FSAW 18/11/05
For discussion

Annual surveillance report

Executive Summary

1. The attached paper, due to be considered by the Board on 5 December 2018, provides a description of the new overall surveillance approach, and how the components fit together; an update on the progress in the design and delivery of those components; an update on the progress of the laboratory capacity and capability review; identification of the need for a new sampling strategy.

2. Julie Pierce, will present this paper to the Committee.

3. Members are invited to:

   - **consider** the Board paper
   - **consider** any advice the WFAC wishes the Board to consider as part of its deliberations.

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Annual surveillance report

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Summary

1. This report provides a description of the new overall surveillance approach, and how the components fit together; an update on the progress in the design and delivery of those components; an update on the progress of the laboratory capacity and capability review; identification of the need for a new sampling strategy.

2. The Board is asked to:

    Note progress and agree the recommendations for future work on the development of the overall model.

Introduction

3. A report is presented annually to the Board on the subject of surveillance. This year, the report reflects the fact that the approach is being fundamentally redesigned, building on the existing functions and adding new ones.

Overview of the surveillance model

4. The future Surveillance Model will be integrated with existing and enhanced functions such as risk assessment and NFCU; it will take a longer-term view of new and emerging food system risks; it will utilise more modern techniques exploiting data and technology; and it will include a revised national sampling strategy. It will place greater emphasis on being pro-active, timely, risk based and integrated across the FSA and with external partners.

5. The goal is to develop a systematic approach across the FSA to effectively identify food and feed risks. Whilst the focus this year has been on readiness for EU Exit, the capability being created will evolve and provide the long-term value required by the FSA to protect consumers in the UK.

6. A schematic showing how the elements of Surveillance fit together is presented at Figure 1. This is just an illustration; there are potentially other providers and users of the data and service. There will be flows of data across all parts of the FSA, and beyond, with Strategic Surveillance providing a critical, connected, strategic service.

Figure 1
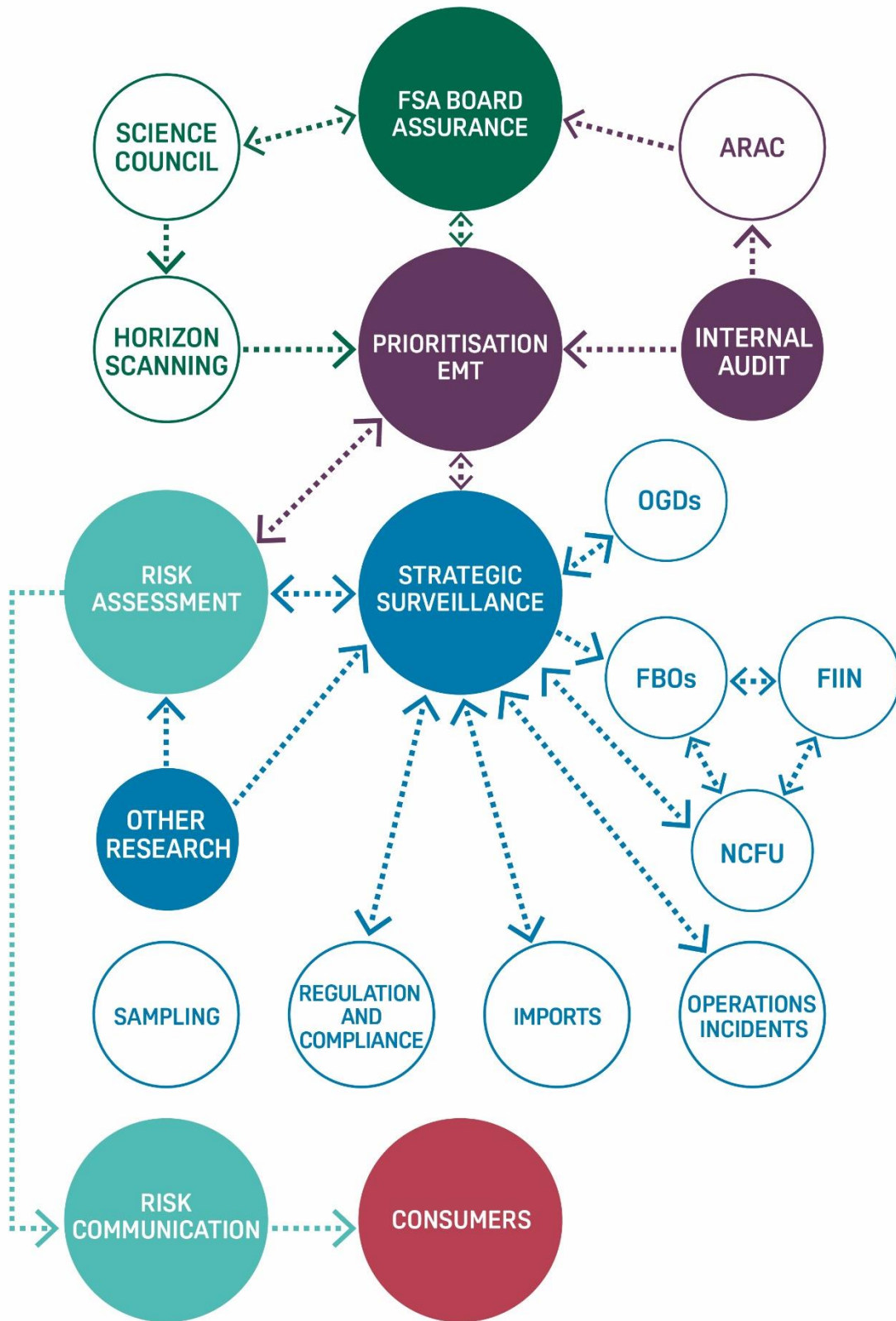
Description of elements and interdependencies

Risk Assessment

7. The paper submitted to the September Board meeting on Risk Analysis[1] outlined the proposed approach to risk assessment and the other elements of risk analysis. The quality and utility of risk assessment will be enhanced by clear evidence, being open, and being able to respond in a timely manner. Risk assessment needs to be served by access to relevant, quality data, as well as the technical skills to help interpret that data.

Strategic Surveillance

8. Over the last year we have built a new capability to understand risks (safety / authenticity / assurance) by accessing and analysing data, thereby deriving insights and building predictive models.

9. The capability continues to evolve but will consist of:

   a. the business processes to identify the questions, identify data sources and approaches, conduct the analysis, derive the insight, communicate and curate the insights;
   b. the data whether internal or external;
   c. the technology to undertake the processing;
   d. the algorithms.

10. We have developed a flexible capability to address questions and issues as they arise whether strategic, global and long term, or immediate and operational.

11. See **Annex A** for more detail on the approach taken and examples of the products from the work to date.

12. Fundamental to the approach taken is evolution and learning. This capability is being built into the design of the service. The results of the Science Council WG4 on Digital Technology and Data Usage (see **Annex B**), will be particularly relevant to inform that evolution.

NFCU

13. The NFCU has been working with the Surveillance Team and will be both a recipient and contributor to the overall knowledge base. The security surrounding much of the work of the NFCU is recognised. However, the NFCU already value access to new sources of information and the modern processing and analytics capabilities from the Strategic Surveillance work. This will become even more important as the NFCU develops into its extended role.

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[1] Risk Analysis: Process, Governance, Communication FSA 18-09-09

14. The MoU between FIIN (The Food Industry Intelligence Network) and the FSA has now been signed and access to that information source will be valuable in targeting our work.

RCD/RoF

15. The Strategic Surveillance will also serve RCD (the Regulatory Compliance Division) and RoF as we derive a better understanding of the risk factors associated with each business establishment.

Sampling

16. Sampling is both another source of data for the Strategic Surveillance function and an intervention from the surveillance/horizon scanning work. Sampling may serve many functions and so is shown in the diagram as "floating".

Review of Laboratory Capacity and Capability

17. Sampling requires laboratory capacity and capability. The FSA is leading on a cross government review of the capability and capacity of official control laboratories in feed and food enforcement. Phase 1 consists of a review of the current laboratory capability and capacity in preparation for Day 1 of EU Exit. Phase 2 will address the whole enforcement system with a view to recommend options to ensure a sustainable Official Control Laboratory system (for the longer term).

18. Phase 1 of the review is on schedule with the data gathering exercise completed and a draft report in preparation. Phase 2 of the review is currently being procured to identify an independent, expert supplier to undertake the work.

Sampling Strategy

19. The FSA proposes commissioning a sampling strategy that would look to provide a proportional, cost effective approach; it would be informed by and inform the other sources of surveillance data and insight.

20. Proportionality in sampling frames relies on articulating confidence, certainty, appetite, power and affordability. The Sampling Strategy will ensure that each of these elements is explicit, quantified and justified. The Strategy will be informed by and help guide the work of the Local Authorities in their sampling plans. The strategic approach will include evaluation of its predictions and on-going assessment of its own efficacy and efficiency.

Horizon Scanning

21. We are developing our capability in horizon scanning and food systems foresight. This work complements surveillance by looking at capability to identify

risks and issues in the longer-term and across the wider food system. It is being developed with the Science Council's Working Group 3 on Food System Risks and Horizon Scanning (see **Annex C**). The work is progressing well, and we expect the Council to provide its report to the FSA in early 2019. The report and a proposed response from the FSA will be discussed by the FSA Board.

How the System Works

22. Each of the elements should operate together as an integrated "system": each element is both informing and being informed by the next. EMT will set priorities, but this needs to be an on-going and responsive approach as risks change and insights are derived. Prioritisation will be a challenge, as some risks/insights are prioritised, others will need to be de-prioritised for reasons of capacity and affordability, along with the other risk weighting factors. We will need to learn and evolve how to run the system well.

23. The system does not work in isolation of feedback from the various interventions (risk management actions) that are outside its direct scope. We need to determine how well our interventions have worked, building our learning.

24. Reference is again made to the September Board paper on Risk Assessment[Error! Bookmark not defined.]. The overall approach to Surveillance is similar to, overlapping and closely aligned to, that for risk assessment.

Governance

25. The FSA Board will provide overall assurance of Surveillance. Reference is made to the proposed role of the Board and Scientific Committees in regard to Risk Assessment[1], given the overlap between them. In summary:

    a. The FSA Board will deliver its **governance** responsibilities through: setting the framework and process for deciding priorities for risk assessment, informed by the relative impact and value of competing priorities.
    b. The FSA Board will deliver its **assurance** responsibilities through: the Chief Scientific Adviser, informed by the Science Council as appropriate; and FSA internal audit.

26. The FSA Chief Executive and EMT oversee the prioritisation and approach, and ensure cost effective delivery to address the risks.

Resource implications

27. The funding for EU Exit is addressing much of the funding required for the new approach. However, further detailed work is needed to determine whether there is sufficient funding, and how any prioritisation choices need to be made.

Conclusion and recommendations

28. The Board is asked to:

- **discuss** the approaches we are taking to evolve Surveillance, capacity and capability in preparation for EU Exit and for the long term; and

- **agree** to the governance proposals

Annex A: Strategic Surveillance

1. We have taken an innovative approach to the development of the new service. We have not created a large monolithic data warehouse. We have found that there is a lot of open and freely available data, and similarly open source algorithms and tools, which make this a very cost-effective approach. We have demonstrated success with different types of data science suppliers, giving us flexibility, access to key skills and the ability to scale up or down.

2. We have learnt that data algorithms and machine learning models can be re-used, either in part or whole – transferable models and common data sets will over time result in a 'toolbox' and act as accelerators and identified datasets which are common across multiple use cases (Trade, climate, environment…).

3. We are in a better position than before to identify risks in a predictive way. We are building capability to understand where risks may arise before they become issues to consumers. This capability is fundamentally different to much of surveillance undertaken now: we need to see risk emerging and be able to address, rather than observe it as it is already happened, giving the FSA and its partners, as well as businesses the best opportunity to take action to avert the risk. We are looking out across geography and looking out into the future.

4. Our priority for this year has been risks that may change through EU Exit. To summarise, we have:

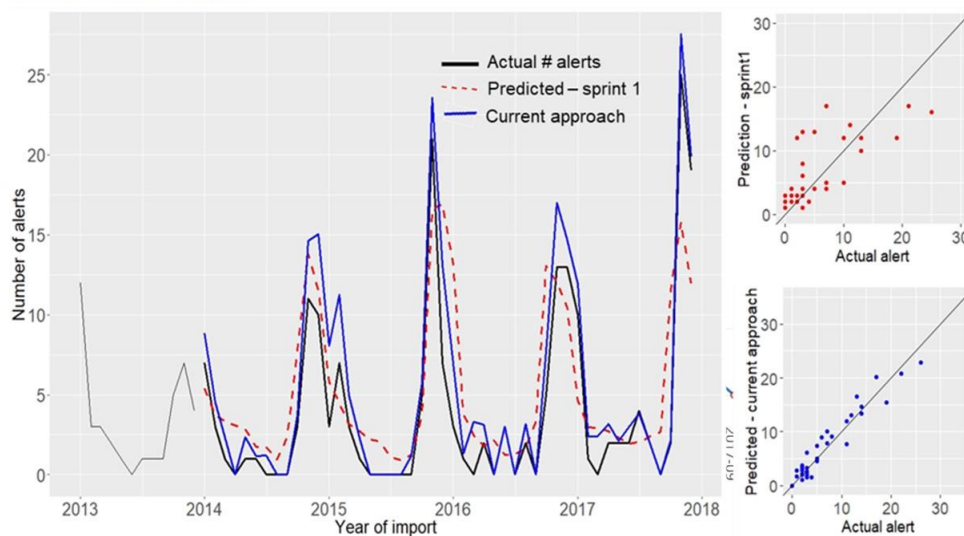   a. Built predictive tools to <u>predict Aflatoxin risks</u> originating from imported food, here figs from Turkey;

b. Delivered tools to gain key insights in terms of <u>trade anomalies</u>, trade flow diagrams;
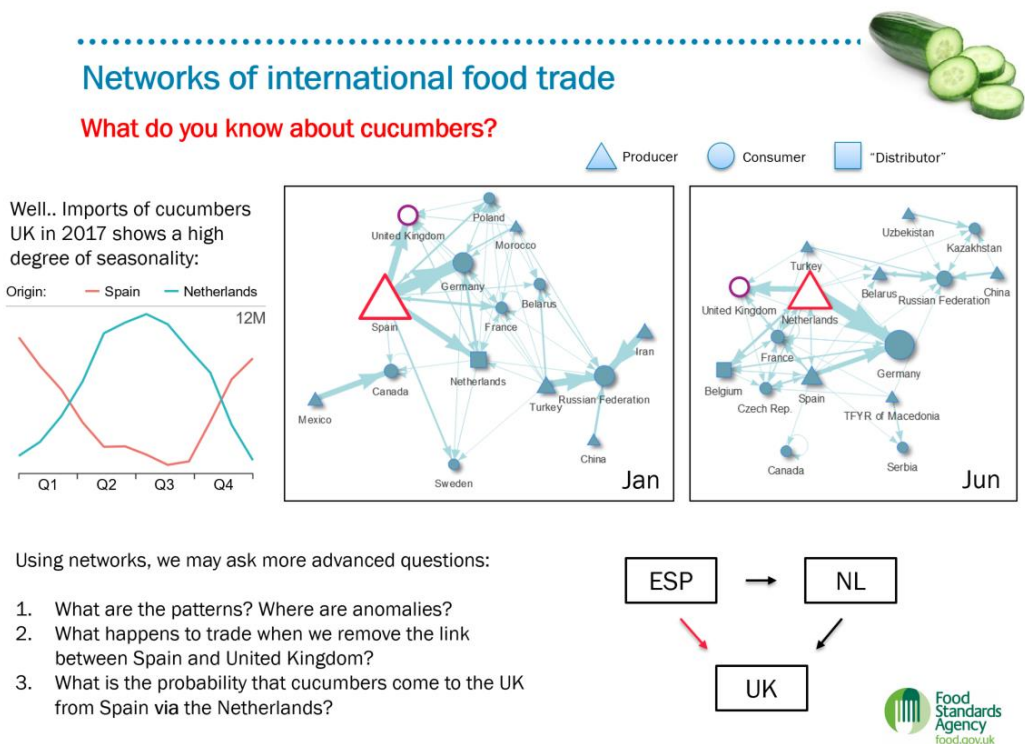
c. Gained insights into the pork supply chain to understand likely causes of risk - <u>surpluses and shortages</u>;

d. Analysed datasets to determine <u>risky foods</u> imported from EU and Third countries.

5. Surveillance builds on critical data infrastructure/enablers, e.g., data standards across business and local and central government, as well as globally; literacy and proficiency in data management and exploitation; coherent approaches to trust and transparency.

6. The approach taken is a series of sprints[2] with participation from the FSA, OGDs, academia and business. Each sprint both addresses a business problem/question such as listed above, but also has progressively built a repeatable approach, identified re-usable data and technical artefacts such as analytical approaches and dashboards. At the end of the sprint we take the output and put into production for teams to use on an on-going basis or may simply file away in the knowledge repository for future reference.

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[2] Timeboxed, generally 10-week, piece of work with clear, demonstrable objectives and outputs

7. The Strategic Surveillance function will serve many FSA teams and so the development of solid communication and business processes will be critical to success as much as the technology and data science capability. We have been pleased to see much engagement with external colleagues, and that should continue so we can work together to develop a capability to the benefit of all.

8. We already have a working service, and that will be enhanced between now and March to address the immediate potential EU Exit associated changes to the risk profile, but the service will then be developed further and embedded in the FSA day to day operation.

Annex B - Science Council Working Group 4 on Digital Technology and Data Usage

1. The Science Council has recently established its fourth Working Group, on Digital Technology and Data Usage, chaired by professor Patrick Woolf, a leading international expert in data science. It will consider the following questions:

   a. Over the next 2-5 years, what are likely to be the emerging data tools, techniques and technologies which could have the greatest impact on the FSA's mission, including for its Regulating Our Future programme, and what value could these add?

   b. What are key implications for the FSA of advancements in open data, data sharing and how should the Agency go about leveraging them (including private/industry data)?

   c. How can the FSA ensure that it adopts the right controls and governance around data? This will be informed by a review of data governance and legal & regulatory frameworks for the use of data in decision making (including pre-disclosure and pre-disposition in relation to machine learning and artificial intelligence), and, associated with this, the ethical use of data.

2. This work will help inform surveillance as well as FSA's wider work and is being developed in close engagement with these areas. The Working Group Secretariat is joint between the CSA team and the Digital and Data Team.

3. We expect the Working Group to report to the FSA in late 2019.

Annex C - Update on horizon scanning and foresight

1. We are also developing our approach and capability in horizon scanning and food systems foresight, as a complementary element of our capability to identify risks and issues, in the longer-term and across the wider food system. This work is being developed with the Science Council's Working Group 3 on Food System Risks and Horizon Scanning, which is considering two questions:

   a. How can FSA get a sound and useful understanding of global food systems risks and opportunities and of how it can respond to these.
   b. What should the FSA do to improve its horizon scanning capability in the longer term?

2. We have commissioned a desk study with RAND Europe to inform the Working Group's work, focusing on the first question.

3. The work is progressing well, and we expect the Council to agree and submit its final report to the FSA in early 2019. The report and a proposed response from the FSA will be discussed by the FSA Board, as for the reports for the first two Working Groups.

4. As part of the desk study, the Council and FSA hosted an expert workshop on 12 September, with senior experts and stakeholders from across the food system, including from industry, regulation, academic and consumer perspectives (including Board Member Mary Quicke). This workshop was very successful, generating informed discussion, insight and challenge to enrich and refine the analysis in the desk study, and the Working Group's evidence base for its future recommendations.