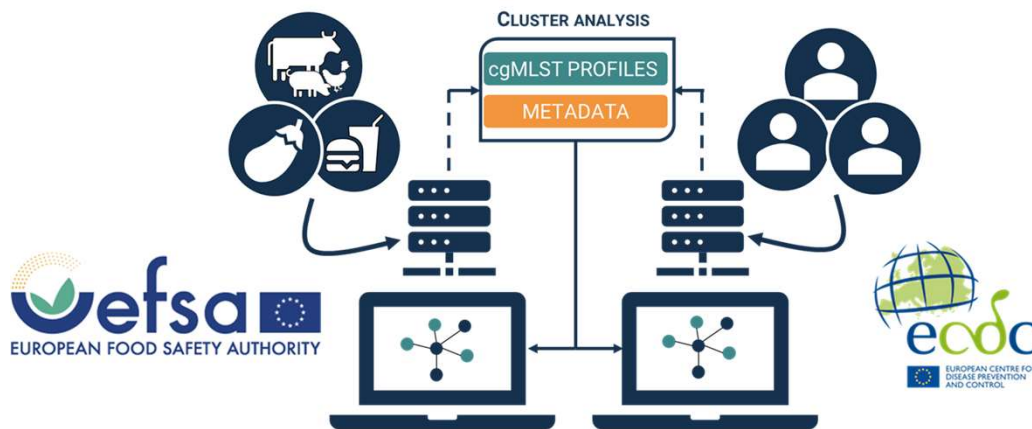


# ENHANCING EU GENOMIC SURVEILLANCE THROUGH THE ONE HEALTH WGS SYSTEM

Mirko Rossi, Scientific Officer BIOHAW

# EFSA AND ECDC JOINT ONE HEALTH WGS SYSTEM

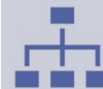
- Mandate from EC received in 2019
- The Joint One Health WGS system is **operative since July 2022**



**Secure Collaboration**



**Responsible Data Use**



**EU Complexity**



**Operational Efficiency**





**Constantly evolving**




# WHY ARE TWO PLATFORMS?

## TWO PLATFORMS: EFSA AND ECDC

	<b>Interoperability</b> <b>Cross-sector matches</b> Detection of joint microbiological clusters
	<b>Machine-to-machine</b> Seamless cross-sectoral exchange of WGS-based typing data and epidemiological data upon verified correlation

## WHY TWO PLATFORMS?


	Addressing sector specific governance and agency network needs
	Streamline user identity management and user support
	Integration with agency specific infrastructure
	Increase control in data sharing cross-sector



# GOALS OF THE EFSA WGS SYSTEM PLATFORM

## EFSA One Health WGS System Portal

The EFSA One Health WGS System has been developed by EFSA as response to the European Commission mandate for the collection of sequencing data of isolates from food, feed, animals, and the farm and food processing environment, for the purpose of supporting ECDC in rapid detection of multi-country foodborne outbreaks

	Build a database of genomic profiles that can be queried in case of foodborne outbreaks	<b>PREPAREDNESS</b>
	Support the real-time investigation of multi-country foodborne outbreaks	<b>RESPONSE</b>
	Support cross-sectorial collaboration and partnership among MS in the Food Sector	<b>ENGAGEMENT</b>
	Compliance with EU legislation (as from 23 August 2026)	<b>COMPLIANCE</b>



# WHEN ARE DATA SHARED?

<b>VOLUNTARY</b>	<b>Reactively:</b> Data calls from all countries when an outbreak assessment has been initiated <b>Proactively:</b> Data provider can share data at any time. Each country has own strategy on data sharing
<b>MANDATORY</b>	Starting from 23 <sup>rd</sup> August 2026: in scope of Commission Implementing Regulation (EU) 2025/179



Official Journal  
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2025/179

3.2.2025

COMMISSION IMPLEMENTING REGULATION (EU) 2025/179

of 31 January 2025

on the collection and transmission of molecular analytical data within the frame of epidemiological investigations of food-borne outbreaks in accordance with Directive 2003/99/EC of the European Parliament and of the Council



# COMMISSION IMPLEMENTING REGULATION (EU) 2025/179

- **Purpose:** Improve outbreak investigations by mandating WGS of foodborne pathogens, enabling swift identification of contaminated consignments and outbreak sources.
- **Scope:** Applies to isolates from food, feed, animals, and related environment associated or suspected to be associated to foodborne outbreak.
- **Pathogens Covered:** *Salmonella enterica*, *Listeria monocytogenes*, *Escherichia coli*, *Campylobacter jejuni*, *Campylobacter coli*.
- **Requirements:**
  - WGS must be performed in **ISO 17025-accredited labs**.
  - Data must be transmitted **without undue delay** to EFSA.
  - Metadata must include **sampling date, origin, outbreak reference**, and more.
- **Food Business Operators:** Must cooperate with national food authorities.

F.A.Q from EC



# SCIENCE MEETS POLICY CONFERENCE

## Science Meets Policy: From Regulation to Practice – Turning WGS into Action for Foodborne Outbreak Investigation

☐ 2 September 2026, 12:00 - 18:00 (CEST);

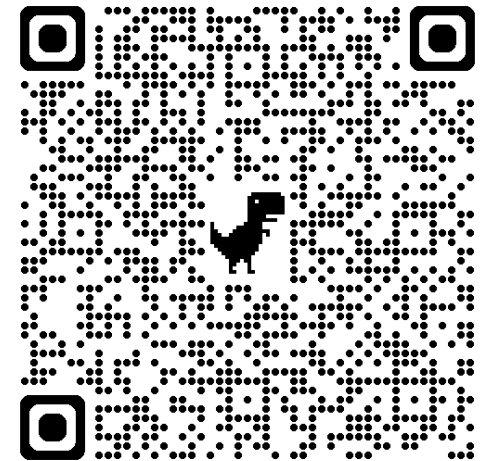
☐ 3 September 2026, 09:00 - 14:00 (CEST)

📍 Rome, Italy

[Register here](#)

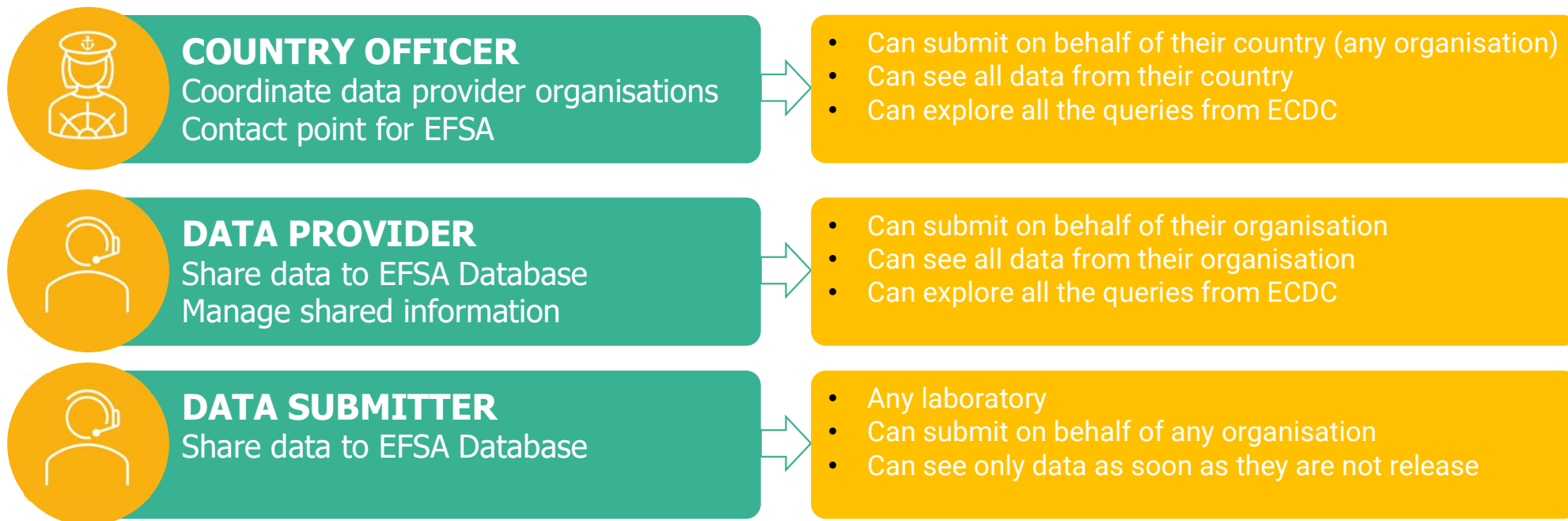
**Deadline:** 13 May 2026 - 12:00 (CEST)

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# WHO CAN ACCESS THE SYSTEM AND SHARE DATA?

## USERS AT COUNTRY LEVEL



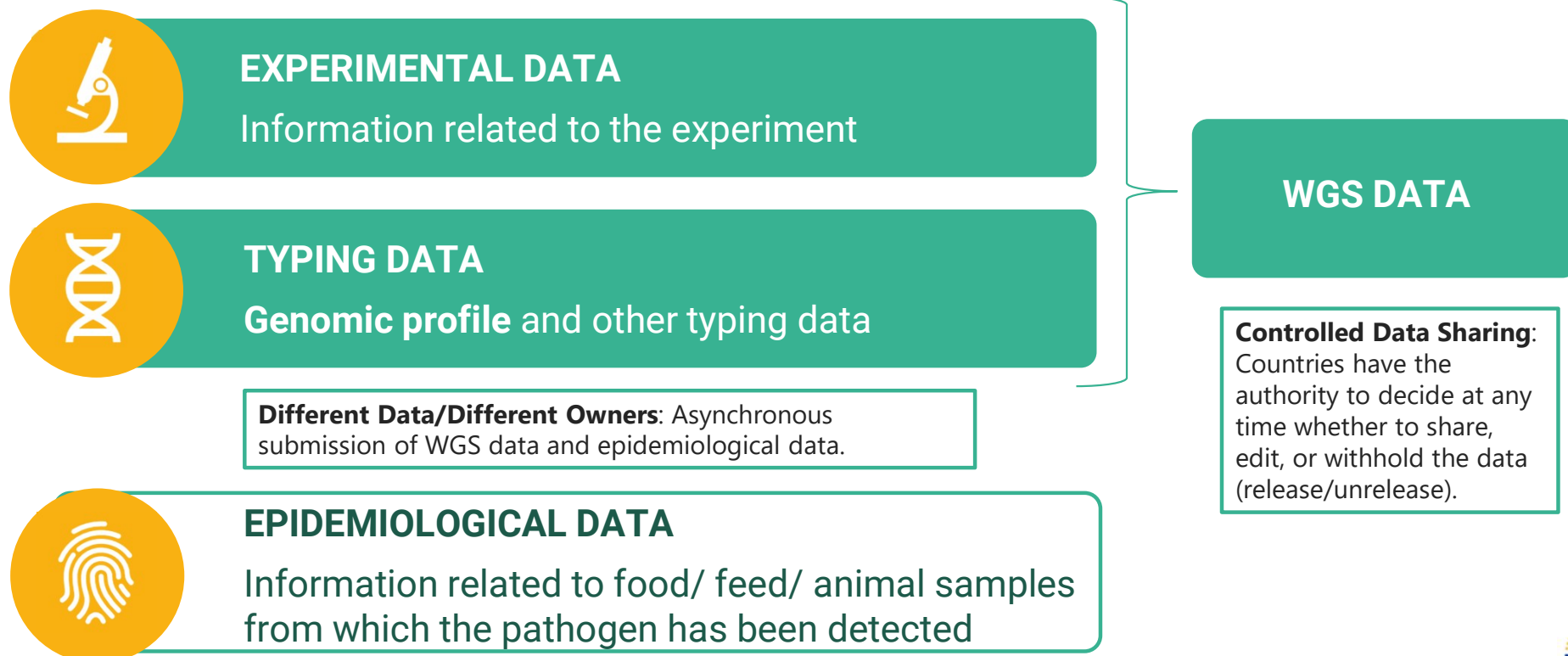
## NOMINATION PROCEDURE



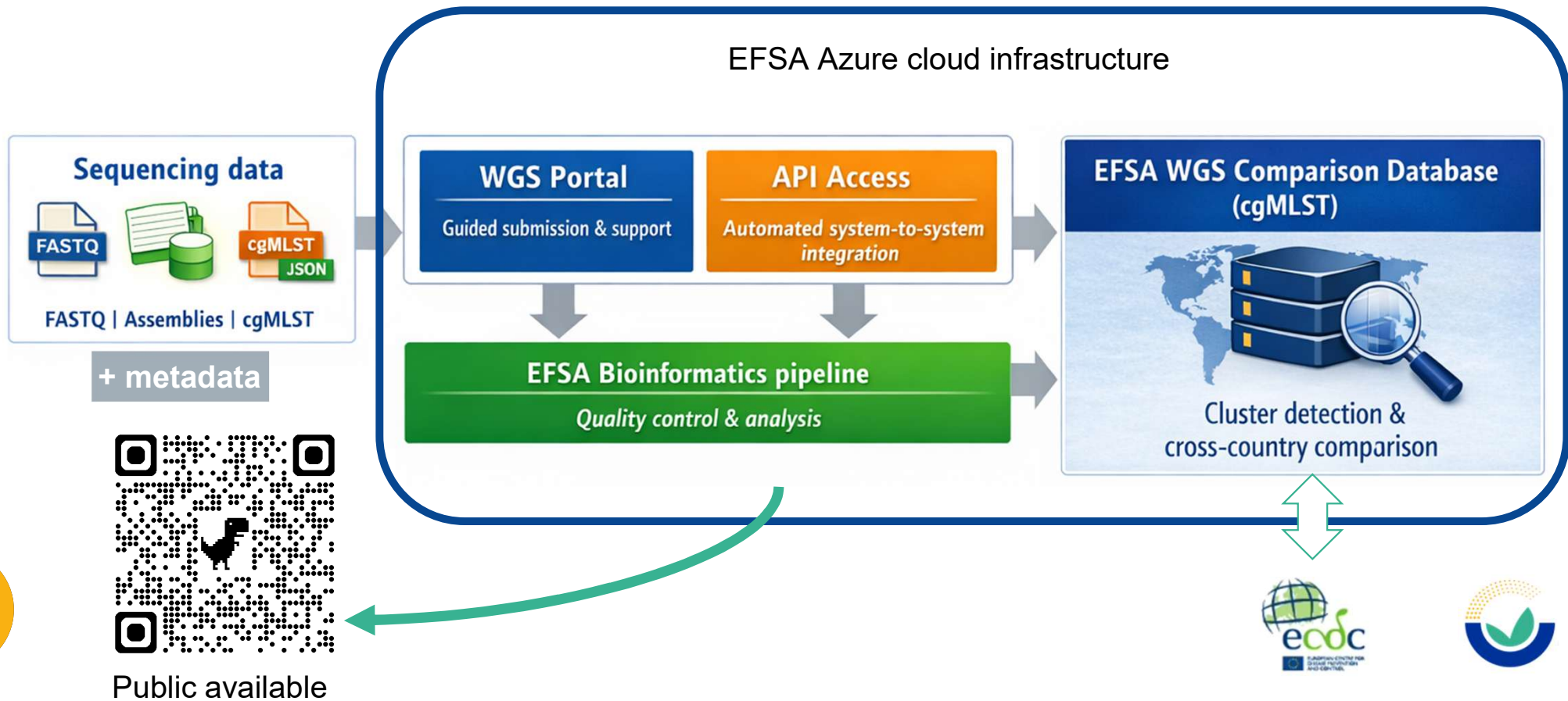
**Controlled Access:** Only appointed users from food authorities can access the data, ensuring the maintenance of the chain of custody.



# WHAT ARE THE DATA STORED IN THE EFSA WGS SYSTEM PLATFORM?



# HOW ARE DATA SUBMITTED? FLEXIBLE SUBMISSION ROUTES FOR DIFFERENT NATIONAL SETUPS



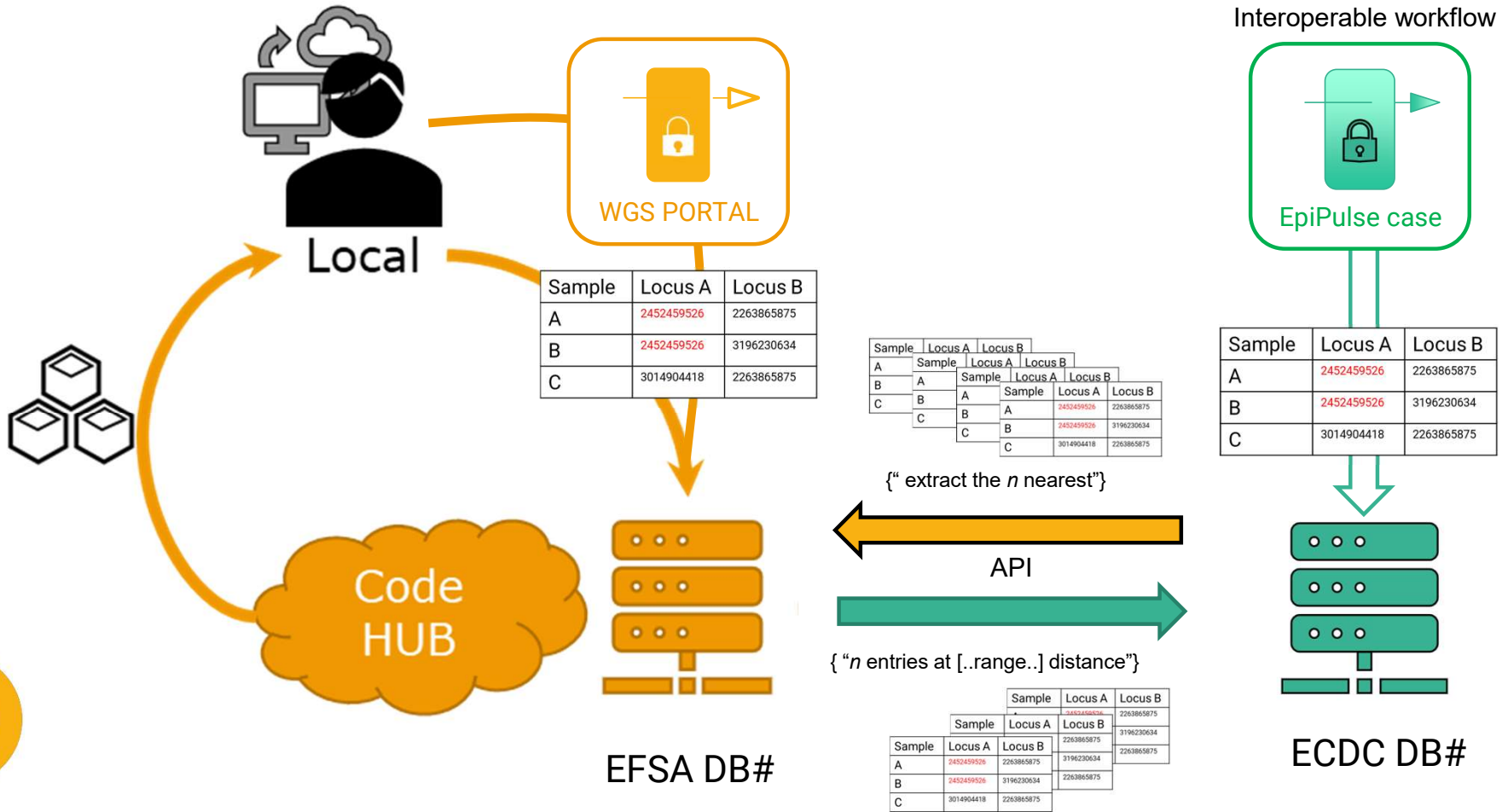
## EFSA – ECDC INTERACTION

- **Weekly Queries:** ECDC sends queries to EFSA recurrently using species-specific fixed-thresholds
- **Ad Hoc Queries:** ECDC can send queries to EFSA using variable-threshold as needed, especially during outbreak validation and characterization
- **Automatic Data Exchange:** data exchange only occurs between ECDC and EFSA when a match across-sector is found
- **Cross-sectoral Analyses – use of the data:** Data are included only in ECDC-EFSA food-borne outbreak assessments

Species	Cluster cut-off single-linkage clustering	N. clusters	N multi-country clusters	Max distance with non-human data	N multi-country clusters including non-human data
<i>Listeria</i>	4 AD	769	218	7 AD	110
<i>Salmonella</i>	5 AD	1078	371	10 AD	140



# SEAMLESS INTEGRATION WITH ECDC



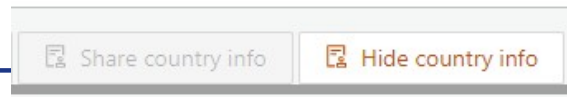
# WHAT DO EFSA AND ECDC SHARE?

## Always shared

- **cgMLST profile**
- Other typing data (MLST ST, AMR profile, Serotype, Virulence genes)
- Sampling year
- Food category (e.g. fish and fishery products thereof)

## Shared only if agreed by Data Provider

- Country of owner organisation
- Country of submitting organisation
- Country of sampling
- Country of origin

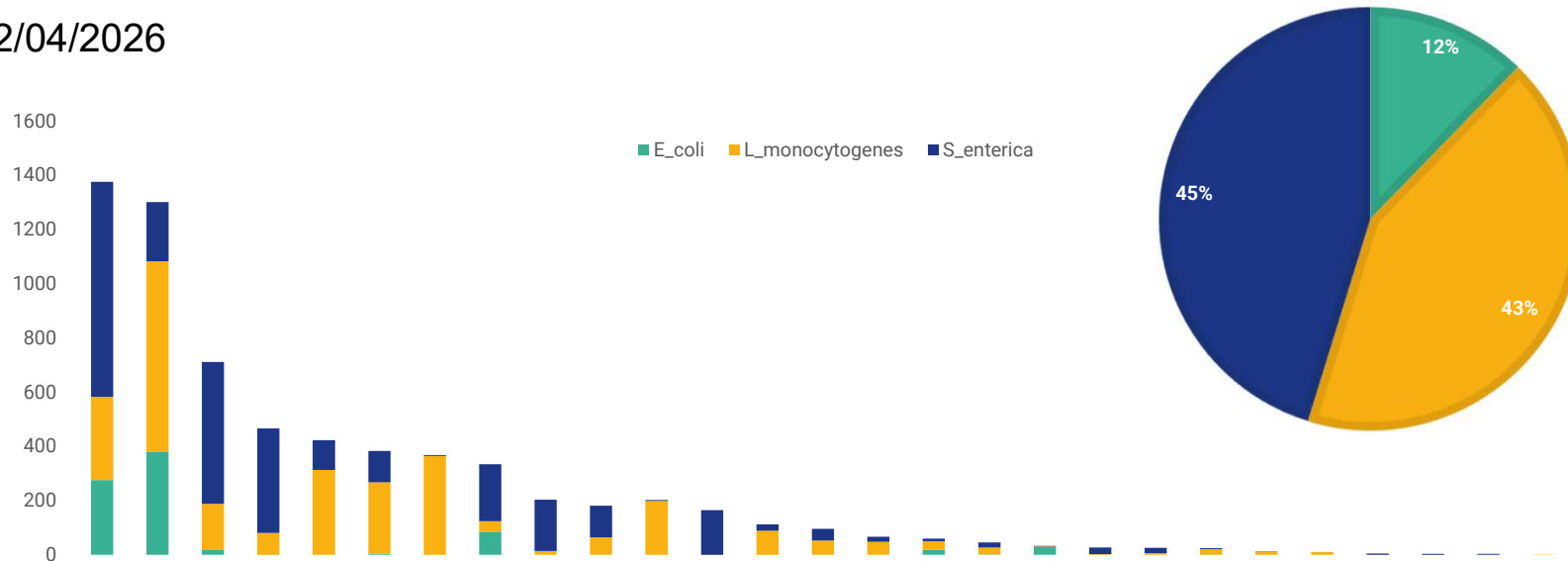


EFSA Data Providers have the freedom to decide if **any country information** is sharable with ECDC system or not by selecting “hide/share country info”



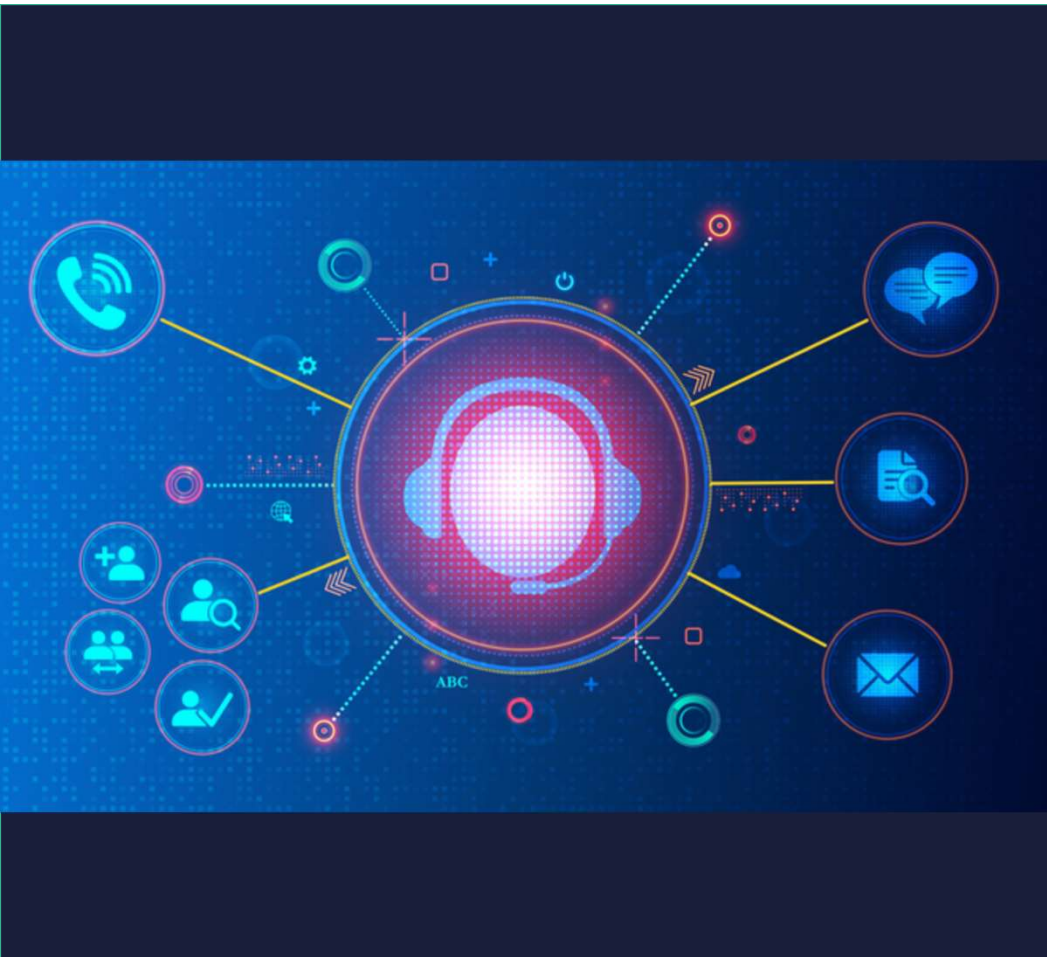
# CONTRIBUTION MEMBER STATES (PROFILE RELEASED)

As of 12/04/2026



- Frequency approximately 100 uploads/month
- Since July 2022: total uploads **6,843**
- 97.2% successful release for comparison with ECDC profiles
- Total profiles released **6,647** from 27 countries (**54% - found matching ECDC clusters**)
- Additionally, 16,604 public sequencing from NCBI/ENA (**25% - found matching ECDC clusters**)





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# MONITORING

## Prioritized multi-country microbiological clusters and outbreaks

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*Tracking infection and distribution patterns for  
effective response*



# MONITORING

## Structured Collaboration

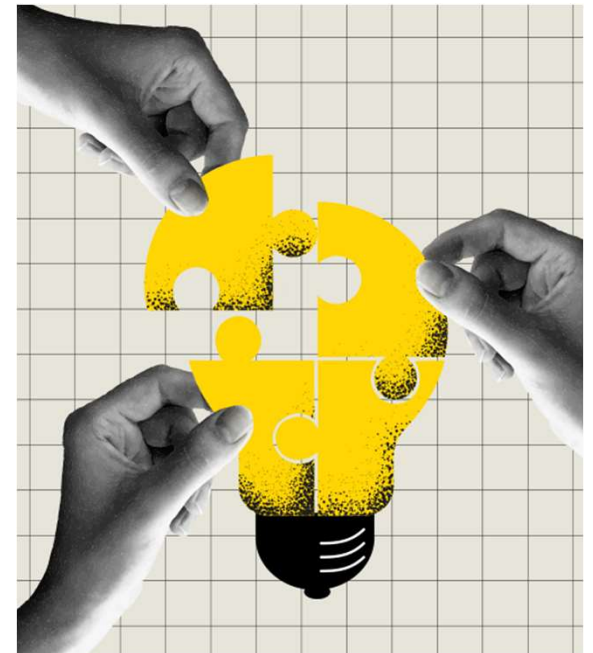
EFSA and ECDC hold a **weekly teleconference** for exchange and alignment on microbiological clusters/ongoing outbreaks. A group chat guarantees the **continuous exchanges** of information.

## Data Analysis

Evaluation and **interpretation** of microbiological/genomics, epidemiological, and traceability data available and/or missing

## Joint actions

Coordinated actions to support decisions on outbreak assessment, and engagement with relevant networks for response (e.g. data requests, data verification).



# MONITORING

## Platforms:

**WGS System: New/requested submissions, queries received, tagged clusters**

**RASFF:** Notifications (linked/not linked to outbreaks)

**EpiPulse/EWRS:** Events/Notifications

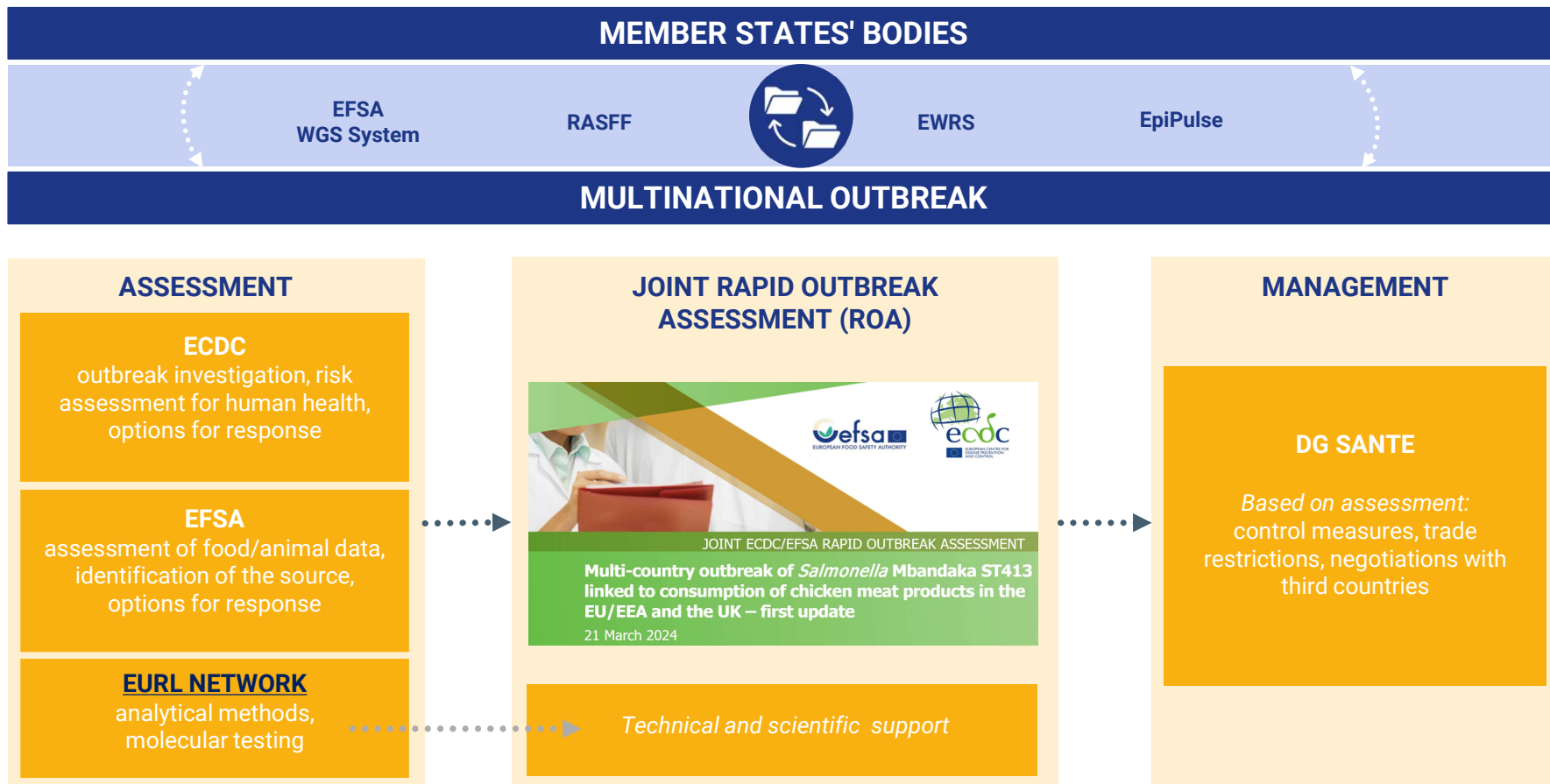
**EFSA Zoonoses database:** Occurrence (background indication)

## Stakeholders

EFSA Network of Country Officers and Data Providers of the WGS System; European Commission; RASFF Network; EURLs



# CROSS SECTORAL WORKING ARRANGEMENTS



# MORE INFORMATION

## Topic page in the EFSA website

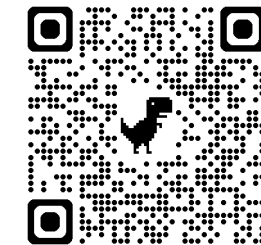


The screenshot shows the EFSA website interface. At the top left is the EFSA logo (European Food Safety Authority) with the text 'EUROPEAN FOOD SAFETY AUTHORITY'. To the right are language options (EN English) and a calendar icon. A search bar contains the text 'Search news, topics, public...'. Below the navigation bar, the breadcrumb 'Home / All topics' is visible. The main heading is 'Whole genome sequencing in foodborne outbreaks'. Below the heading, it states 'Last reviewed date: 26 March 2025 | 7 minutes read' and includes social media share icons for LinkedIn, Twitter, Facebook, and YouTube. A circular image of a DNA helix is positioned to the right of the text. A 'Contents' sidebar lists: Milestones, EFSA's role, EU framework, FAQs, Published on this topic, and Related topics. At the bottom of the page, there is a QR code.

## Promotional video



The screenshot shows a YouTube video thumbnail. It features the YouTube logo in the top left corner. The EFSA logo is centered, with the text 'EUROPEAN FOOD SAFETY AUTHORITY' below it. The main title of the video is 'HOW THE EU USES WHOLE-GENOME SEQUENCING TO COMBAT FOODBORNE OUTBREAKS'. At the bottom of the thumbnail, there is a text overlay that reads 'to combat foodborne outbreaks.'



# STAY CONNECTED

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