The use of NAMs in the risk assessment of chemicals in food

The FSA roadmap, personal reflections and predictions

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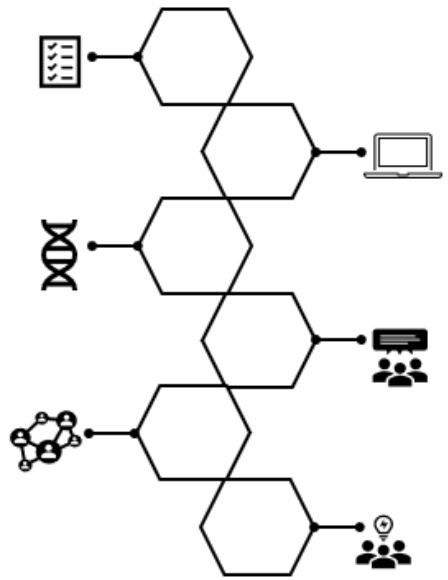
Paving the way for a UK Roadmap:

Development, Validation and Regulatory Acceptance of New Approach Methodologies (NAMs) in Chemical Risk Assessment



2021

Food Standards Agency

Overall objectives of the roadmap are to:

- identify latest available NAMs for optimal risk assessment
- learn from other regulatory agencies UK and beyond
- validate through case studies
- build confidence in NAMs in the regulatory setting
- develop skills and training
- implement and integrate NAMs in the regulatory setting

Time for a change in approach?

- Most chemicals intentionally added to food are not very toxic
- Chemicals found in food often need to be assessed quickly to allow decisions on risk management
- Competing priorities for consumers
    - Food is safe and is what it says it is

The future of food safety assessment of chemicals depends on our adaptability and flexibility whilst using the best scientific methodologies and strategies available to respond to the accelerating developments in science, society and technology.

The vision is to use new approach methodologies (NAMs) to be able to predict risk more accurately, rapidly and efficiently.

Toxicological risk assessment evolves

- The tools and methods available reflect both technical feasibility and our scientific knowledge
    - Often constrained by societal values and priorities
- We seek to address the question posed but perhaps have not defined the question

Animal testing capacity

- A lot of resource is needed for regulatory animal studies
  - Facilities
  - Personnel
- Not all pigs are equal
  - GLP
- Net effect is capacity is limited – and studies may not be achievable in the required timescale

It’s only a model and may not reflect reality

- Our aim is to protect humans, farm animals and pets
- Animal models have limitations
  - we just think we know what these are
- NAMS have limitations
  - we can account for these by understanding them

Allowing for uncertainty is nothing new

- Our processes incorporate uncertainty factors that take account of differences between individual and species in what they do to the compound and what the compound does to them

- We can increase these to cover limitations in the database or decrease them when we have more knowledge

- For animal studies we use default values that experience shows are generally sufficient
- For NAMS we do not have that experience yet so will start by applying figures that give us greater leeway

A note of wisdom from the tiered approach

- Introduction of the tiered approach to testing for food additives was generally welcomed both scientifically and on animal welfare grounds and the principle was been to most food chemicals in Europe

- BUT

- Applicants found challenges adapting from a list of required studies to a more scientifically based approach requiring judgements which was less predictable

- And needed them to demonstrate evidence for claims!

The Cassandra moment

- I do not think there has ever been a greater opportunity to introduce NAMS into regulatory risk assessment than now

- Why?

- Political will
- Regulatory reality
- Scientific maturity of methods

What has the FSA done?

- Started with the question – how can we improve risk assessment for compounds where data is sparse or need to extrapolate from analogues

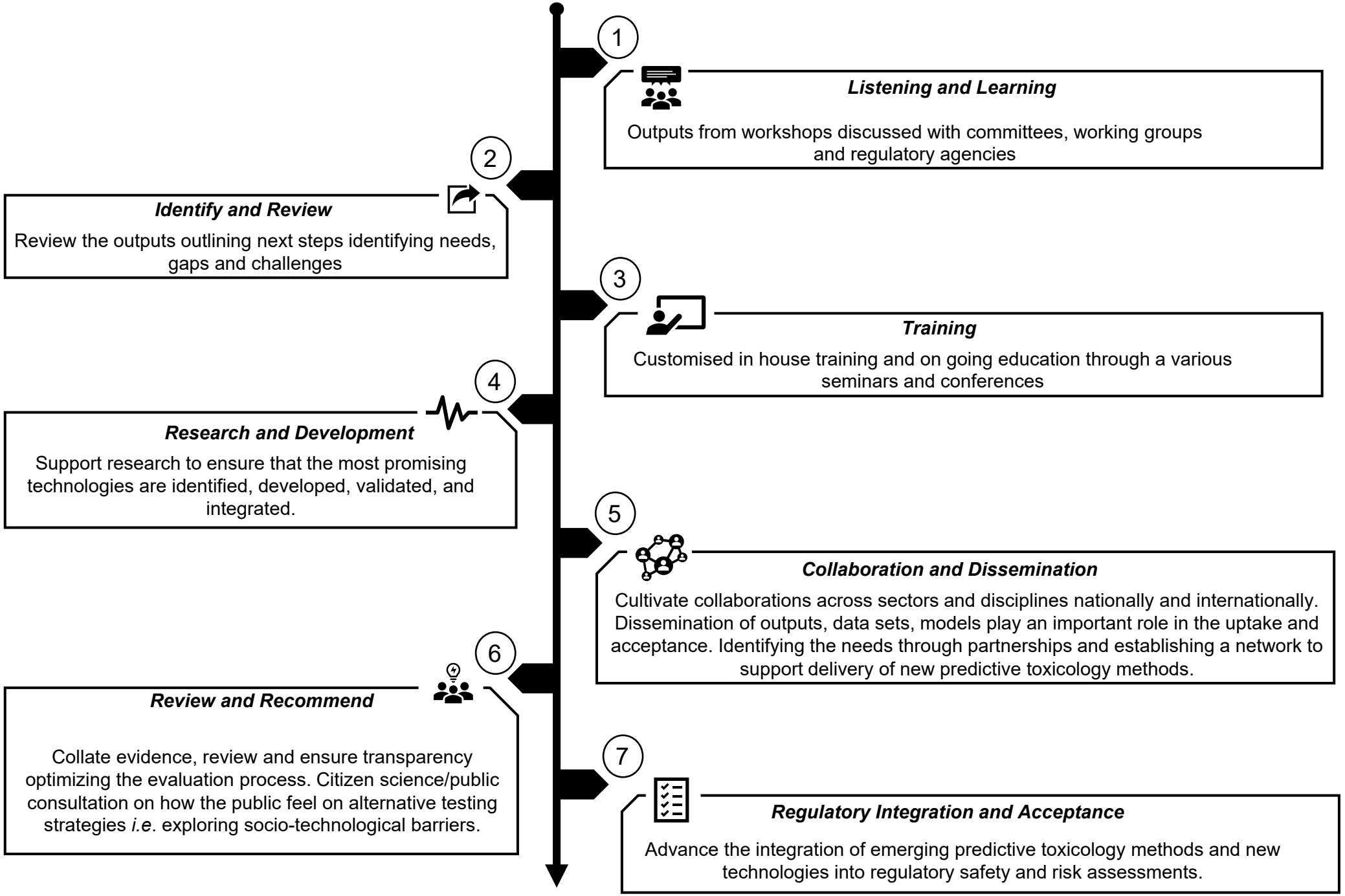
- Initially research call to address this – response was disappointing

- However

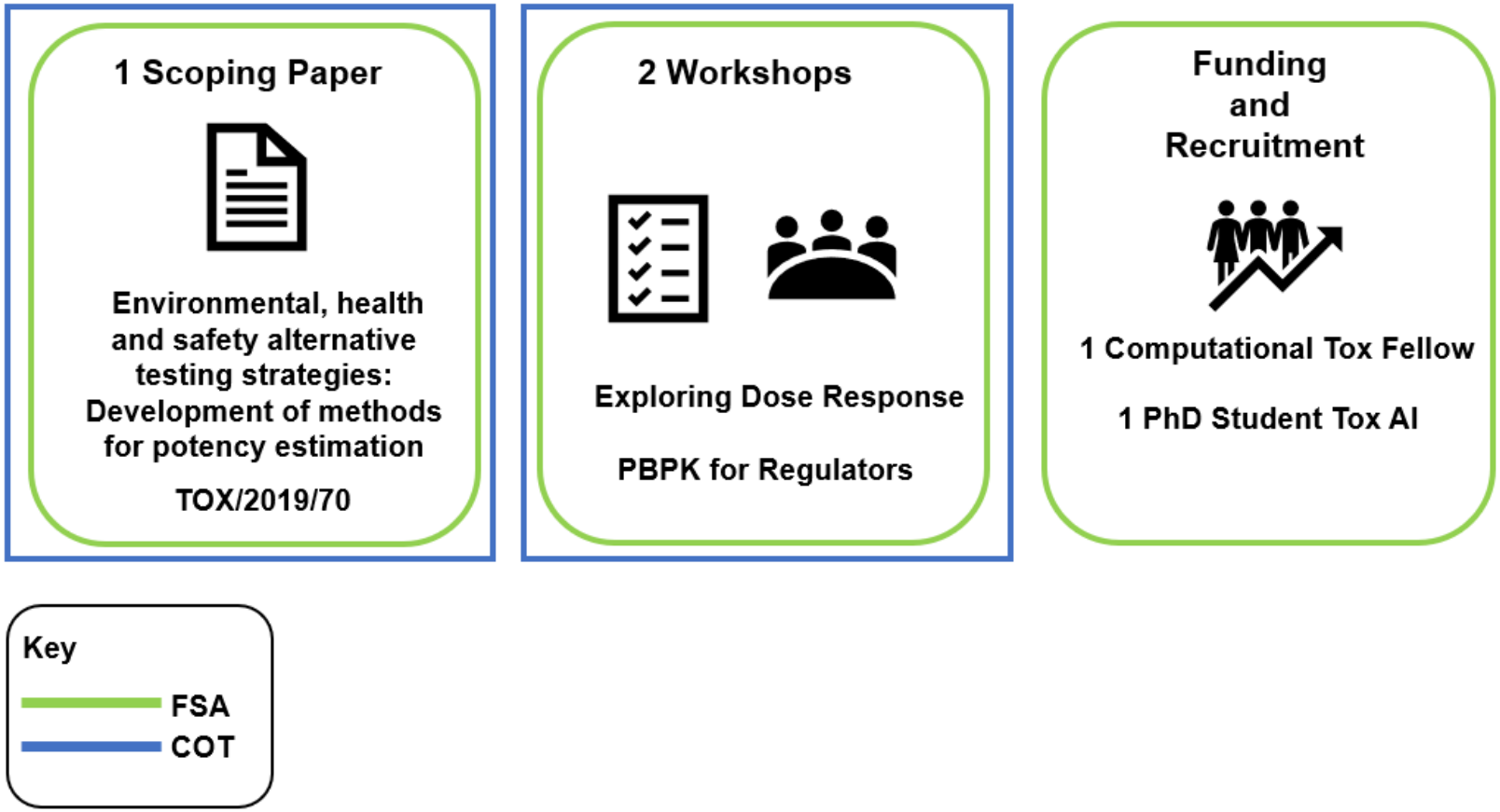
- Discussions within evaluation panel crystallised the issues and possibilities

What were the challenges

- Could we get buy in from our scientific advisors
- Can we devise a way from where we are to where we want to be
  - Need to ensure this is flexible enough to cope with disappointments and blind alleys
- How do we ensure wider buy in
  - Covid has reinforced that it is not just the experts you need to convince
  - Sceptics need reassurance and persuasion


1
Listening and Learning
Outputs from workshops discussed with committees, working groups and regulatory agencies
2
Identify and Review
Review the outputs outlining next steps identifying needs, gaps and challenges
3
Training
Customised in house training and on going education through a various seminars and conferences
4
Research and Development
Support research to ensure that the most promising technologies are identified, developed, validated, and integrated.
5
Collaboration and Dissemination
Cultivate collaborations across sectors and disciplines nationally and internationally. Dissemination of outputs, data sets, models play an important role in the uptake and acceptance. Identifying the needs through partnerships and establishing a network to support delivery of new predictive toxicology methods.
6
Review and Recommend
Collate evidence, review and ensure transparency optimizing the evaluation process. Citizen science/public consultation on how the public feel on alternative testing strategies i.e. exploring socio-technological barriers.
7
Regulatory Integration and Acceptance
Advance the integration of emerging predictive toxicology methods and new technologies into regulatory safety and risk assessments.

What were the first steps?



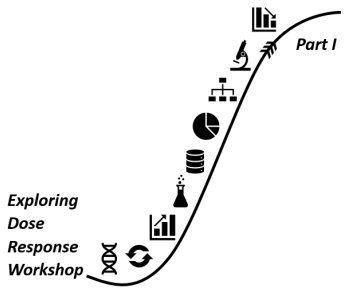
Where are we now and where do we go next?

- We have taken the first steps on our journey
- We have developed the initial roadmap
  - We just need to refine it further
- We recognise there are other departments with similar interests
  - We are looking to establish a cross government group

TIME

NAMs scoping paper

1



Output

2

PBPK Regulators Workshop

Output

3

First outline of UK Roadmap

4

Discussions with working groups and Scientific Advisory Committees

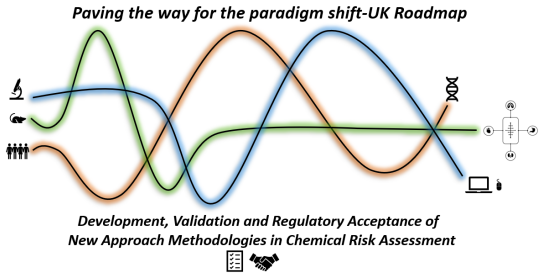
5

Funding and Recruitment

1 Computational Tox Fellow

1 PhD Student Tox AI

6



Output

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Second outline of UK Roadmap

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UK Roadmap

9

What about practical steps?

- Smoke flavouring reauthorisations
- EU law has a hard date by which it must be done (retained in UK law)
- Data requirements for risk assessment changed in EFSA guidance
    - New genotoxicity package
    - Extended one-generation reproductive toxicity test
        - Not enough laboratory capacity to do the latter in time
- FSA based on COT advice are encouraging use of NAMs to provide data to assess reproductive toxicity now
    - Applicants will be committed to do EOGRTS for Europe
    - May provide unique opportunity for comparison and confidence