



EFSA HORIZON SCANNING

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*Knowledge, Innovation and Partnership Management
Unit (KNOW)*

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REGULATION (EC) N° 178/2002 – ARTICLES 23 & 34

EFSA undertakes actions:

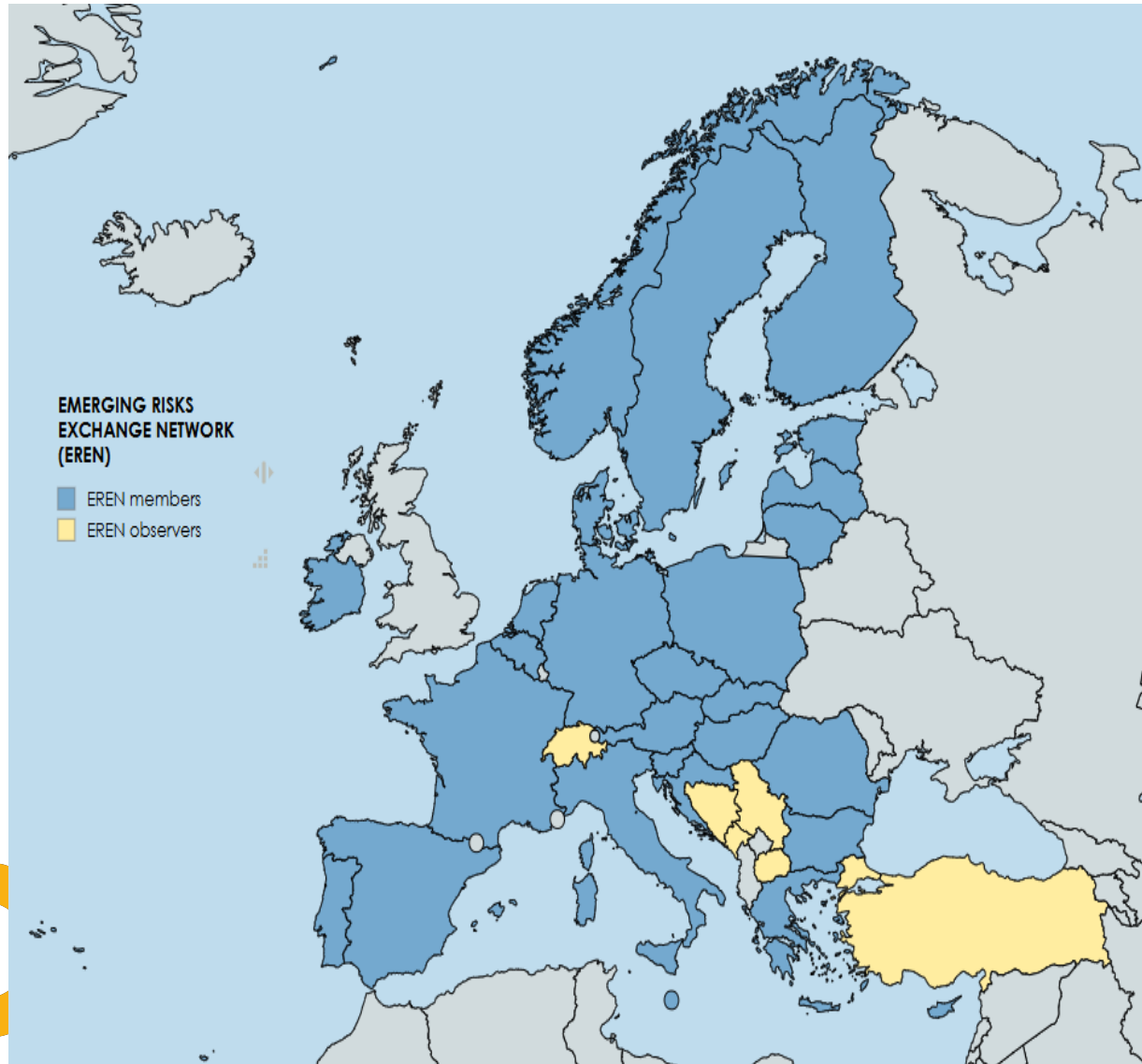
to identify and characterise **EMERGING RISKS**

and establishes monitoring procedures to systematically search for, collect, collate and analyse information and data

**with a view to the identification of emerging risks
in the fields within its mission**



EMERGING RISKS EXCHANGE NETWORK (EREN)



28 participant countries

6 observer countries 13 observer institutions

Twice-yearly meetings

Meetings in 2024-2025:

[31st EREN meeting](#) (Cyprus, 23-24 May 2024)

[32nd EREN meeting](#) (Parma, 29-30 October 2024)

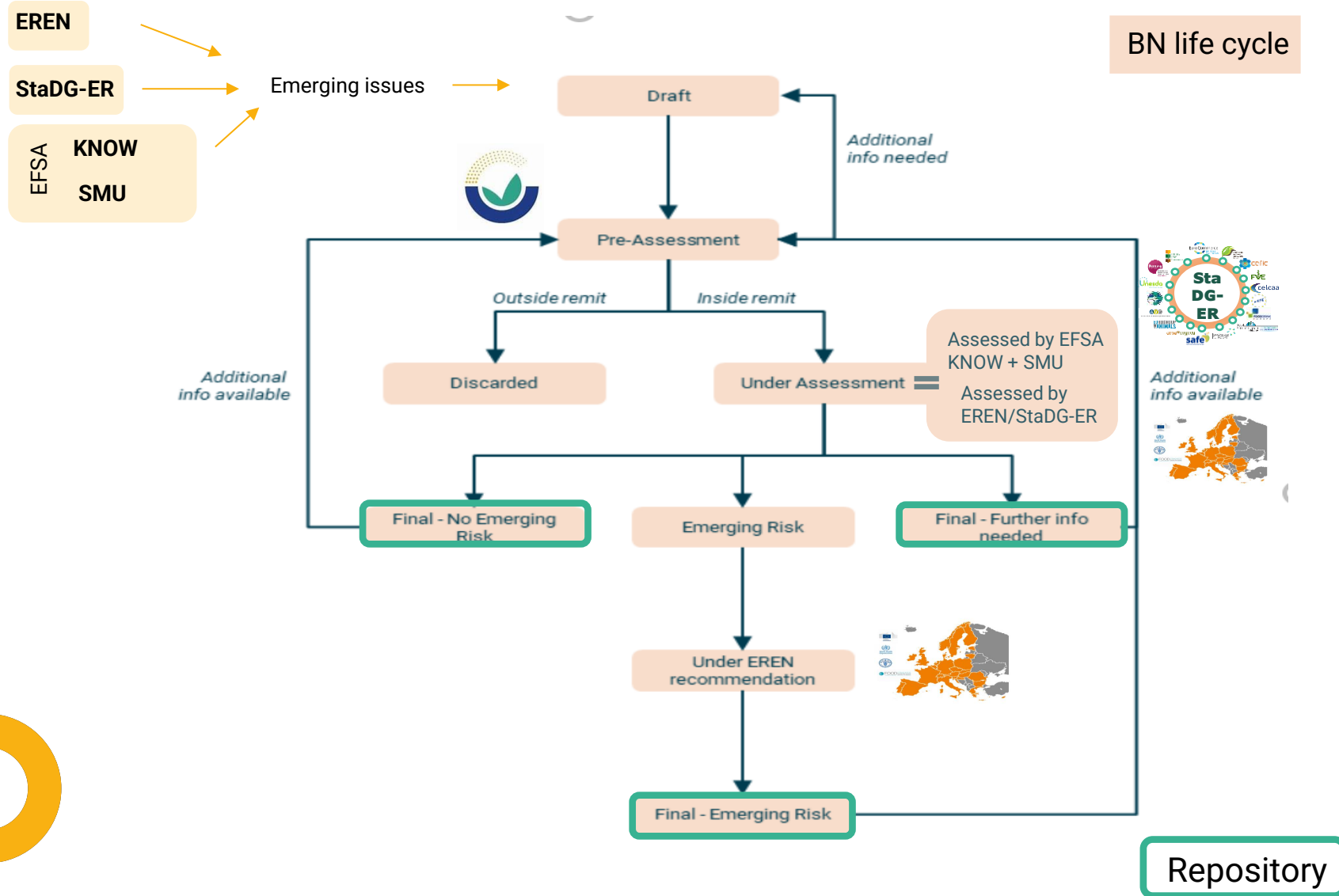
[33rd EREN meeting](#) (Tallinn, 13-14 May 2025)

[34th EREN meeting](#) (Parma, 28-29 October 2025)

Subject Matter Unit + Panel support might be requested during the assessment of newly submitted issues !



EMERGING RISK ASSESSMENT WORKFLOW



EFSA's motivation



Europe-wide **monitoring of emerging risks** in the field of food/feed safety by EFSA



Centralising and streamlining of all previous and ongoing **emerging risks identification activities** by EFSA



Easy collaboration and communication between heterogenous emerging risks experts and stakeholders



OBJECTIVES OF ENVIRONMENTAL & HORIZON SCANNING

STRATEGIC OBJECTIVE 2

Ensure preparedness for future risk analysis needs

- To be as aware as possible of what is happening in and outside of Europe
- Anticipate how food/feed plant and animal health landscape could look like in the future
- Adapt/adjust eventually by re-prioritising EFSA's activities and strategy if needed



The graphic features a central hexagonal collage of images: a scientist at a microscope, a wine glass, a bunch of grapes, a forest, a hand holding a leaf, and a person working in a field. The collage is set against a background of blue and white geometric shapes and a network of lines. The text 'EFSA Strategy 2027' is prominently displayed in blue, with 'Science', 'Safe food', and 'Sustainability' listed below it. At the bottom, there is a signature block and the EFSA logo.

mb210624-a2

EFSA Strategy 2027

Science
Safe food
Sustainability

Adopted at the Management Board meeting held in virtual modality on 24 June 2021
For EFSA's Management Board [SIGNED]
Raymond O'Rourke
Chair of the Management Board

efsa
European Food Safety Authority

REALITY CHECK



A close-up photograph of a person's hand reaching into a cardboard box filled with fresh produce. The person is wearing a white shirt with black polka dots. The box contains various vegetables, including dark leafy greens, red bell peppers, a green avocado, and a yellow squash. The word "SYNERGIES" is overlaid in white, bold, sans-serif capital letters across the center of the image. The bottom right corner of the image is partially obscured by a yellow curved graphic element containing a white logo.

SYNERGIES

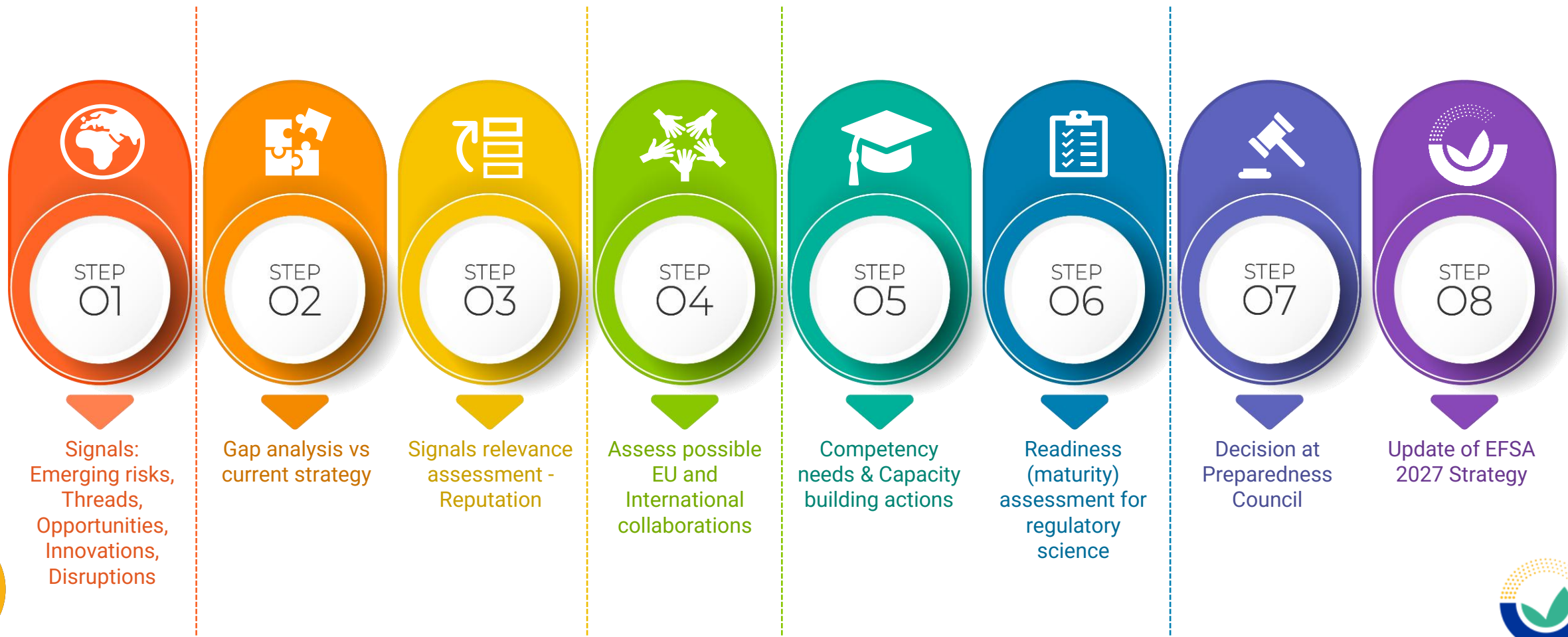


2ND HALF 2025 SCANNING – EXTERNAL REPORTS REVIEW

Year	Source	Title
2025	Singularity Hub	Dangerous AI-Designed Proteins Could Evade Today's Biosecurity Software
2025	EC	2025 Strategic Foresight Report
2025	EEA	Europe's environment and climate: knowledge for resilience, prosperity and sustainability
2025	ESPAS	ESPAS Horizon Scanning Signal Cards
2025	StaDG-ER	Vitamins dependencies
2025	Hackaday	Could space radiations mutate seeds for the benefit of humanity?
2025	IFPRI	Food policy – Lessons and priorities for a changing world
2025	JRC	Polycrisis exploration workshop
2025	CIFS	Exploring the futures of technology
2025	ECHA	Key areas of regulatory challenge
2025	Farsight	Europe's future – Four scenarios for the next decade
2025	OECD	Strategic foresight – toolkit for resilient public policy
2025	UK DEFRA	A UK Government food strategy for England, considering the wider UK food system



EFSA HORIZON SCANNING WORKFLOW



HORIZON SCANNING SIGNALS – 2ND SEMESTER 2025

Not further considered



1. Neurodiversity in EFSA
2. Digital market and risk assessment
3. Space mutagenesis
4. Critical raw materials dependency

Analysis ongoing



1. AI-designed proteins
2. Bioelectricity

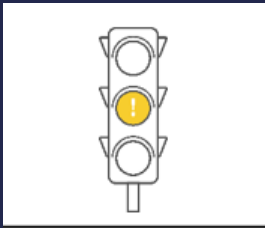
Already dealt with



1. Using air for CO2 extraction and utilisation
2. Epidemic intelligence for animal diseases / zoonoses
3. Fear Of Becoming Obsolete (FOBO)
4. Warfare-related contaminants
5. Decarbonisation-related contaminants
6. Fish sludge as source of phosphorous for feed



AI-DESIGNED PROTEINS



- **computer-aided design** to enhance the predictability of bioengineering; e.g. reprogramming bacteriophages to have an extended host range
- engineered with alternative biochemical components such as xenobiotic nucleic acids (XNA) or **non-canonical amino acids** (ncAAs) to produce xenoproteins
- dual-use challenge: could accelerate beneficial innovation in biotechnology but also create new biosecurity vulnerabilities if misused or undetected.

- fall outside the scope of traditional genetically modified organisms (GMOs)
- class of products with **no evolutionary history and no established record of safe consumption -> challenges traditional, comparative safety assessment models**
- **evading current biosecurity screening software.**

- **Gap 1: Allergenicity Assessment**
"for new to nature proteins most allergic reactions cannot be predicted using validated methods at present."

- **Gap 2: Toxicological and Production Safety of Xenobionts**
"not covered by current guidance - the stability of these novel components and their potential degradation into harmful metabolites is a key concern"

- **Gap 3: Nutritional Assessment**
"may cause imbalanced nutrition, e.g. by altering bioavailability."



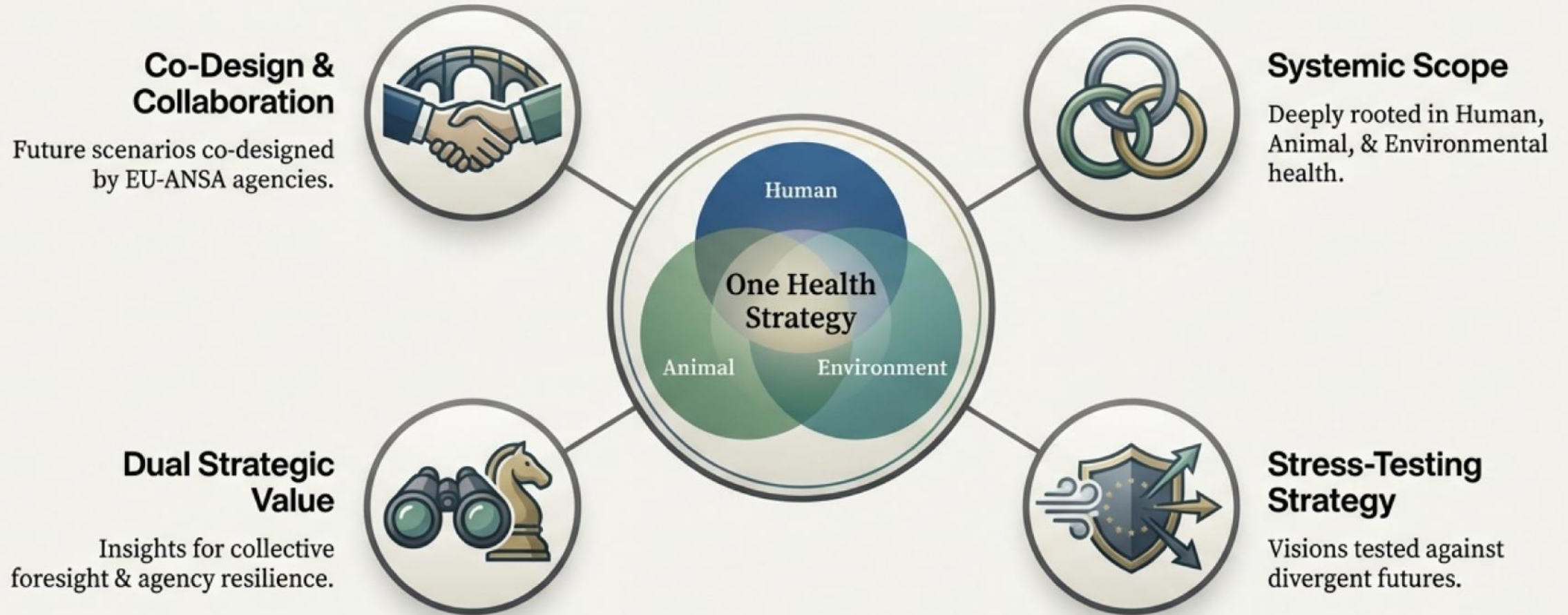
Absence of methodology to evaluate sequence-function risk when the sequence does not match existing databases.

High relevance considering rapid convergence of AI and synthetic biology



FORESIGHT

A One Health Systemic Approach to Co-Designing Strategy 2035



Moving from “*Tomorrow with the eyes of today*” to “*Today with the eyes of tomorrow.*”

SCENARIOS FOR 2035

**Health Transformation
after Wake-up Call**



EU-governance high



**One Health Governance in a
Digitalized, Climate-
Challenged Europe**

Technology and
innovation dynamic
high

**Better safe than sorry: Nature-
Smart Europe in the Age of
Prevention**



Technology and
innovation dynamic
low



Keep it private!

**Nationalism and
egocentrism in Europe**



EU-governance low



THE CHALLENGE

Strategic Area: Future Risk Modelling & Digital Twins (I)

From Static Hindsight to Dynamic Foresight

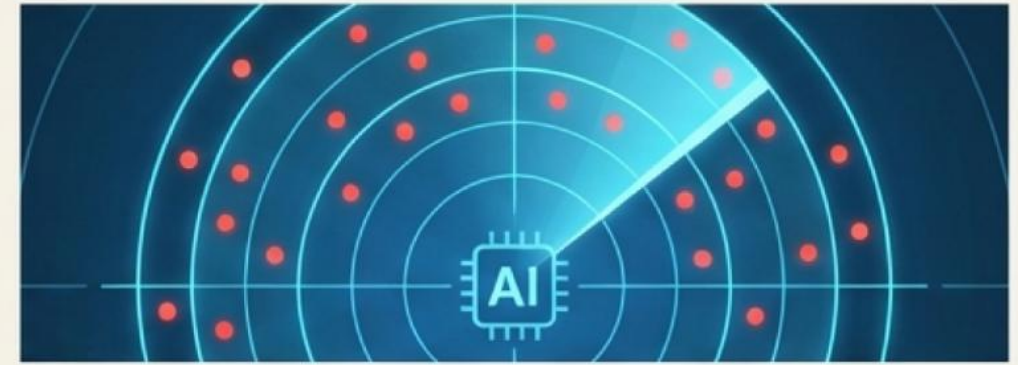


Human analysis misses 'weak signals' across science and trade.



Exploratory futures often disconnected from decision-relevant intelligence.

THE ACTION



Augment Horizon Scanning with AI. Expand vision to detect patterns early.



Drive Actionable Insights. Direct digital twins to inform preparedness decisions and crisis readiness.

THE CHALLENGE

Strategic Area: Security, Resilience & Climate (I)

A United Front Against Systemic Shocks



Intelligence is fragmented across sectors.



'Security' and 'Food Safety' treated as silos.

THE ACTION



Build an Integrated Sentinel Network.
Distributed EU-wide warning system.



Bridge Security & One Health.
Address geopolitical stress while preserving independence.

Strategic Area: Health Equity & Demographics (I)

Preparedness That Leaves No One Behind

THE CHALLENGE



Scientific advice can unintentionally favor the privileged.



Top-down foresight lacks societal legitimacy.

THE ACTION



Embed Trust, Ethics & Equity. Ensure foresight supports fairness and justice.

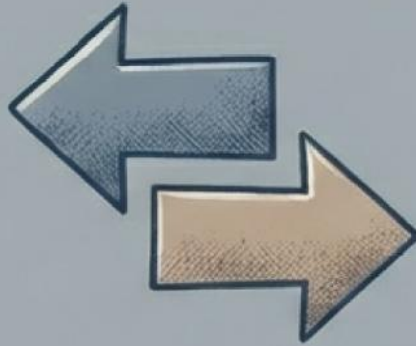


Co-Create Strategy with Society. Involve citizens to build shared futures.

THE CHALLENGE

Strategic Area: Security, Resilience & Climate (II)

Unified Foresight in a Climate-Impacted World



Agencies work on conflicting future assumptions.



Climate change treated as a single event.

THE ACTION



Forge a Unified Foresight Ecosystem.
Align scenarios to reduce fragmentation.



Embed Climate-Food-Health Nexus.
Integrate climate impacts as a permanent stressor

Turning Foresight into Agency

Closing Strategic Reflections for 2035



1. Across all futures, EFSA's enduring value is to **Anticipate, Integrate, and Prevent**—turning foresight into trust, data into public goods, and complexity into resilience.

2. A futures mindset gives us the **Agency to make positive change**, regardless of which scenario unfolds.

DISCUSSION TIME 😊

Integration of MS horizon scanning / foresight activities with EFSA's

- Submitting signals for EFSA's consideration
- EFSA's reporting on signals analysed
- Use of the Focal Points for the characterisation of signals that passed step 2 and 3 of the HS workflow
- Mutual information on planned foresight activities and results: via EREN or via FP meeting?
Other?



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THANK YOU 😊

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