



Food Standards Agency: Innovation and Regulation

FSA approach to innovation and new technology

The FSA strategy 2015-20¹ identifies the potentially very radical impacts to food supply, the world over, within the next 25 years. In developing our strategy we looked at a wide range of evidence and talked to lots of different people, with varied food interests and fields of expertise, to inform our approach.

Importantly, the FSA strategy recognises the need for changes in our own behaviour in order to respond to these developments

“The changes in the food system mean that there need to be changes in the behaviour of consumers and food businesses – and of course the FSA – to get the best outcome for consumers.”

The strategy also recognises that there are growing challenges around food safety, affordability, security and sustainability. It sets out our support for innovative food production methods as a response to these challenges where they deliver benefits for consumers, taking into account the range of consumers’ interests. The FSA has started a programme of work that will look at our role in helping consumers understand and have the capacity to make informed choices about food, now and in the future².

The FSA’s Regulatory Strategy³ outlines our broader thinking about how our future delivery model needs to change to adapt to the changing environment and how we make sure we take advantage of digital transformation to do things better.

This document brings together all the different strands of work we’re doing into one overarching FSA innovation plan. It is intended to provide assurance on the effectiveness of our approach to innovation.

How legislation and enforcement frameworks could adapt to new technologies and disruptive business models to encourage growth

It is the responsibility of businesses to ensure that the food they provide is safe and what it says it is. The FSA’s role is to support the majority of businesses that want to do the right things for consumers, while making sure those who put consumers’ health and confidence in the food sector at risk are dealt with appropriately. In doing so we are open minded about how we, food businesses and local authorities deliver consumer protection, focusing on the outcome rather than the delivery method. By, taking a risk based approach our legislative and enforcement frameworks should be flexible enough to adapt to new technologies.

We are aware that more can be done. As such in January 2015 the FSA Board agreed the principles of the FSA’s Regulatory Strategy. The strategy acknowledges that the supply of food will change in future and the FSA’s approach needs to be

¹ <http://www.food.gov.uk/about-us/about-the-fsa>

² <http://www.food.gov.uk/sites/default/files/fsa150706.pdf>

³ <http://www.food.gov.uk/sites/default/files/fsa-150104.pdf>
<http://www.food.gov.uk/sites/default/files/fsa-160106.pdf>

flexible enough to deal with those changing circumstances. The FSA puts the consumer first in everything we do. The Regulatory strategy makes it clear that regulation is not the only solution to deliver consumer protection, but rather one of a tool box of options. This is reflected in the principles, which include:

- Our focus will be on the outcomes we are seeking to achieve, keeping an open mind about the means by which those outcomes are achieved.
- Our future regulatory approach should be truly risk-based and assessed in terms of impacts.
- Government intervention is warranted where its benefits to the public are proportionate to the costs/disbenefits of its application.
- The costs to business of regulation are no more than they need to be.

We are aware that small businesses in particular need to feel supported when developing innovative products or new technologies. For the majority of businesses their first point of contact will be their local authority. Where innovative products and technologies are concerned the questions posed could be unusual. We will continue to work closely with our delivery partners to ensure they have the support and expertise needed to answer those questions. We recognise small businesses desire for stronger regulatory support, and wish to meet those needs in a proportionate, even-handed and cost-effective way. Going forward, the FSA will need to focus on ways of providing greater support through on-line solutions that can be accessed by all businesses

An assessment of how new technology is likely to shape the sectors being regulated

The FSA works with food businesses and academia in the UK and internationally to better understand innovative approaches, so that we may identify opportunities to improve food safety or standards and to address those that may pose risks to consumer protection or. We are working to develop further partnerships with those working at the cutting edge of innovation, including ITAAU⁴, the Turing Centre, AIMS⁵, KTN⁶, Digital Catapult, the European Commission and Horizon 2020 to develop thinking, and to scope and deliver joint work programmes, where possible.

In addition, we actively engage with Industry and other partners to identify and address new and re-emerging risks. The impact of new technologies both in manufacturing and testing is a key theme of this work area. Examples include 3-D printing of food, insects as a novel protein source, gene editing and synthetic biology.

The FSA is actively involved in cross-government activities on horizon scanning. This aims to help us to understand the potential impacts of emerging technologies for our work, and ensure that we reflect these in our work both to exploit opportunities and to address any risks. It also helps us to monitor developments and signals in the wider system that

⁴ <http://www.itutility.ac.uk/>

⁵ <http://www.rothamsted.ac.uk/centre-agri-informatics-and-metrics-sustainability-aims>

⁶ <http://www.ktn-uk.co.uk/>

could represent opportunities from new technologies and business models and other changes.

We are involved in horizon scanning work with other Member States on delivering EU food safety and nutrition to 2050, as well as a number of other networks with international food safety organisations to gather information to help shape and target our future approach.

This work indicates that new technologies will progressively change the nature of the food system in ways that challenge the traditional models for ensuring compliance with food regulation. We have already seen more distributed sourcing and production, and significant changes in the retail of food driven by new technologies (i.e. supply chains that are less traditional, linear or fixed including through the use of informal routes or participation of businesses that are not primarily or obviously food businesses in the legal sense, or are not based in a specific or known location, such as internet sales).

Another change we are seeing is greater use of automated/real-time information and control in the food system, in areas other than retail stock control. Together, these mean that the focus of work to assure food business compliance (such as routine food business inspections) and how we obtain assurance could shift significantly, from official sampling and testing of food products at individual food businesses, to more integrated and distributed approaches based on shared information from monitoring systems, and to take greater assurance from food business control systems.

Actions for how regulators could better utilise new technologies to generate efficiency savings and reduce burdens on business.

We have been actively engaged with cross-Government activities on emerging technologies and this has influenced our Departmental and Science Strategies for 2015-20. We have identified the following three priority areas in which we see significant potential for the use of new technologies to bring radical change and improvement in food system information and control, with win-wins for business, for the consumer and for the FSA as the regulator, through improved assurance of safety, integrity and efficiency so that we have a strong food system we can trust.

1. Better understanding and control of foodborne pathogens.

This focuses on development and application of new and rapid genomics and the associated big data tools (e.g. tools that can handle extremely large sets of data) to understand, track and control pathogens and attribute the cause of outbreaks (and, as the technology develops, other food safety risks such as allergens, chemicals, and fraud). This could deliver quicker, better identification and control of foodborne disease outbreaks, and by joining up data across health-food-environment-society, enable us to better target and refine interventions to address risks and realise resource efficiencies.

A recent example in this area is our work with Public Health England and others to apply near 'real-time' genomics to improve the detection, attribution and management of a

foodborne disease outbreak in 2014.⁷ Earlier and more accurate identification and control of outbreaks and incidents helps to reduce their impact on businesses and on the consumer. We are also working with other government and industry partners to develop and exploit these opportunities both in Europe (e.g. the Compare⁸ project in Horizon 2020) and internationally (for example Global Microbial Identifier; GMI⁹).

2. Better understanding of and engagement with people and businesses

This relates to use of big data across social media, citizen and other data sources, to better understand peoples' and businesses' views and behaviours, and to engage with them in new ways to develop, test and improve policies and operational delivery.

3. Step-changes in food system information and control

Here, new technologies such as big data, advanced materials (e.g smart packaging to increase shelf life and protect the quality of food), sensors and rapid/automated information exchange and analysis could lead to huge improvements in the effectiveness of monitoring and control in the food system, increasing safety and integrity (for example detection of contamination earlier/further up the chain). Importantly, this could also deliver benefits for innovation for efficiency, competitiveness and sustainability and, in turn facilitate innovation in regulatory approaches, such as self-regulation and co-regulation.

Our role in realising the opportunities

In January 2016 the FSA Board agreed the outline for the FSA's regulatory delivery. One of the key elements is how we take advantage of modern digital technology to improve what we do. For example, this will mean that where electronic sensors and other equipment can provide assurance, the regulatory framework should take that into account. It could also mean using social media and other channels to crowdsource information about where there are problems, or where problems are likely to occur.

The FSA will work towards setting up a new Expert Committee on Innovation in the Food Chain which should have the necessary expertise to advise FSA on emerging issues and innovation in food and feed (with a focus on food safety) and the flexibility to create sub-groups or to work with other science advisory committees to provide risk assessment advice to FSA on priority areas such as allergens and on the biotechnology of food and feed.

To help us develop and utilise new applications of technologies we have also created a new Strategic Evidence Programme under our Science, Evidence and Information strategy 2015-20. The programme is led by our Chief Scientific Advisor, Professor Guy Poppy, and focuses on developing strategic partnerships and future capabilities, including better or radically different ways of doing things in the future. Early examples of work in this area include:

7 Inns T, Lane C, Peters T, Dallman T, Chatt C, McFarland N, Crook P, Bishop T, Edge J, Hawker J, Elson R, Neal K, Adak GK, Cleary P, on behalf of the Outbreak Control Team. A multi-country Salmonella Enteritidis phage type 14b outbreak associated with eggs from a German producer: 'near real-time' application of whole genome sequencing and food chain investigations, United Kingdom, May to September 2014. Euro Surveill. 2015;20(16):pii=21098. Article DOI: <http://dx.doi.org/10.2807/1560-7917.ES2015.20.16.21098>

8 <http://www.compare-europe.eu/>

9 <http://www.globalmicrobialidentifier.org/>

- a joint call with the RCUK-funded *IT as a Utility network*¹⁰ to develop innovative applications of the Internet of Things (IoT) (a network of ‘things’, linked-up through the internet, that gather information locally and exchange information for shared purposes) for food safety. This call includes a literature review of current use of IoT for food, and a series of pilot projects.
- a call for expressions of interest for innovative research proposals in five strategic areas: controlling listeriosis, use of technology in assuring meat operations, next generation sequencing ‘big data’, use of recycled waste-derived materials, and optimising food sampling and analysis.¹¹
- Work to identify opportunities for innovation in the delivery of official controls in meat plants, beginning with a workshop in 2016 bringing together FSA, academics and industry to identify specific projects to take forward collaboratively.

Information on the FSA approach to commissioning research, or how to apply for research funding, can be found on our website <http://www.food.gov.uk/science/researchfunding>

The ability of food businesses to develop and take advantage of innovative approaches and new technologies is key to addressing the growing pressures on food supply to 2020 and beyond. The FSA is clear that to ensure consumers have access to an affordable healthy diet now and in the future we need to be supportive of that. For food to be safe and is what it says we need to be able to exploit opportunities where new technologies can improve consumer protection and address potential risks. This plan sets out how we will meet those challenges and exploit those opportunities.

¹⁰ <http://www.itutility.ac.uk/>

¹¹ <http://www.food.gov.uk/news-updates/news/2015/14318/strategic-areas-research>