Business Case

Food-Microbiology Intelligence Network (F-MIN) – Year 2 Pilot

Purpose: To provide a business case to enhance the current minimum viable product for data sharing and insight generation with i) additional functionality to enhance data protection, ii) enhance data insight and iii) provide a roadmap to scale-up and launch a fully functional platform and network to the market.

Executive Summary

The **F-MIN (Food-Microbiology Intelligence Network) project** is a strategic initiative designed to create a trusted, confidential network of food businesses to share and co-analyse microbiological testing data.

Goal: To establish a system that reveals sector-wide insights into microbial risks, enabling collective, proactive actions to safeguard consumers and enhance food supply chain resilience.

Benefits of the F-MIN Platform:
The platform offers a unified view of food safety trends and emerging risks through the joint analysis of internal member data and global open-source intelligence (via FOODAKAI). Key benefits include:

- **Increased Product Confidence:** Provides assurance where risks are not detected
- **Earlier Awareness of Emerging Risk:** Warns of new or heightened risks entering the supply system
- **Advanced Risk Identification:** Reveals previously unknown, recurrent risks through compiled multi-member datasets
- **Collective Awareness:** Shares rationale and results for enhanced testing due to supply chain changes or horizon scanning
- **Proactive Risk Management:** Enables members to focus resources and testing activity on areas of highest or changing risk.

Business Value:
F-MIN delivers immense business value by facilitating a shift from reactive to intelligence-driven risk management.

- **Enhanced Resilience:** Members can increase supply chain resilience by targeting activity and resources effectively
- **Cost Efficiency:** Provides a bidirectional validation tool, confirming market-wide issues via open-source data to avoid unnecessary exploratory testing, or proactively initiating targeted testing to prevent costly incidents (recalls) before they occur
- **Immediate return of investment:** The platform includes seamless access to high-value open-source intelligence (predictive analytics, daily/ weekly alerts) which, as a standalone subscription, is valued at **more than £5,000 per year**, effectively matching the Pilot Y2 investment.

Investment (Pilot Y2):

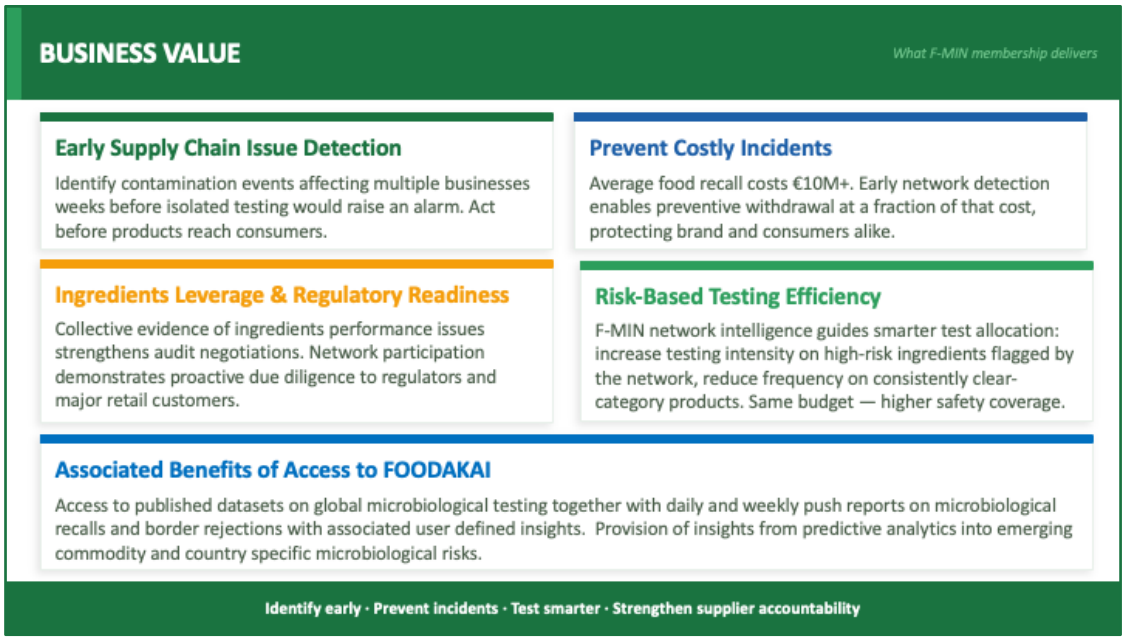
The membership fee for the F-MIN Pilot Year 2 phase is **£5,000**.

Pilot Y2 and Full Project:

The Pilot Year 2 (Y2) focuses on solidifying the platform's core functionality, enhancing data protection via the detailed anonymisation process (working with a provider), and improving insight generation through automated features. Key Y2 activities include:

- Recruitment of new members to achieve the critical 'minimum viable number'
- Implementation and review of the anonymisation process (to be reviewed after 3-6 months)
- Development of the full F-MIN rollout plan and roadmap.

Following Y2, the intent is to move to a **subscription model** with annual financial contributions. In recognition of their early commitment and investment, Pilot Y1 and Y2 members will receive a significant financial discount over the first six years after the full launch, culminating in a return of investment.



F-MIN Business Value: Added value available to F-MIN members from access to cross-company pooled anonymised data, visual data analysis and predictive analytics.

1 Principles of the F-MIN collaboration

F-MIN Objective: To create a trusted network of food businesses that share and co-analyse data on microbial risks to reveal sector-wide insights that enable collective actions to safeguard consumers.

1.1 Value proposition/ case for change for the business-to-business integration of datasets:

The joint analysis of microbiology testing datasets directly between food business operators would enable the visualisation of food safety trends and the discovery of new insights to manage risk, providing:

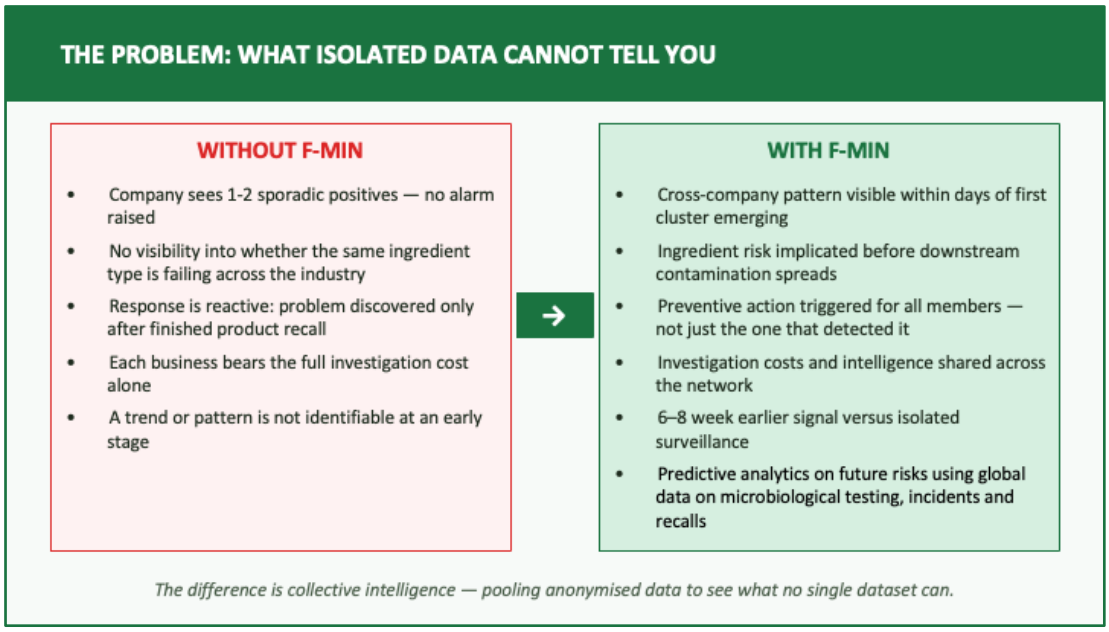
- Increased product confidence (i.e. providing knowledge where food safety risks were not detected)
- Earlier awareness of emerging risk (i.e. warning of where a new or heightened risk has entered a system)
- Advanced capability to identify recurrent risks (i.e. evidence of a previously unknown risk using newly compiled datasets from multiple members across time points), and
- Collective awareness of perceived or future risks (i.e. sharing the rationale and results of where enhanced testing is/ should occur due to changes in supply chains, processes, or horizon scanning)

In each of these risk assessment scenarios, members of F-MIN can use the resulting information to increase resilience in their supply chains by supporting their business and suppliers to focus activity and resourcing on the areas of highest risk or changing risk. These activities could include a refined approach to testing of a particular food product or process, or alternatively, the de-escalation of testing if historical risks are no longer observed in a setting/ food category.

Frequency of data submission will be at least monthly with capability for real-time, continuous data uploads. The platform provides for real-time data analysis and reporting by users and enhancements will allow 'signals' to be alerted. The need for offline trend analysis and reporting by independent third parties is minimised by enhancements to enable system-based reporting. Member-wide contributions are reinforced by the system, as only those members who have submitted their recent data will have view of the consortium data.

1.2 Associated benefits of access to global data on microbiological testing, incidents and recalls and predictive analytics on future risks

The integration of open-source data alongside internal testing results provides a powerful, bidirectional validation tool that enhances both proactive risk management and cost efficiency. For example, if a UK food business detects a pathogen like *Listeria monocytogenes* in an ingredient such as ham during internal testing, Food Safety and Quality Assurance (FSQA) teams can immediately consult the platform's public data, such as recalls and border rejections, to verify if this represents an emerging, market-wide issue. Confirming this trend allows the company to confidently implement preventive measures across their supply chain without incurring the costs of additional exploratory testing. Conversely, if open-source alerts reveal an emerging pathogen in a key ingredient for salads like lettuce, a company can proactively initiate targeted extra testing on their own supply, allowing them to intercept the hazard and prevent a costly product incident before it reaches the consumer. More detailed information, including visual representations of the open-source data, are available in Appendix 7.2.



F-MIN benefits: Comparison of microbiology data insights of a single isolated business compared to being a member of the F-MIN consortium.

2 Strategic alignment

F-MIN is for any food and beverage business conducting microbiology testing at scale, including producers, manufacturers, retailers. The project is supported with data tools (Agroknow), anonymisation protection (QIB Extra) and administrative functions (Food Safety Research Network; FSRN).

An F-MIN Consortium Agreement has been established by the Pilot Year 1 members and all new members can subscribe to the same terms through an Accession Form. The key terms are listed below for information:

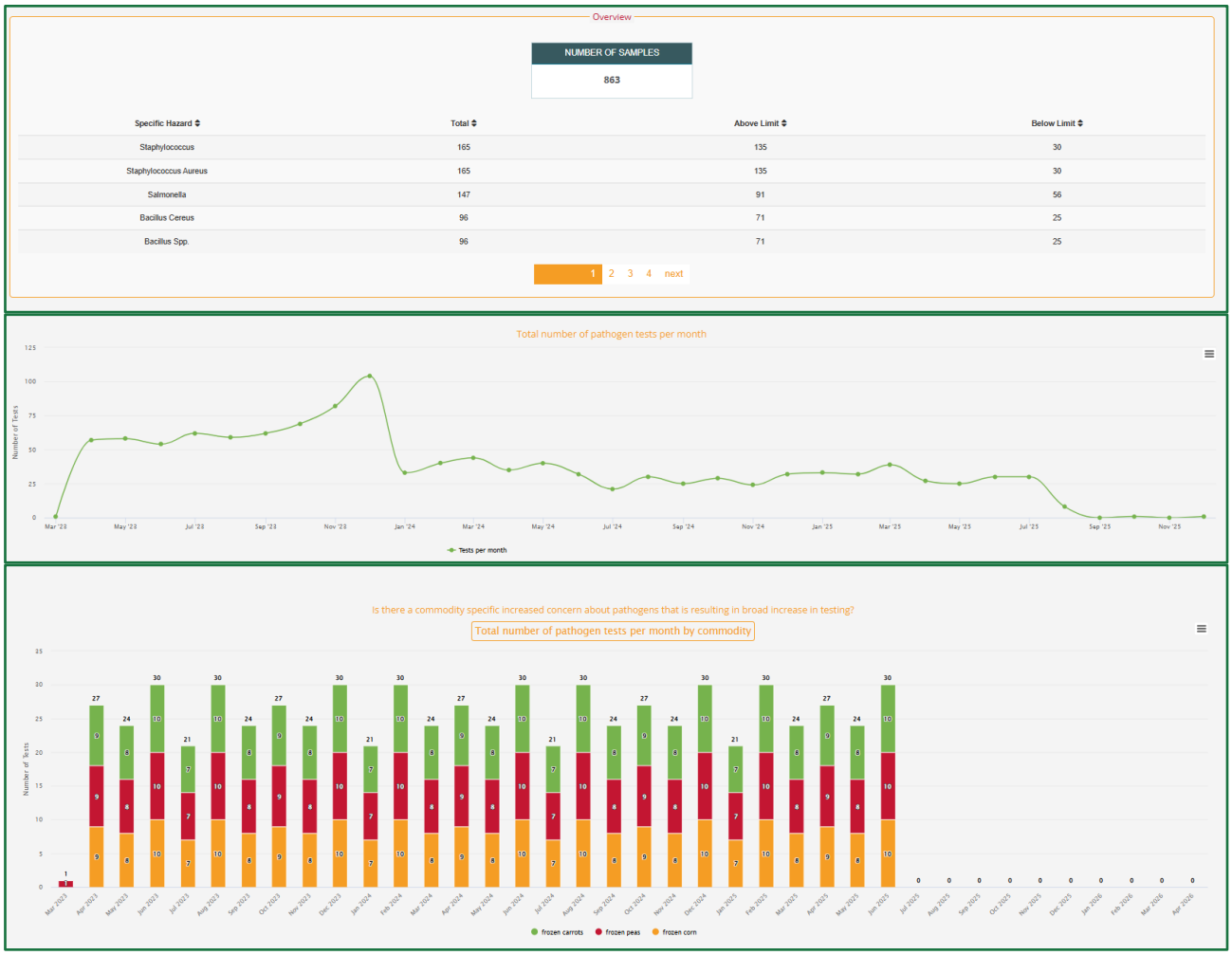
- **Governance:** A Steering Committee, comprising one representative per party and chaired by FSRN during the pilot, will oversee activities, set milestones, approve new members, and make decisions by consensus
- **Duration:** The pilot runs for one year from an agreed commencement date
- **Data & IP:** Members retain ownership of their own anonymised input data. Ownership of F-MIN Results (outputs and insights from collective analysis) will be the F-MIN entity, temporarily Quadram Institute Bioscience (QIB). All members receive a perpetual, royalty-free, non-exclusive licence to use results for internal purposes. Commercial exploitation requires consent from all parties
- **Data Transfer:** Each contributing member will sign a separate Data Transfer Agreement (DTA) with Agroknow, governing the terms of data submission and use (summarised in Appendix 7.4)
- **Confidentiality:** Member participation and all shared data are confidential, with a 10-year non-disclosure obligation following the end of the contract
- **Membership:** New members may join during the pilot, subject to Steering Committee approval. All members must sign the Consortium Agreement and a DTA, and are expected to contribute anonymised testing datasets (with exceptions agreed by the Steering Committee)
- **Termination:** Members may terminate at any time on notice. The DTA remains valid independently of the Consortium Agreement
- **Governing Law:** England and Wales.

3 Current status of data tools

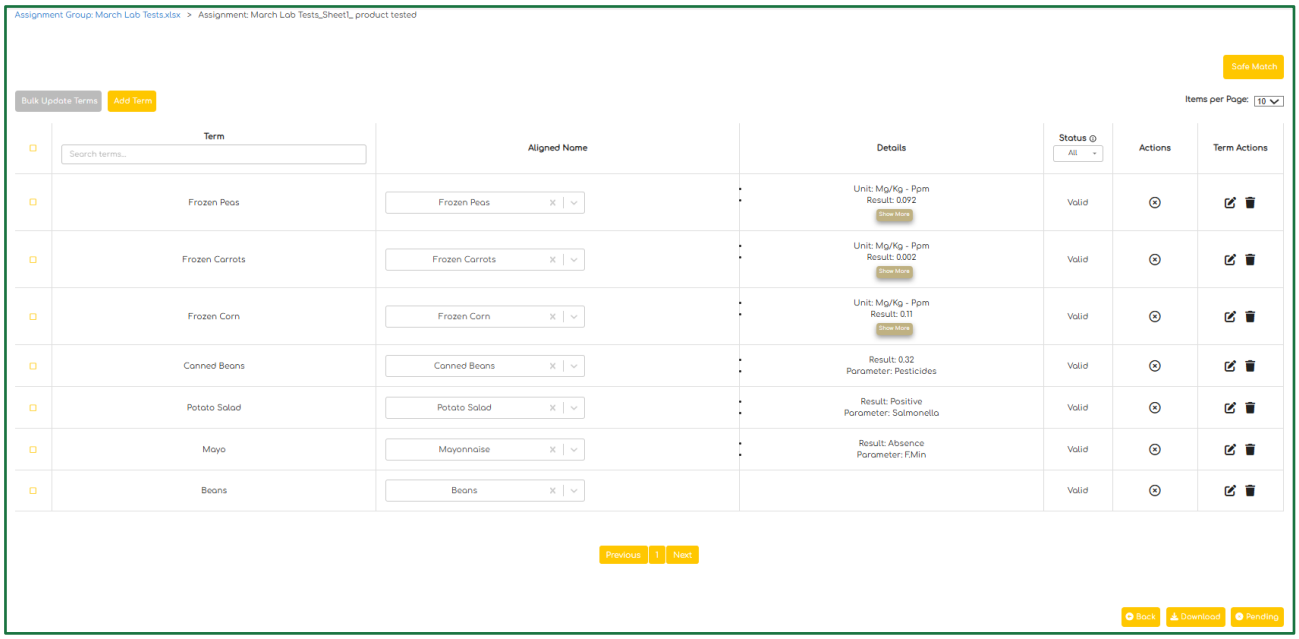
3.1 Agroknow working model

The Agroknow team has already delivered several components of the F-MIN platform:

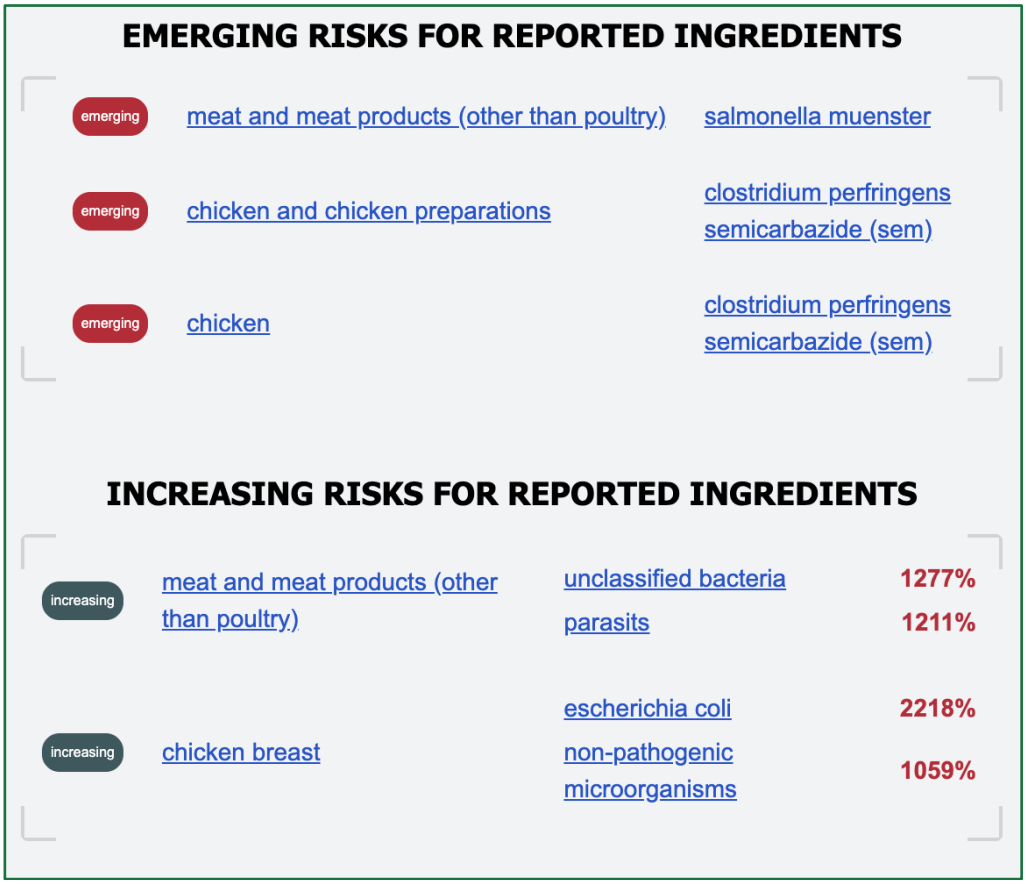
- **Collaborative data sharing model** that enables the alignment of different data schemas used for testing data
- **Data uploading, import and mapping tool** that allows the secure submission of testing data by the food businesses
- **Testing data processing and harmonisation** that enables the aggregated analytics for food businesses' (private) and open-source testing data
- **Micro risks testing data dashboard** with filtering capabilities to enable reporting of private and public testing data
- **Daily and weekly alerts** with trending pathogen issues in the global supply chain
- **Insights visualisation** for the F-MIN aggregated testing dataset, for open-source dataset, for mock dataset and for each food business testing data.



Insights Visualisation in the F-MIN dashboard: Microbiology testing data is visualised in different ways to offer quick and easy interpretation of results.



Data import and mapping tool: Data import is automated through a tool that uses AI to map metadata to existing categories, thus also removing brand identifying information.



Daily alerts with trending pathogens from open-source data: Active alerts of emerging and increasing risks in the global food supply chain help members identify potential issues faster.

3.2 Utilisation and continued development of the platform

Agroknow will be on hand to support and make amendments to the import and analysis platforms as improvements are identified during the F-MIN Pilot Year 2 Phase. We anticipate small amendments to improve functionality and analysis value-added as members start importing live testing data, compared to the historical data used in the F-MIN Pilot Year 1 Phase.

3.3 Anonymisation offering

In order to ensure true anonymisation of the data, an independent entity will be employed as a firebreak. The detailed proposed process is described in 7.3, aiming to safeguard anonymity of data on the system and to protect from potential Freedom of Information requests.

4 Costings

For the full launch of F-MIN, there will be an independent entity that will receive and distribute funds, making the membership fee a single payment.

4.1 Cost related to F-MIN platform

The membership fee for the F-MIN Pilot Year 2 phase will be **£5,000** per member**.**

4.2 Cost related to anonymisation

An additional cost will be payable to the anonymisation provider to cover anonymisation service costs. Two providers have been explored, with costings presented below, to employ a scientific services consultancy (QIB Extra), or a legal entity (Eversheds Sutherland). After discussion with both providers and a comparison of the service and benefits offered by each, the scientific services consultancy has been selected. Notably, the legal provider has communicated that "legal professional privilege [...] would not typically extend to [...] functions of the kind envisaged for the anonymisation process". The detailed anonymisation process and provider comparison is described in Appendix 7.3.

QIB Extra (selected option):
Initial startup costs estimated total = **£2,000** plus VAT (total cost, not per member)
Monthly estimated total = **£800** plus VAT (total cost, not per member)
Total for Pilot Year 2 (including VAT) = **£13,920**

Eversheds Sutherland (alternative option):
Initial startup costs estimated total = **£19,025** plus VAT (total cost, not per member)
Monthly estimated total = **£1,685** plus VAT (total cost, not per member)
Total for Pilot Year 2 (including VAT) = **£47,094**

FSRN will cover the costs associated with anonymisation process setup and first year running costs to simplify the joining process for new members. After full launch, the anonymisation cost per member will be included in the annual membership fee.

5 Activities in the next 12 months (Clear description of what the cost includes)

5.1 Recruitment of new members

A large number of members is critical to the value proposition of the F-MIN project. All new members would join the project by signing the F-MIN Consortium Agreement, as summarised in Section 2. The

FSRN, as the project coordinator, is engaging with trade associations and networks to attract more members. Groups we are currently engaging with include the British Retail Consortium, the Institute of Grocery Distribution and the Chilled Food Association.

5.2 Implement and review anonymisation process

We are working with potential providers to optimise and implement the anonymisation process described in *Section 3.3* and *7.3*. The intent is for this process to be reviewed after 3-6 months to determine if amendments would be necessary to make the data import process more secure or more practical and to review the cost.

5.3 F-MIN Rollout plan

A plan and roadmap will be developed and agreed by members for launch and rollout of F-MIN with clear targets for membership numbers, administration, launch and ongoing maintenance. This rollout plan will include minimum number of members to make the project financially viable, and minimum number of members to make the insights valuable.

5.4 Description of anticipated activities from Agroknow

Developments planned for F-MIN Pilot Year 2:

- **Improvements of the data importing, mapping and uploading tool** to support the new anonymisation process
- **Improvements in the F-MIN data sharing model** to support the new anonymisation process and the filtering of dataset per food business with a unique ID
- **An automated insight feature** that detects when a pathogen has caused positive test results across multiple food commodities in the same time window — a pattern that signals a potential supply chain contamination issue rather than an isolated, company-specific event
- **Improvements of F-MIN insights visualisation** based on the feedback on the participating food businesses
- **Development of supporting materials** for data upload and mapping
- **Training of experts** to help them efficiently map and upload the testing data
- **Improve the automated mechanisms** for data uploading and mapping.

6 Added value for pilot members in future years

The intent is to move to a subscription model with annual financial contributions from each member. The exact cost will depend on the number of members, with a 'minimum viable number' of members per costing bracket.

In recognition of pilot members' early contribution to the development of the F-MIN model, and their early investment, a discount has been agreed for the first years after launch as a return of investment.

6.1 Pilot Y1+Y2 members

Investment: £10,000
Return of investment duration: 6 years
Discount: £2,000 for the first four years; £1,000 for the following two years

6.2 Pilot Y2 members

Investment: £5,000
Return of investment duration: 6 years
Discount: £1,000 for the first four years; £500 for the following two years

7 Appendix

7.1 Mock dataset examples of value offering

Objective: show how pooling aggregated data can identify widespread supply chain issues that isolated datasets cannot.

Mock scenario summary:

- This mock scenario involves six independent food businesses that produce ready-to-eat frozen products. They routinely test ingredients and finished products for a hypothetical pathogen, *Farcicella min* (*F. min*)
- Each business has a different scale and supply chain, with partial supplier overlap
- Initially, *F. min* detections are rare and sporadic. However, a short-lived contamination event occurs in the shared supply network, leading to elevated detections across multiple businesses at varying intensities and times.

Anticipated outcome:

- Sharing anonymised, line-listed microbiology data via a B2B platform reveals cross-company patterns that individual datasets cannot show
- Combining data from multiple businesses highlights varying intensities of positive detections
- Negative results in certain areas help define the boundaries and likely source of an event.

Mock dataset – individual vs aggregated insights: When a company has sight of only their data, a supply chain contamination might present as a small spike that does not cause concern; whereas a factory issue may appear as significant. By comparing data

across companies, it is possible to quickly identify an issue affecting the supply chain and distinguish this from a factory cross-contamination event.

Key findings from the mock dataset analysis:

- Aggregated data revealed TWO distinct contamination patterns: a factory-level spike (one company, Company B, Jul 2024) and a supply-chain event affecting 3+ companies simultaneously (Jan–Feb 2022)
- Ingredient-level (producer) data provided an earlier, cleaner signal than finished-product testing — validating the value of upstream data sharing
- Negative results across unaffected members were equally valuable: they defined the geographic and supplier boundaries of each event
- No single company's dataset could have identified the supply-chain event; the pattern only emerged when all five datasets were combined.

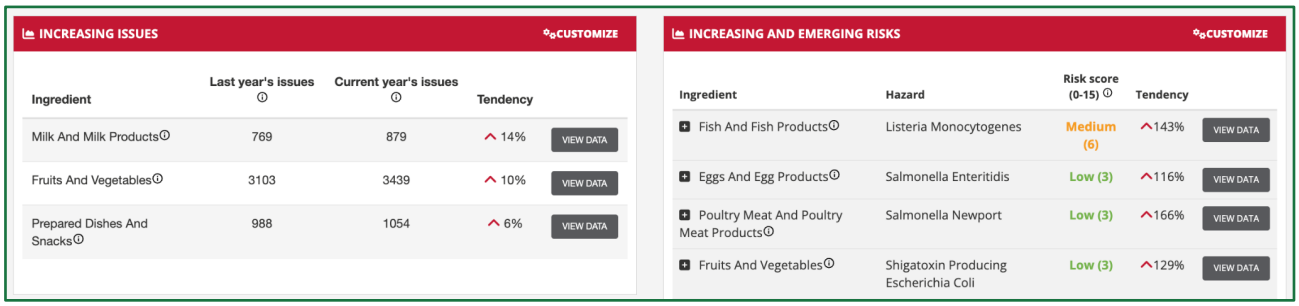
7.2 Case study using open-source data (FOODAKAI)

The strategic value of open-source data integration

While the F-MIN platform's core capability is pooling and analysing anonymised internal testing data, a fundamental additional benefit for participating companies is the seamless access to global open-source data trends and predictive analytics provided through the FOODAKAI platform. This access empowers organisations to shift from a reactive testing model to a highly proactive, intelligence-driven risk management strategy.

Use case: intercepting emerging hazards using public alerts

Consider a scenario where open-source global alerts and predictive analytics identify an emerging pathogen trend in a key ingredient for salads, such as lettuce. Through daily and weekly alerts, FOODAKAI automatically notifies the company's Food Safety and Quality Assurance (FSQA) teams of this developing external threat.



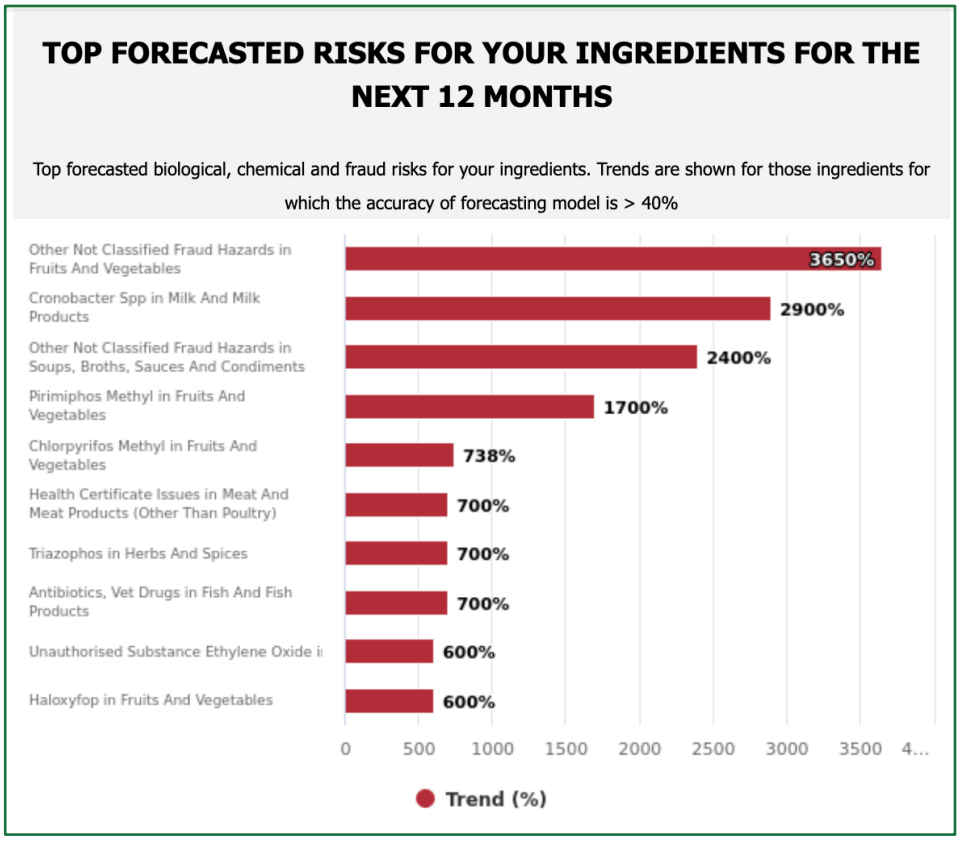
The FOODAKAI dashboard: a summary screen showing emerging risks for pathogens split by food categories.

Armed with this early warning from the open-source data, a company can proactively initiate targeted, extra testing on their own inbound lettuce supply. Instead of relying on routine testing cadences that might miss the contaminated batch, the FSQA team is able to intercept the hazard at the supply chain level and prevent a costly public product incident before the finished salads ever reach the consumer.

Value for Participating Companies

- **Preventative Action and Brand Protection:** By leveraging global incident data, companies can identify external supply chain threats early, allowing them to stop contaminated ingredients from entering their final products and thus avoiding devastating recalls

- **Bidirectional Validation:** FSQA teams can use the platform to verify if an isolated signal in their own data or the F-MIN aggregated data is part of a larger global trend, such as increased border rejections or recalls from a specific region
- **Optimised Resource Allocation:** By understanding which ingredients are currently flagging as high-risk globally, businesses can dynamically focus their testing budgets and resources precisely where they are most needed.



Top forecasted risks: Predicted trends for risks identified using the open-source data are depicted in a bar graph for easy visualisation.

Exceptional Return on Investment

It is important to note that standalone subscriptions for this calibre of open-source intelligence (including predictive analytics, daily and weekly emerging risk alerts, and comprehensive tracking of global recalls and border rejections) are themselves valued **at more than £5,000 per year** (based on the cost of existing solutions for Horizon Scanning). In the F-MIN initiative, this powerful suite of open-source insights is provided seamlessly alongside the core F-MIN data-sharing tools, offering participating companies an immense, ready-made return on their investment.

7.3 Anonymisation process

Consultant: anonymisation provider (e.g. QIB Extra, Eversheds Sutherland)
Agroknow: data platform provider (Agroknow)
F-MIN member company: any live member of the F-MIN consortium
Data Import Tool Platform: the platform used to 'cleanse' and upload data onto the data analysis platform
F-MIN dashboard: the data analysis platform

Proposed F-MIN data import process:

- Consultant will generate a series of usernames & passwords and send to Agroknow
- Agroknow will create these accounts onto the Data Import Tool Platform
- Consultant will assign a username to each F-MIN member company
- Each F-MIN member company will upload their data using this coded username, only Consultant will have access to the username-company assignments
- There will be a preview page in the data import tool for members to review the cleansed data before finalising upload
- Consultant will have an administrator account for the Data Import Tool Platform with access to a page showing a list of latest submissions by username; Consultant can use this to send reminders to companies that failed to upload data each month, using a 3-strike system
- All uploaded data will have a hidden tag corresponding to the username used to upload it; this will not be visible anywhere on the F-MIN dashboard
- There will be a functionality to search for data by username tag, however these will not be available as a drop-down menu, you will need to type the username exactly in order to get results back.

What this means for functionality:

- Only the Consultant knows which tag corresponds to which company
- Anonymisation **effort** falls on the import tool; **responsibility** falls on the member company
- Only the Consultant can see which company has uploaded their data and share reminders (using a 3-strikes-and-you're-out system)
- Each company can pull their own data to visualise analysis but cannot view other data grouped by company.

Comparison of the two potential service providers and rationale on decision:

- Eversheds was approached as the anonymisation service provider for FIIN (the Food Integrity Intelligence Network, sharing food authenticity data)
- Given the differences between the two projects, in F-MIN the anonymisation provider will be engaged more frequently (monthly compared to quarterly) and will have a smaller task (hold the key to members' accounts and send reminders to upload data) and lower responsibility (will not have sight of any data); therefore, for F-MIN, we do not require the same level of service and legal privilege does not apply, since they would be acting as a service provider
- Comparison:

	Eversheds	**QIB Extra**
Anonymisation process offering	As requested	As requested
Cost for first year (setup and running)	£47,094	£13,920
Adaptability (for changes in the process)	Limited within quoted scope; significant changes will likely incur additional cost	Flexible within their available resources, any additional work charged at same rate
Accessibility (for project communication)	Limited to within quoted scope; significant additional communication may incur additional cost	Responsive and bespoke service offered within cost quoted
Legal protection	Not liable to Freedom of Information requests; Not protected by legal professional privilege when acting as a service provider	Not liable to Freedom of Information requests; Not protected by legal professional privilege

	Notably, the legal provider has communicated that "legal professional privilege [...] would not typically extend to purely operational or administrative service-provider functions of the kind envisaged for the anonymisation process"	

7.4 Data Transfer Agreement terms

A summary of key terms to be included in the Data Transfer Agreement ("DTA") between each Commercial Party and Agroknow. This is not a complete list of terms and additional terms to the ones reported here may be included as customary for this type of agreement and as negotiated between Agroknow and each Commercial Party. In the event of any conflicts between the terms of the DTA and the terms of the F-MIN Consortium Agreement, the terms of the F-MIN Consortium Agreement shall prevail.

Parties	Provider: Each Commercial Party Recipient: Agroknow
Definitions	**Unprocessed Data:** any data inputted through the FOODAKAI portal by a Commercial Party
Responsibilities	Each Commercial Party will contribute data at the agreed frequency using the agreed data fields, except where F-MIN food categories are not in scope for them. Each Commercial Party shall make all necessary efforts to provide accurate and complete data. Agroknow will be responsible for secure data management.
Terms and Conditions of Use	Data can only be used for tasks defined by the F-MIN Consortium Agreement. Unprocessed Data may not be transferred to any third party. Processed Data will be provided to all Parties of the F-MIN Consortium Agreement.
IP Terms	Ownership of Unprocessed data is retained by the company contributing the data. F-MIN Results ownership is as set out in the F-MIN Consortium Agreement (Clause 4.3).

Costs	Each Party will be responsible for their costs in connection to transfer of data, its security and storage.
Confidentiality	The Recipient will not disclose another Party's Confidential Information to any third party for a period of 10 years after end of contract (subject to Clause 5 of the F-MIN Consortium Agreement). Processed data will only be shared with Parties as agreed in the F-MIN Consortium Agreement.
Termination	The DTA will terminate upon withdrawal of a Commercial Party from the F-MIN Consortium Agreement. The Provider or Recipient can withdraw in the event of the Provider or Recipient breeching the terms of the DTA. Upon termination all Unprocessed Data will be deleted. For the avoidance of doubt F-MIN Results will not be deleted.
Governing Law	The DTA and any dispute or claim shall be governed by the laws of England and Wales. The courts of England and Wales shall have exclusive jurisdiction to settle any dispute or claim that arising in connection with the DTA.