Estonian Food Safety Conference participants: Welcome!

Rahastanud Euroopa Liit

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Netherlands Food and Consumer Product Safety Authority
Ministry of Agriculture, Nature and Food Quality

Role of the Competent Authority in Food Safety

11-09-2025

Dr. Bernadette Ossendorp
Chief Food Safety Officer

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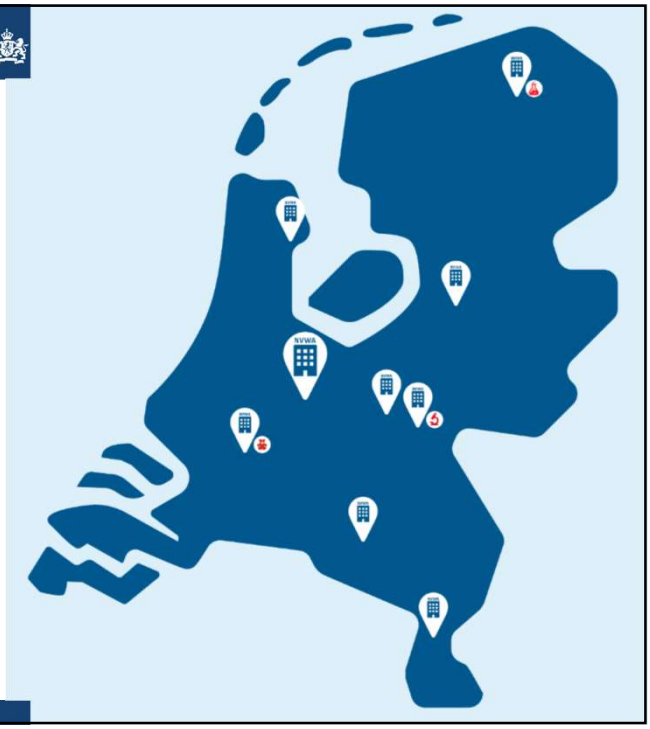
Content

NVWA protects seven public interests

- **Food safety**
- Product safety
- Tobacco and alcohol discouragement
- Animal health
- Animal welfare
- Plant health
- Nature and environment

NVWA locations

- Headquarters located in Utrecht
- 3 (service)offices with laboratories
  - FME product safety lab
  - CMO product safety lab
  - WFSR food safety lab (OCR: OL/NRL)
- 18 support/surveillance locations
  - Fisheries landing ports
  - Border Control Points, eg: Schiphol, Rotterdam, Venlo, ..



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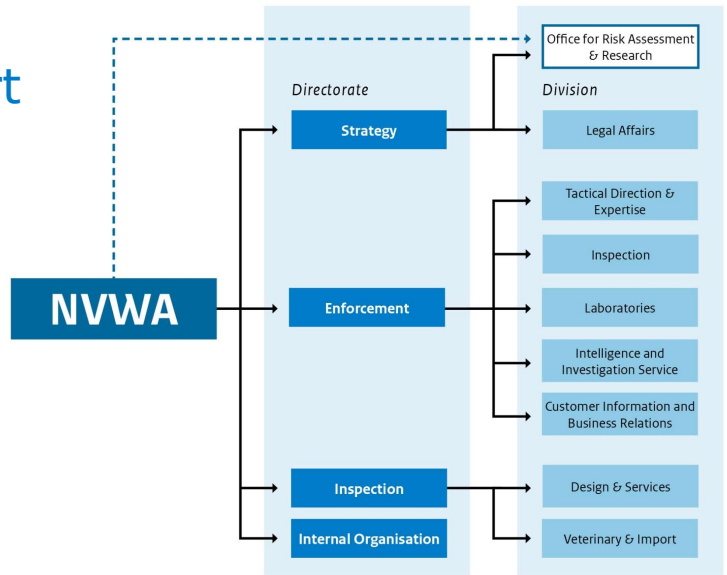
Organisation chart



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NVWA Food Safety Domains

1. Industrial food production
2. Food supplements and specialty nutrition
3. Chemical and microbiological food safety
4. Feed and petfood
5. Animal byproducts
6. Retail and artisanal production
7. Veterinary medicinal products (medicine residues)
8. Food safety in the meat industry (slaughterhouses, logistics, storage facilities)
9. Plant protection products and biocides (residues)
10. Food contact materials (production equipment and packaging)

Horizontal Themes

Sustainability: Green Deal, Farm-to-Fork Strategy, Circular Economy, Packaging and Packaging Waste Regulation	Climate change and scarcity: New and alternative sources of raw materials	Changes in consumption patterns	Community/government participation	Stakeholder communciation and collaboration
Food safety culture and behavior	Voluntary Third Party Assurance Schemes: Risk oriented supervision	Prevention vs enforcement	EU legislation and policy: New tasks, expansion of responsibilities	Innovation: on-site screening, detection limits
	Digitization in the sector: AI, cybersecurity, blockchain technology, algorithms	Changing trade channels: Internet trading platforms, social media and peer-to-peer	Reporting of unsuitable, unsafe and harmful foods	

Vision on Regulation

Social Impact

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Decision-making framework

- Key points from the NVWA's Vision on Supervision:
  1. Working on visible social results
  2. Showing public entrepreneurship
  3. Working together as one learning organisation
- Public interest and focus on social impact
- Maintaining the current high level of food safety
- Increase in new laws and regulations for which we, as competent authority, are responsible or have a shared responsibility
- Requires coordination of tasks and powers
- Make substantiated choices and set priorities

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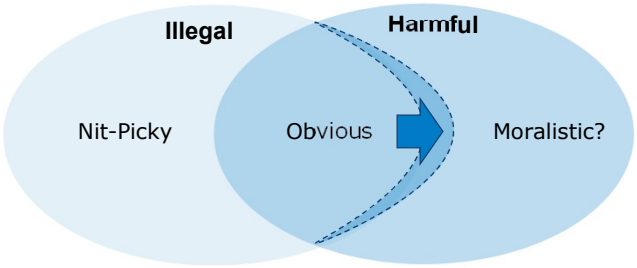
Risk-based regulator / Harm reduction (Sparrow)



Letter of the law
+ Legislation provides guidance
+ Easy short-term accountability
- Legislation outdated or requires revision/scrapping
- Legislation does not always correspond to 'public values'

Spirit of the law
+ Room to tackle social problems
+ Better accountability in the long term
- Legislation is lacking or inadequate
- Risk of arbitrariness

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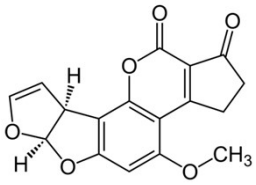
Food hazards

Physical

most noticed
by consumers

Chemical



most feared
by consumers

(Micro)biological

big health impact
& major regulatory
emphasis

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Fundament for our **Vision on Food Safety**

- NVWA Vision on Supervision (Organisational Level)
- Domain Level Foresight Studies
- Other Public Interests' Visions (Horizontal)
- International Strategic Documents and Publications
- Food Safety Foresight Study

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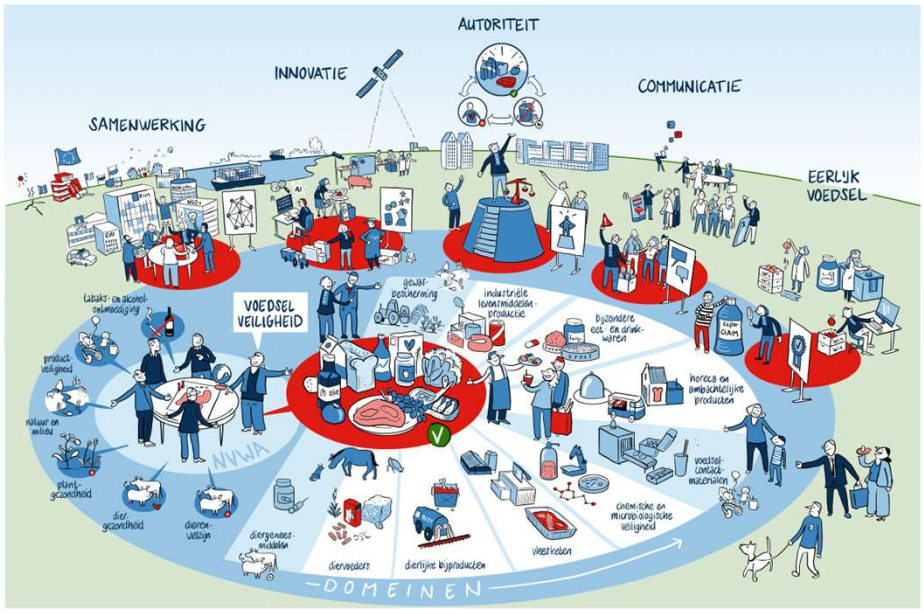
Nederlandse Voedsel- en Warenautoriteit
Ministerie van Landbouw, Natuur en Voedselkwaliteit



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Integrated Food Policy

- Sustainability ⇔ Safe food ⇔ Healthy food
- Not all measures for safe food are sustainable and healthy
- Sustainability (circularity) and scarcity may lead to food safety risks
- Healthy and sustainability versus price and convenience
- Need for an integrated food policy

- *What is our role as a supervisor?*
- *Where can we make the greatest impact?*

Food safety: prepare for the unexpected

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Preconditions

1. We need to prioritize, make hard decisions and substatiated choices
2. We require improved information systems and fundamental datastructures
3. Facilitate innovation within the organisation and also in and with the sector
4. Simplify work processes

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Compliance Measurement & Risk-Based Enforcement

Business 2 Consumer

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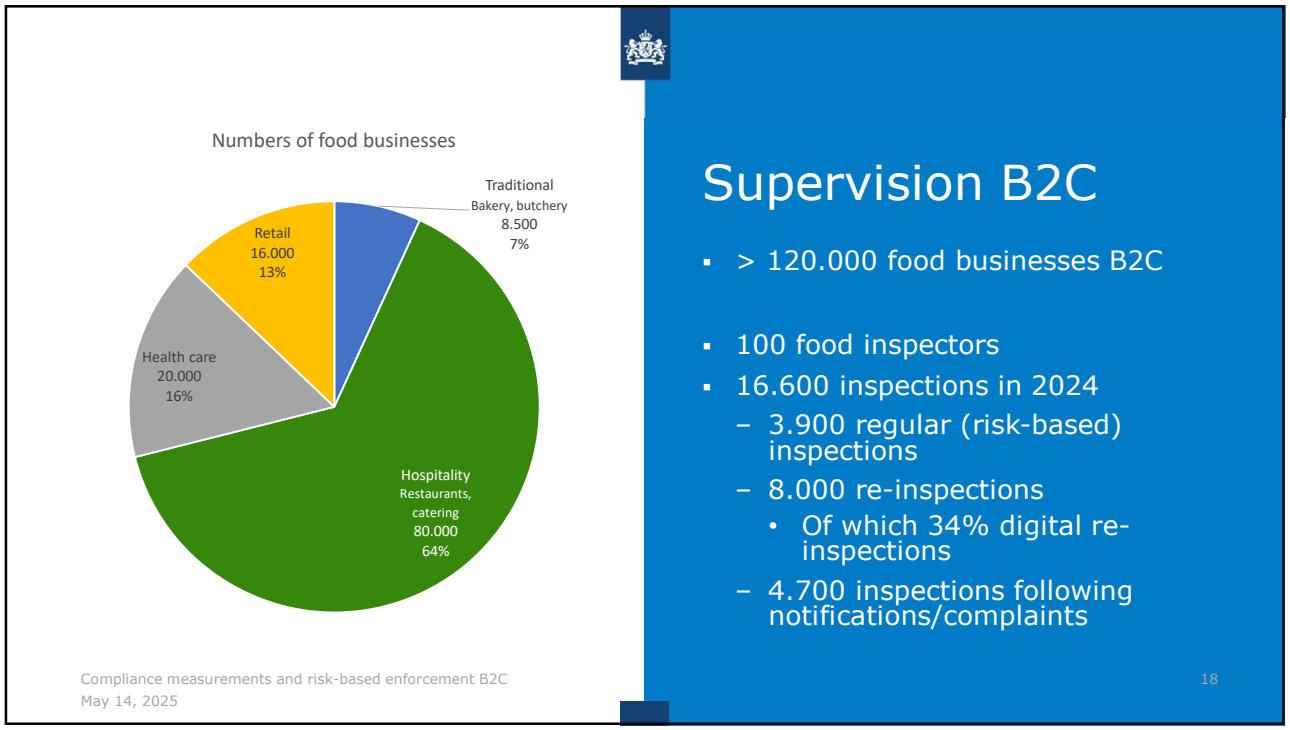

Supervision B2C

- > 120.000 food businesses B2C
- 100 food inspectors
- 16.600 inspections in 2024
  - 3.900 regular (risk-based) inspections
  - 8.000 re-inspections
    - Of which 34% digital re-inspections
  - 4.700 inspections following notifications/complaints

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Types of inspections

- Compliance measurements
- Risk-based inspections (regular)
- Increased supervision

- System approach for supervision reduction
  - Chain approach (monitoring of food formulas)
  - Covenants (supervisory agreement)
  - Checkpoint Food Safety program

check. oedselveiligheid
samen voor veilig voedsel

Risk-based <-> knowledge-driven

- Risk-based supervision narrows the view of the entire domain
- Insight into compliance of different target groups is a prerequisite for being able to work in a risk-based way (better information position)
- What is the level of risk-based deployment by target group?
- Eliminating wrong choices in risk-based supervision

Objective of compliance measurement: insight into target groups

- Objective picture of regulatory compliance of target groups within B2C
- Non-risk-based selection of businesses
- Statistic measurements compliance of the whole group (knowledge-driven)
- 4 Target groups -> every year 1 group
- Use: Risk-based inspections

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Predictive Model for Control Planning

Business 2 Business

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Background

Necessity for a risk based selection system

- 10.000 business to business food business operators
- Choices need to be made for making the yearly planning
- Reproducible

- The previous system focused heavily on compliance, causing the same companies to be regularly inspected

European Commission

Regulation (EU) 2017/625

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Development of the riskmodel

Step **1**. Check available risk models already in use in other countries

Step **2**. Check available data

Step **3**. Workshops with inspection

Step **4**. Implement pilot

Step **5**. Implement V.1

Step **6**. Validate model and adjust accordingly. Add new factors if possible.

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Examples

- **Canada**
  - The Canadian Food Inspection Agency (CFIA) has a well studied risk model in use
  - Exhaustive list of factors to determine a risk profile (inherent factors, mitigation factors, compliance factors)
- **Australia**
  - In the Australian model we found a method to categorize food companies into corresponding risk-profiles
- **Germany**
  - Convenient risk calculation system
  - Provides the possibility to change factors and easily add new factors later on

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Risk Factors

Inherent Factors

- Commodity*
- Type of products*, Volume*
- Type of operations conducted at the establishment*
- Direct distribution to vulnerable population
- Processing steps (slicing, dicing)

* related to health impact DALYs attributed to these risk factors

Mitigation Factors

- Presence of additional processes
- Presence of a sampling plan
- International certification scheme
- 3rd party audits
- Full time QA personnel
- Control of incoming supplies (letter of guarantee, audits of suppliers, etc)

Compliance Factors

- History of enforcement actions
- Recalls
- Food safety confirmed complaints
- Inspector assessment:
  - incoming inputs
  - process control
  - Import controls
  - Sanitation, biosecurity, biocontainment
  - Pest control
  - Chemicals, hygiene and biosecurity
  - Employee training
  - Equipment design and maintenance
  - Buildings
  - Water
  - Waste disposal
  - Receiving, transportation and storage
  - Traceability and control
  - Complaints

Additional Factors

- Time since last inspection

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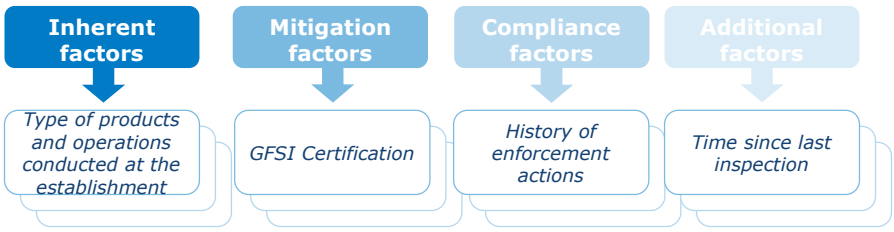
Risk Model v1



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Risk Model v1

Risk factor scores	Severe	High	Middle	Low
Time since last inspection	7	5	3	0
History of enforcement actions	12	8	4	0
GFSI certification	0	n.a	n.a.	-3/-4
Type of product and operation	9	6	3	0

Riskprofile	Profile 1	Profile 2	Profile 3	Profile 4
Score	>15	10 to 15	2 to 10	-4 tot 2

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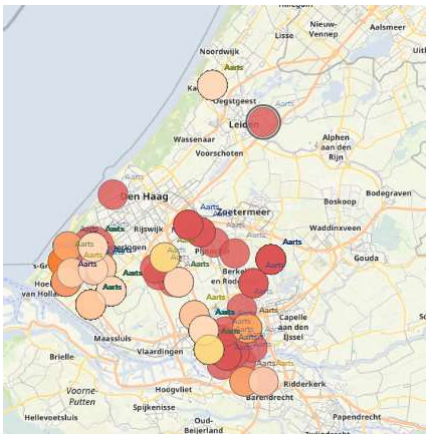
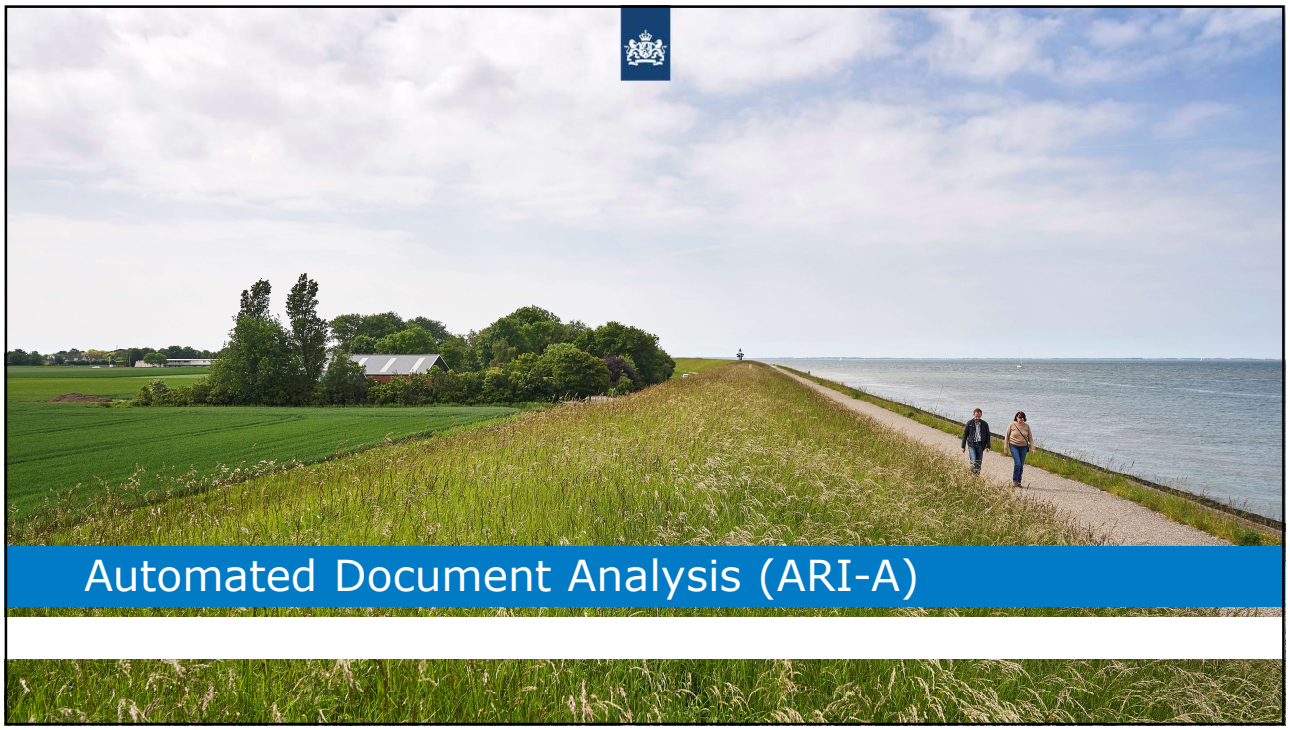
Planning tool



Next steps

- Validate the model
  - Do we see a difference in enforcement actions between low and high risk profile facilities?
- Add factors
  - Keeping the Canadian model as a reference for new factors



Automated Document Analysis (ARI-A)

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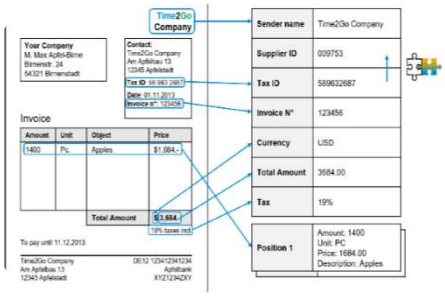

Automated Remote Inpections - Administrative

- Scanning official paper documents or labels,
- convert fields into data,
- verify data with internal and external sources and, immediately recognize suspicious certificates

ARIA

Identify anomalies and trends with AI

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Examples ARIA

1 Animal By-Products:
- From 3,000 to 60,000 certificates / year
- App development costs approx. 140,000 E
- In addition, 6 – 9 cents / ABP scan costs
- Link with DBP databases Traces (real time)

2 EU-DR Timber Regulation audit:
- 12 – 13 different certificates
- App development based on DBP app
- Normally work for 20 – 30 FTE
- Reduce it to a fraction of it

Next:
3 Control of pesticide use
4 Import control (origin, certificates)
5 Food safety docs
6 Feed docs
…..

Voorbeelden van ARIA projecten

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Responsible AI

Data Science Cluster

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Data Science Cluster

- Innovative data-driven projects for the entire NVWA
- Started in 2018
- ~12 data scientists;
  ~20 colleagues in total
- Dashboards, statistical analyses, machine learning
- Supporting internal processes, control planning, policy
- Internal and external data

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Data Science Cluster

Projects		Strategic Themes		Preconditions
'Demand Driven'	'Supply Driven'	ST I: Data Programming	ST II: Early Warning	In collaboration with other departments

Data Science Cluster:
Creating value for our public interests with responsible data science;
now and in the future!

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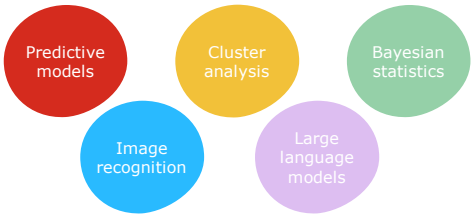
Demand Driven Projects



- Predictive models for control planning
  - Machine learning helps to prioritize inspections by automatically learning the relationship between company characteristics and the odds of noncompliance. Used for Animal welfare inspections in pigs and dairy cows.
- Image recognition
  - Image recognition is a subfield of artificial intelligence that uses machine learning techniques to identify people, places and objects in images. Used for automatic detection of forbidden tobacco advertising (proof of concept) and automatic classification of pig tail length.
- Cluster analysis
  - A technique for automatically identifying subgroups within a population based on the similarity of their characteristics. Used for identifying subtypes of mixed processing plants (byproducts, food, waste) and for identifying subtypes of food business operators.
- Large Language models
  - A form of artificial intelligence ('generative AI') that can comprehend, produce and revise written language. Used for screening new scientific articles for relevance and problem solving of technical errors using existing logs.
- Bayesian Statistics
  - A technique for creating advanced statistical models. Can be used to quantify uncertainty and integrate expert knowledge. Used for analysis of alternative sampling schemes and for prioritizing crop types for inspection

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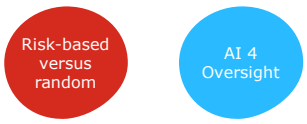
Supply Driven Projects



- Risk-based versus Random
  - A cooperation with our Austrian colleagues to optimise the trade-off between risk-based and representative controls.
- AI 4 Oversight
  - A cooperation between four inspection agencies, two universities and a knowledge institute to futher develop AI methods so that they work for oversight in practice.

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Strategic Themes

Earlier Theme: Sensor Data & AI
- Use of sensor technology in slaughterhouses
- Improve animal welfare
- International symposium 'Modern Inspections with New Technology'

Theme 1: Data Programming
- Improving the NVWA's knowledge base
- Focus on external data sources
- Creating data partnerships (e.g. with Customs)

Theme 2: Early Warning
- Detecting developing risks quickly
- Mainly focused on product safety
- Using warnings, product reviews, etc

Data Ethics & Compliance

- Started a Data Ethics & Compliance Committee
- Started the organization of Data Owners & Stewards
- Have been involved in NVWA wide AI regulation & compliance
- Such as: the NVWA's first entry in the National Algorithm Register

Lessons Learned on Data

- The NVWA data landscape is complex and fragmented
- Cooperation between different teams & skillsets is essential
- A dedicated innovation team helps us to move forward
- But the future of data-driven control planning is bright

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Netherlands Food and Consumer Product Safety Authority
Ministry of Agriculture, Nature and Food Quality

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