Tying up loose ends: How data harmonization fosters interoperability and data sharing

FoodChain-Lab Workshop United Kingdom | 15.-16.05.2025

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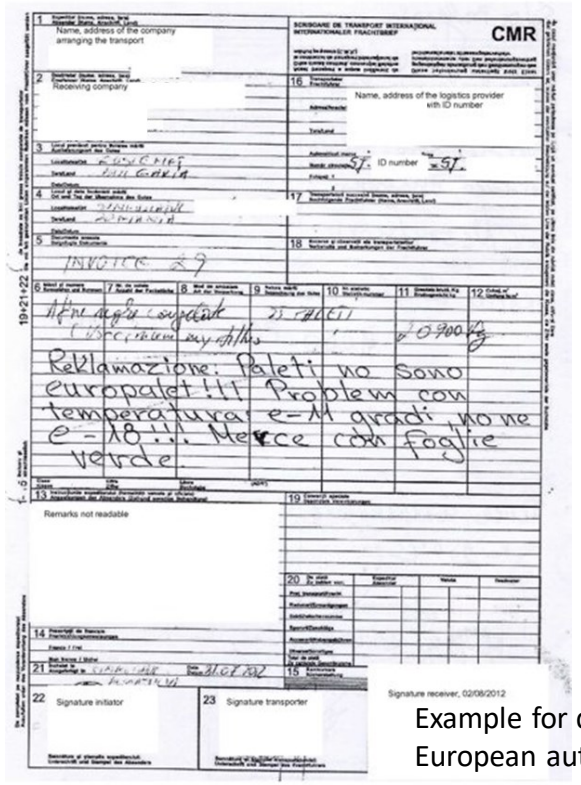
FCL was supported by EFSA-BfR Framework Partnership Agreements (FPA) GP/EFSA/AMU/2016/01 and GP/EFSA/AMU/2020/02, and received funding from the European Union's Horizon 2020 research and innovation programme under Grant Agreement No 773830 OH EJP COHESIVE.

The current situation: Fipronil incident as example

NL collects data

DE collects data

…



Example for data exchanged between European authorities

The current situation: Fipronil incident as example

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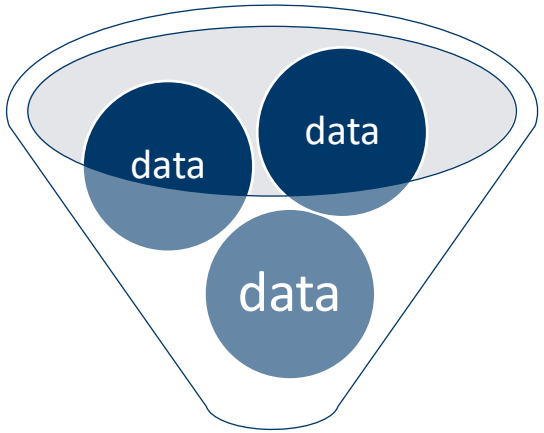
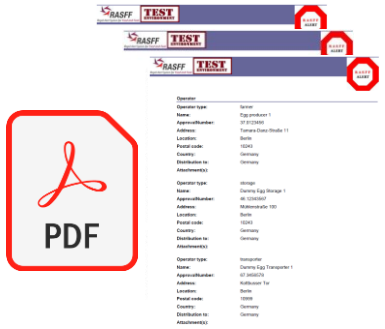
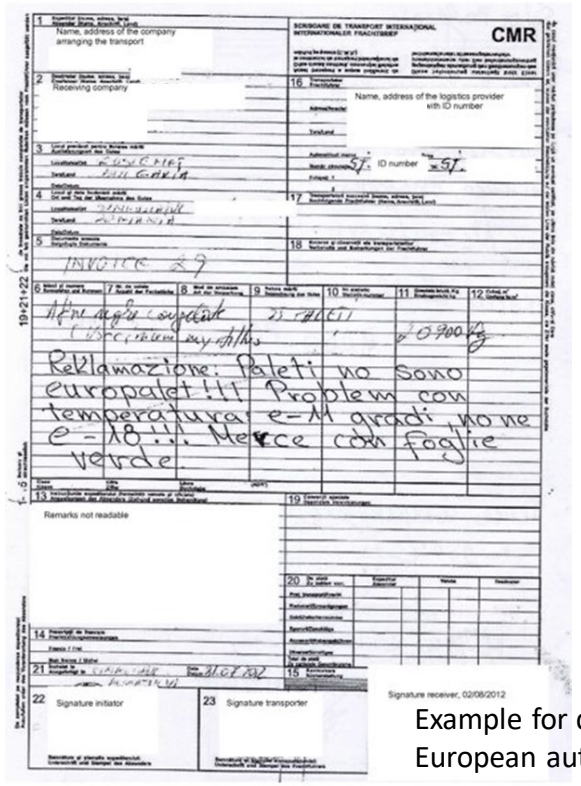


RASFF system





Example for data exchanged between European authorities

The current situation: Fipronil incident as example

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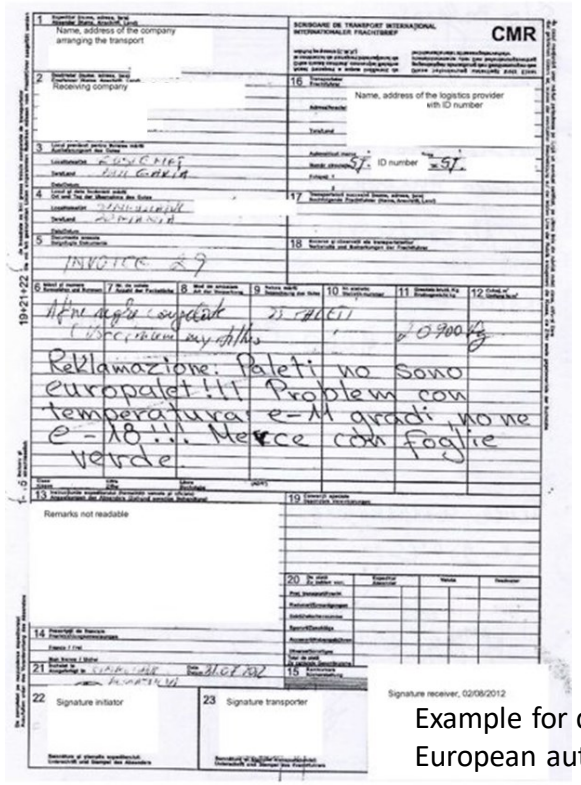
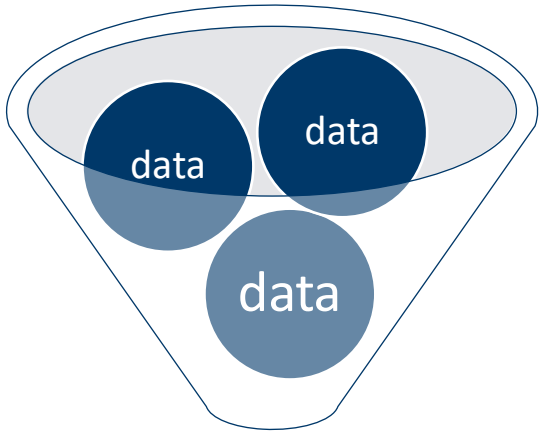


Example for data exchanged between European authorities



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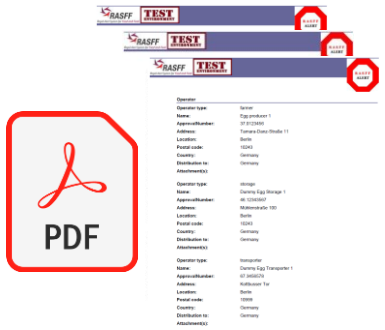


NL extracts data manually

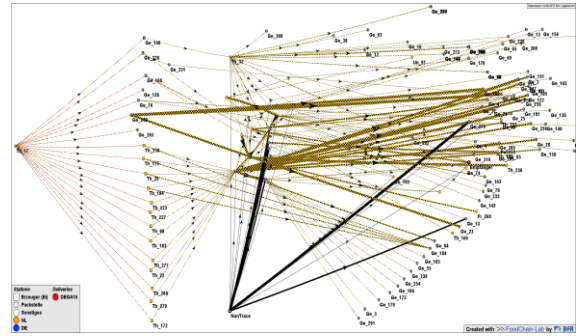
DE (BVL + BfR) extracts data manually

NRW extracts data manually

Duplication of work!

The challenge: Getting an overview on situation

Unstructured data, not machine-readable/paper-based, distributed across several follow-up notifications → limited usability of data



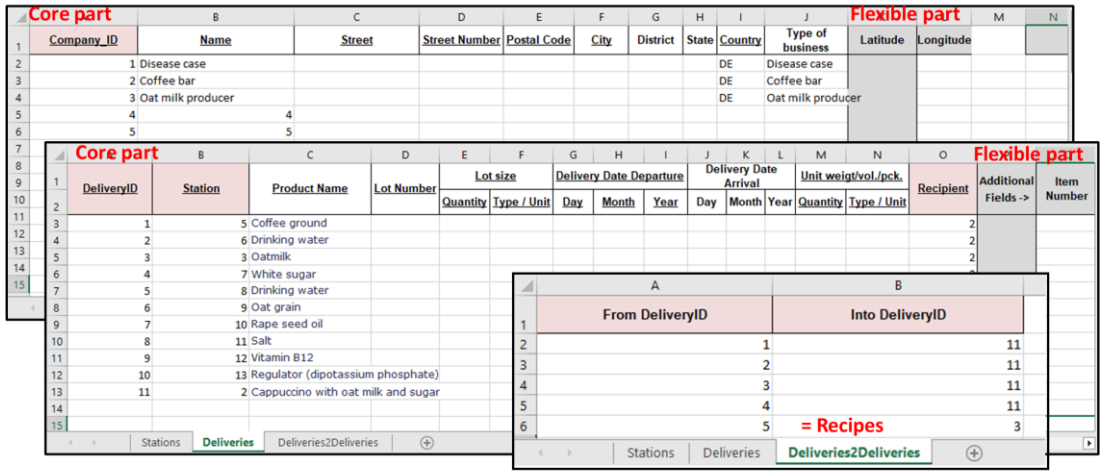
Need: Digital data in pre-agreed formats

Data collection and data extraction:
Structured excel templates as a first step

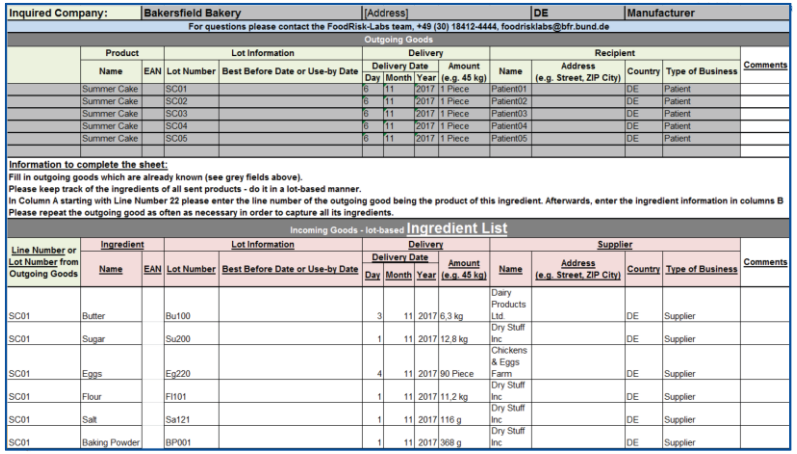
- Ready to use
- Easy to use and easily accessible
- Machine-readable
- Structured but not much standardised

- Tested and applied in real foodborne incidents

Can be customized for UK if needed

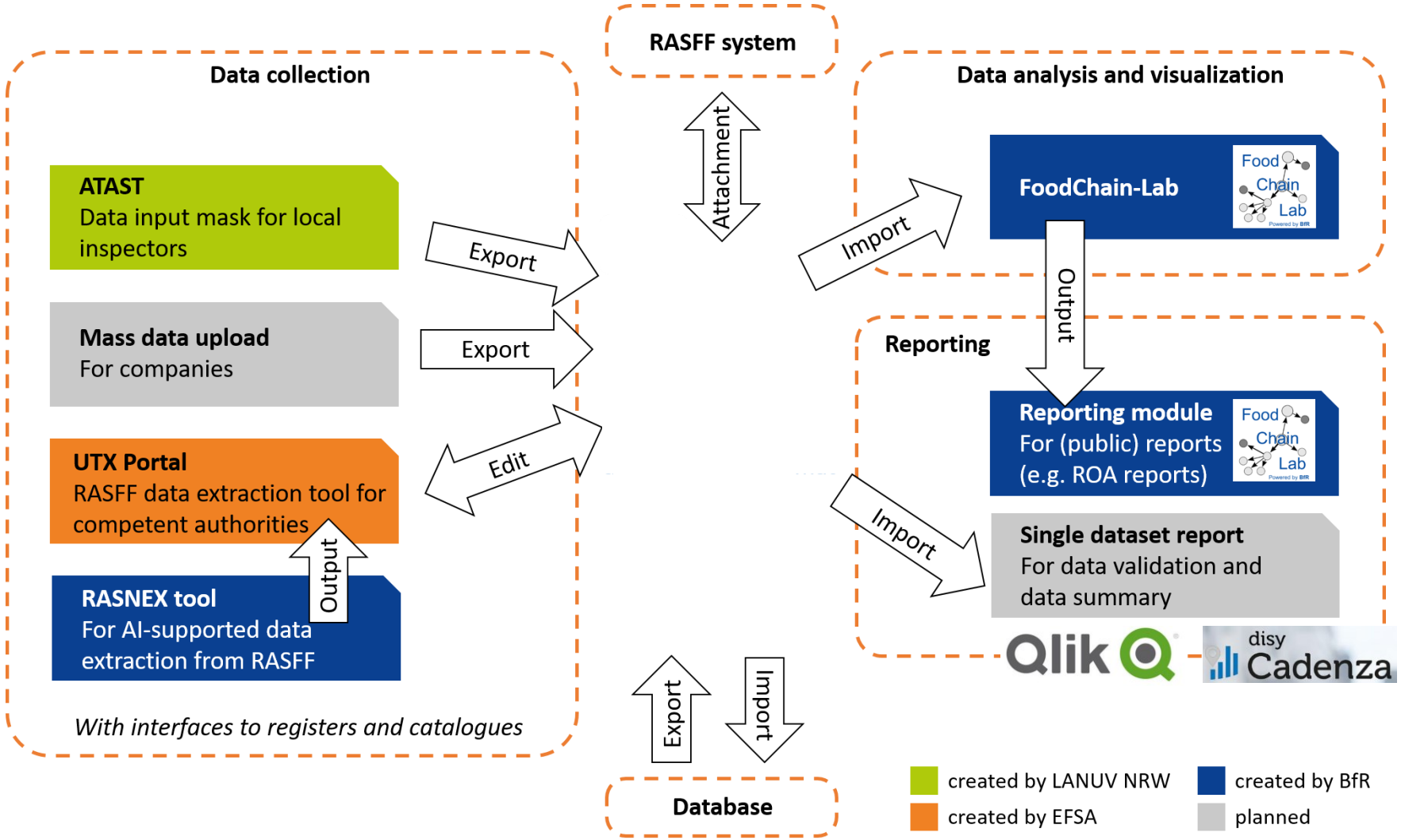


<u>FCL All-in-one template</u>
For data collection + extraction of data of whole incident in one file

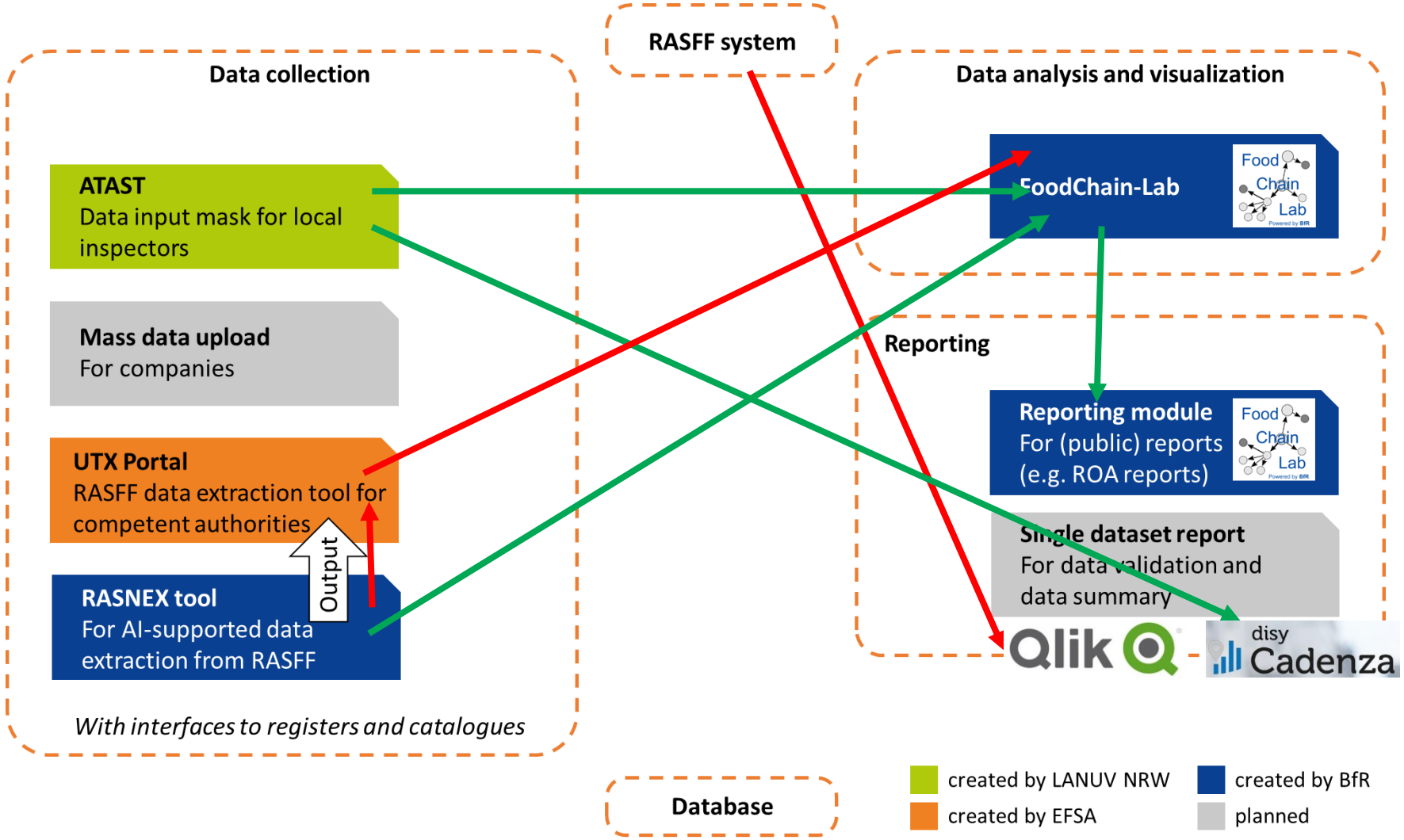


<u>FCL backward + forward tracing template</u>
For stepwise data collection e.g. done by inspectors on site or by food business operators

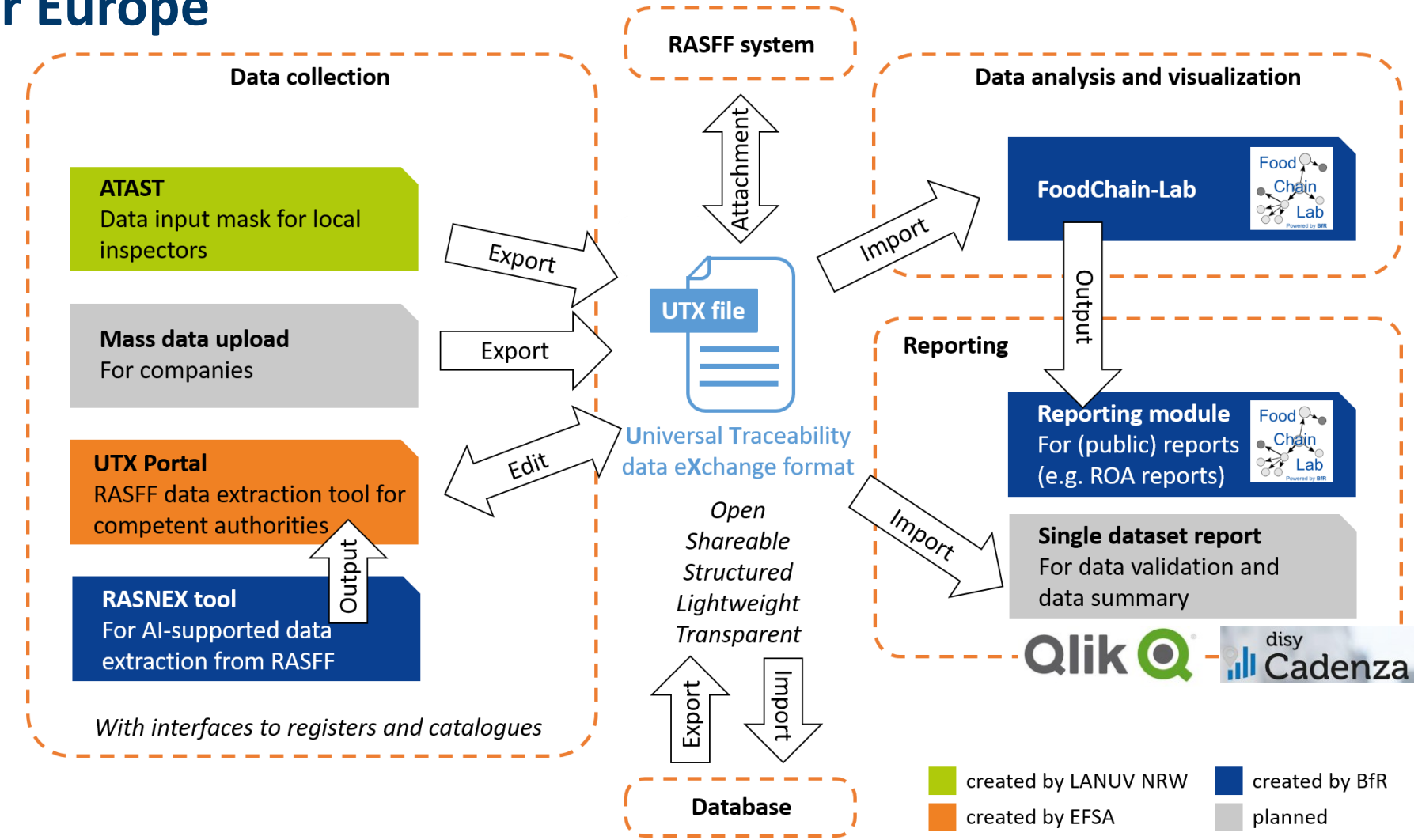
The interoperable multiactor food tracing software ecosystem for Europe



Some data exchange already in practice or under development



The future: An interoperable multiactor food tracing software ecosystem for Europe



Benefits:

Facilitate data exchange
Avoid double work
Easy visualisation + analysis

Your tool?
Feedback on UTX?

Please contact
foodrisklabs@bfr.bund.de

UTX is the container to move all tracing information at once

Successful collaboration needs successful communication!

The UTX format collects, structures and distributes all information. Additional tools in the workflow make the complex information accessible for the users:

- the UTX portal enables actors to collect and extract relevant information
- the tracing data exchange workflow gathers, consolidates, and analyses inputs from multiple actors
- the collaboration tools support specific reporting needs, final documentation, and overarching analysis of the food and feed system.

„The whole is greater than the sum of its parts.“

Aristotle

Universal Traceability data eXchange format (UTX)

Interoperable core data
Standardized, structured informationen

+

non-interoperable flexible data
Additional tool-specific data

UTX core data:

- Thematic data blocks with hierarchical structure
- Relations between data blocks
- Data blocks with clear structure and controlled vocabulary (catalogues, standards)
- Information stored on highest possible level
- Maximal extent of information vs. minimal requirement of information

Universal Traceability data eXchange format

Open
Shareable
Structured
Lightweight
Transparent

Main data blocks	**Stations**	**Product**	Activity	**Information**
Hierarchical sub-data blocks	Food business operator Station	Product Lot Traceable resource unit	Activity	Investigation Information source Contact Registration schemes (Measurement)

UTX could be shared between actors (e.g. via the RASFF system)

Published on Zenodo
https://zenodo.org/records/14775356

Universal Traceability data eXchange format (UTX)

Group	Data element	UTX Variable	UTX Type	UTX Constraints	Description	Examples	Value description
Identification	FBO-ID	id	PK: Text	Unique	Automatically assigned identifier		
Surrogate parameters allowing the identification of a FBO, when the FBO-ID is unknown	Description of the food business	description	Text		Short description of the food business, e.g. usual or brand names		Free text, 1000 characters
Surrogate parameters allowing the identification of a FBO, when the FBO-ID is unknown	Name and address of the food business	fboNameAddress	FK: Contact.id		Official food business name and address as registered, see table Contact		Free text, 200 characters
Surrogate parameters allowing the identification of a station, when the Station-ID is unknown	Website of the food business	website	Text		Website of the food business		
Description:	Start of activities of the establishment	activityStart	DateTime		Start of time period, when the food business was active, or time, when establishment started	Date / time	
Description:	End of activities of the establishment	activityEnd	DateTime		End of time period, when the food business was active, or time, when establishment started	Date / time or on-going (missing)	
Sub-table: List of registrations, certifications and alternative identifications	Alternative registration scheme	registrations[i].registrationScheme	FK: RegistrationSchemes.id		Registration of the food or feed business or case identification for consumer; also other registrations, certifications or other identifications of the food business, e.g. the first digits of the Global Trade Item Number (GTIN) identifying the company	Register-ID	Selected from registration list or newly inserted
Sub-table: List of registrations, certifications and alternative identifications	Registration number	registrations[i].registrationNumber	Text		Registration number in the scheme, e.g. the approval number, the GLOBALG.A.P. number etc.; also the Global Location Number (GLN)	Registration number	Text 80 characters
Sub-table: List of registrations, certifications and alternative identifications	Registration type in alternative scheme	registrations[i].registrationType	CV: RegistrationType		Indicator if the registration is done individually or on cooperative level.		Selection list: -Individual -Cooperative
List of contact persons	Name of contact person	personalContacts	FK: Contact.id[]		Contact persons in the food business or responsible authority to contact for retrieval of information		Selected from contact list or newly inserted
Documentation	Order, invoice, bill of lading, delivery note, receiving inspection, product information sheet	informationSources	FK: InformationSource.id[]	Mandatory	Relevant information describing the FBO.	List of information source-IDs	Selected from the information source table or newly inserted
Remarks	Comments	comments	Text		Any comments regarding the activity, mentionable factors, which might have impact on the investigations.		Free text, 1000 characters
Remarks	Investigation	investigations	FK: Investigation.id[]		Investigation, when entry was evaluated and eventually updated	List of Investigation-IDs	Selected from the Investigation table or newly inserted
Remarks	Last evaluation	lastEvaluationAt	DateTime		Date and time of the last evaluation of this entry		Automatic time stamp after explicit confirmation

Universal Traceability data eXchange format (UTX)

Group	Data element	UTX Variable	UTX Type	UTX Constraints	Description	Examples	Value description
Identification	Contact-ID	id	PK: Text	Unique			
Surrogate parameters allowing the identification of a station, when the Contact-ID is unknown	Name	name	Text		Name of the responsible contact person or unit for functional contacts; company name if contactType ="Station"		
Surrogate parameters allowing the identification of a station, when the Contact-ID is unknown	Role	role	Text		Short description on responsibilities at FBO, e.g. general contact, contact for specific food sectors, establishments, investigations etc., deputy		
Surrogate parameters allowing the identification of a station, when the Contact-ID is unknown	Contact type	contactType	CV: ContactType		Needed to differentiate a personal contact from a company contact (company address); automatically assigned: "Station" if linked to Station.stationNameAddress, "FBO" if linked to FBO.fboNameAddress, else "Personal"		Hidden list, automatically assigned: -Station; -FBO; -Personal;
Surrogate parameters allowing the identification of a station, when the Contact-ID is unknown	Address: Street	addressStreet	Text		Address to identify the physical location of the establishment; transport: where the transportation mean is regularly checked, cleaned, maintained, supplied; or postal address for sending letters; if FBO: Official postal address of the food business as registered; INSPIRE component: ThoroughfareName	INSPIRE scheme for coding of European addresses	
Surrogate parameters allowing the identification of a station, when the Contact-ID is unknown	Address: House Number	addressNumber	Text		Address to identify the physical location of the establishment; or postal address for sending letters; if FBO: Official postal address of the food business as registered; INSPIRE component: Locator Designator Type 1	INSPIRE scheme for coding of European addresses	
Surrogate parameters allowing the identification of a station, when the Contact-ID is unknown	Address: Other	addressOther	Text	Hidden to user, until he/she states that there are problems to enter all address details; then visible; free text	Anything in addition to the address information; or postal address for sending letters; if FBO: Official postal address of the food business as registered		
Surrogate parameters allowing the identification of a station, when the Contact-ID is unknown	Address: Building	addressBuilding	Text		Address to identify the physical location of the establishment; or postal address for sending letters; if FBO: Official postal address of the food business as registered; INSPIRE component: Locator Name Type 2 + Local Designator Type 5 (building name plus number)	INSPIRE scheme for coding of European addresses	
Surrogate parameters allowing the identification of a station, when the Contact-ID is unknown	Address: ZIP	addressZip	Text		Address to identify the physical location of the establishment; or postal address for sending letters; if FBO: Official postal address of the food business as registered; INSPIRE component: not found	INSPIRE scheme for coding of European addresses	
Surrogate parameters allowing the identification of a station, when the Contact-ID is unknown	Address: City	addressCity	Text		Address to identify the physical location of the establishment; or postal address for sending letters; if FBO: Official postal address of the food business as registered; INSPIRE component:	INSPIRE scheme for coding of European addresses	

EUROPEAN FOOD SAFETY AUTHORITY

BfR

Universal Traceability data eXchange format (UTX) – the schema

Supporting tools to fill UTX

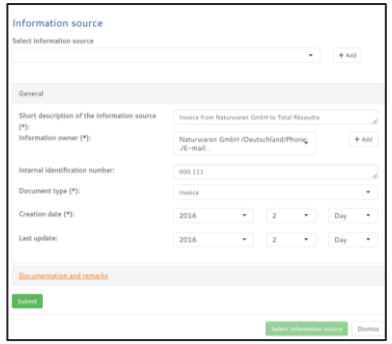
Main data blocks	Stations	Product	Activity	Information
Hierarchical sub-data blocks	Food business operator	Product	Activity	Investigation
	Station	Lot		Information source
		Traceable resource unit		Contact
				Registration schemes
				(Measurement)

RASFF NT FBO data base

Company names + addresses

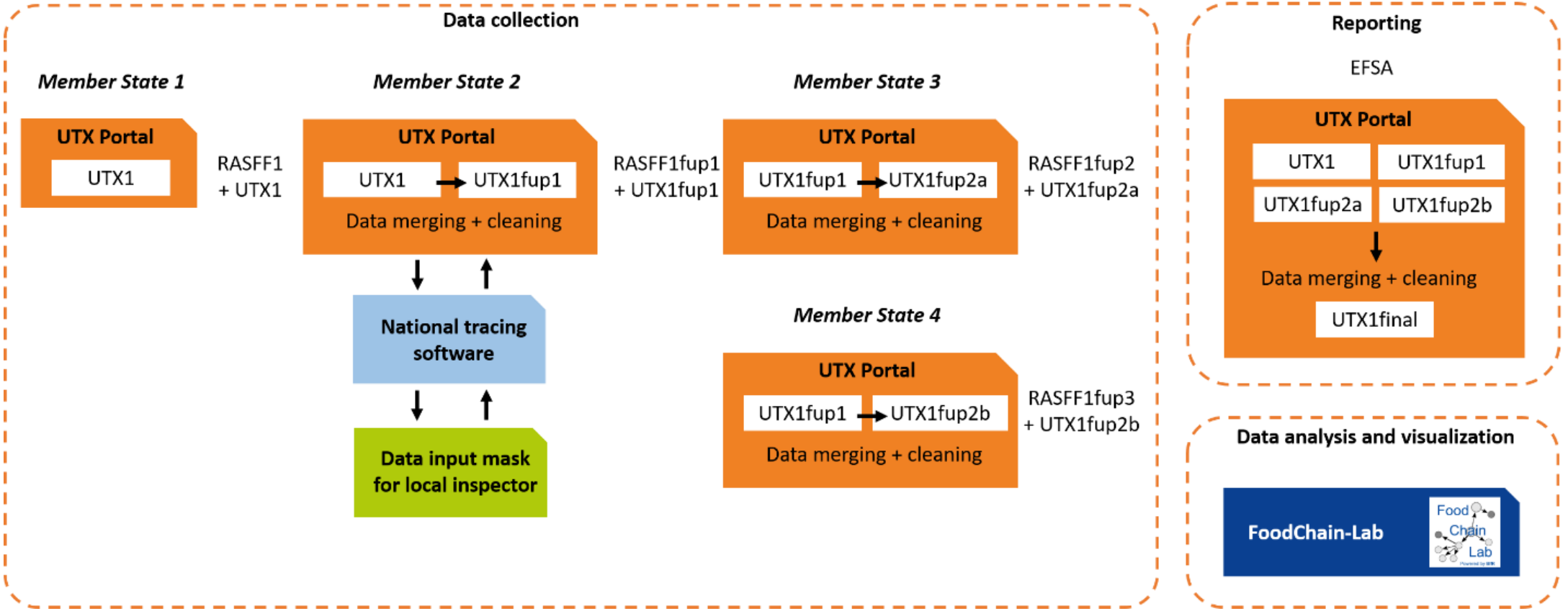
RASNEX dashboard for AI supported automated data extraction from RASFF notificaions

UTX Portal
Guided and structured manual data extraction



Potential workflow for data exchange using UTX

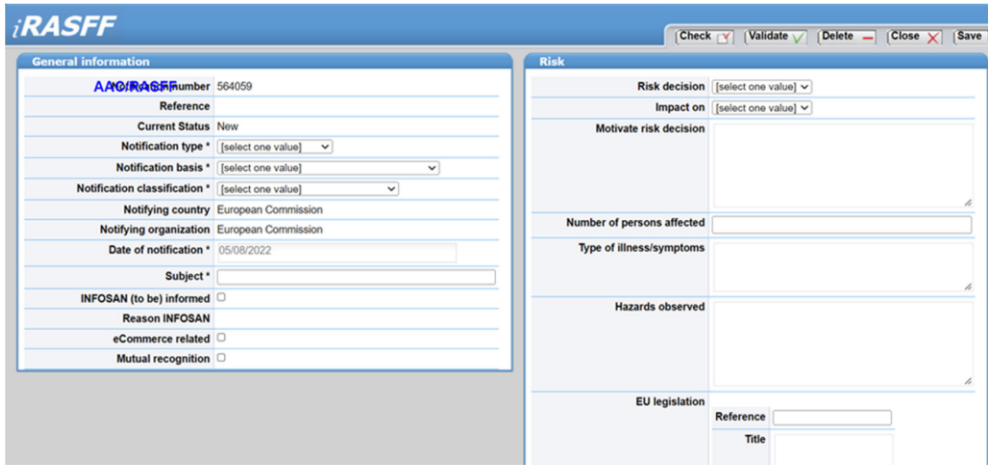
- uses the RASFF system for exchange
- communicates via UTX files
- exchanges structured information



Similar developments on EU level: iRASFF NT

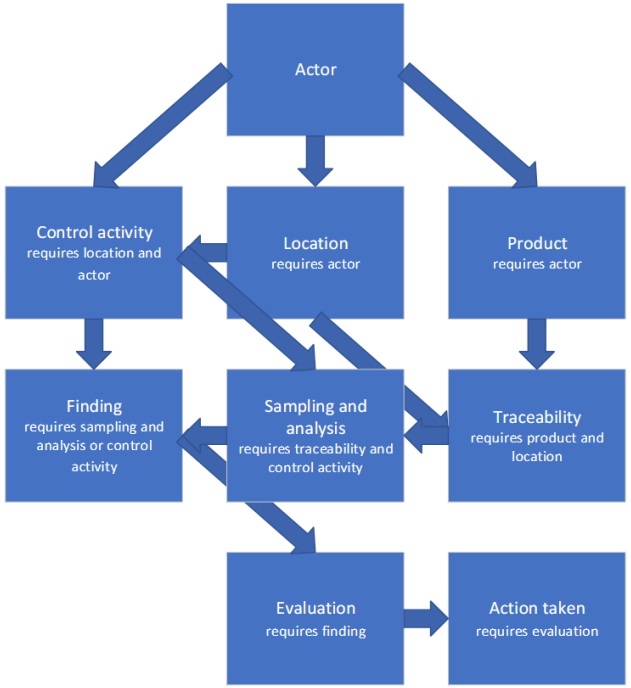
All figures by Jan Baele: https://foodrisklabs.bfr.bund.de/wp-content/uploads/2023/12/EC-presentation_traceability-workshop.pdf

Renewal of RASFF system



iRASFF → iRASFF NT

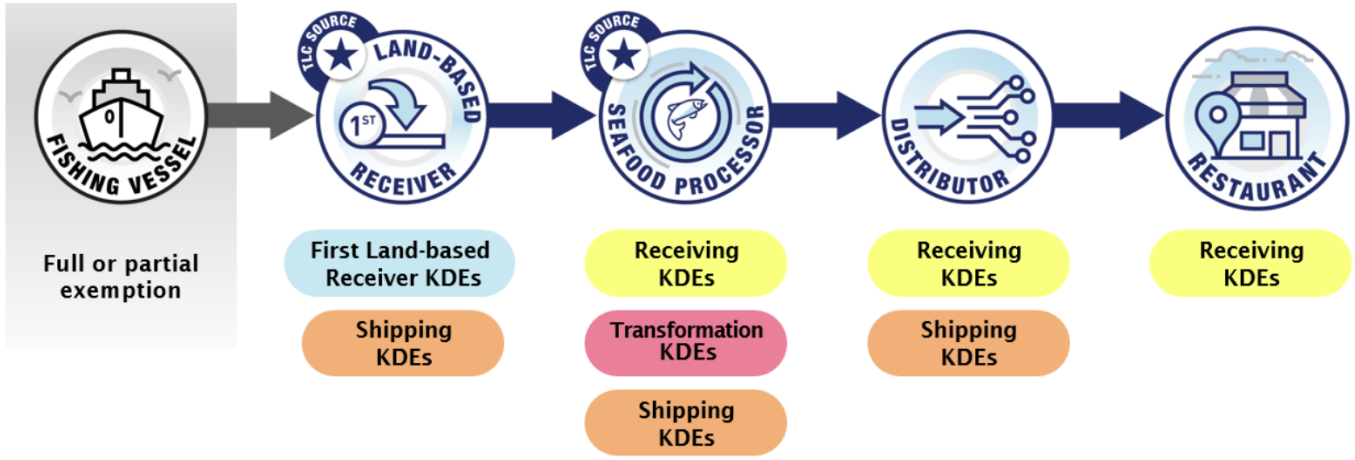
- Relying on data blocks with relations
- Use of standards (FoodEx2, SSD2)
- Focus on interoperability with other systems (TRACES)



UTX should not put double work on MS!
Digital data formats can be translated

Similar development: FDA´s New Era of Smarter Food Safety

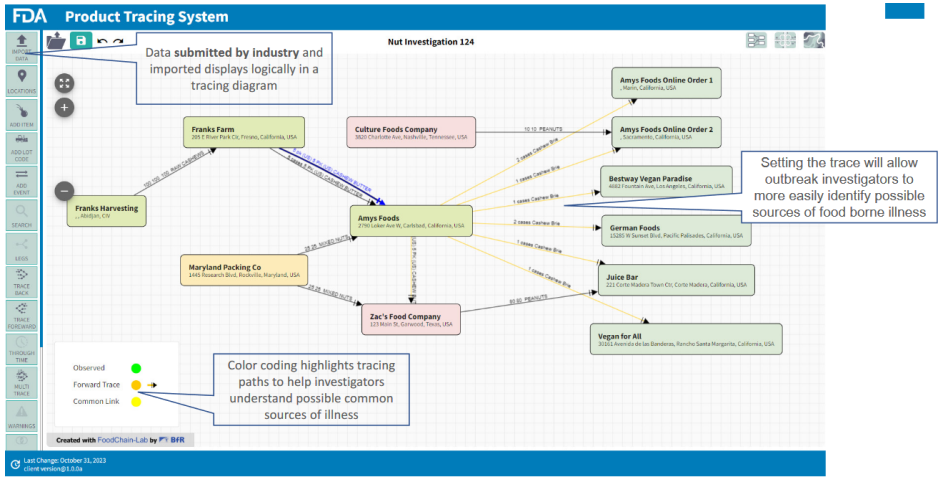
„Food Traceability Rule“ for harmonized data and data sharing



Product Tracing System

- Receive, process and visualize traceability data
- Improve traceback and traceforward analysis
- Government and industry collaboration
- FCL integrated in FDA system

FDA Product Tracing System + Food Chain Lab Powered by BfR



Collaboration between FDA and BfR

Demo video of PTS + FCL in action

https://www.fda.gov/food/new-era-smarter-food-safety/product-tracing-system

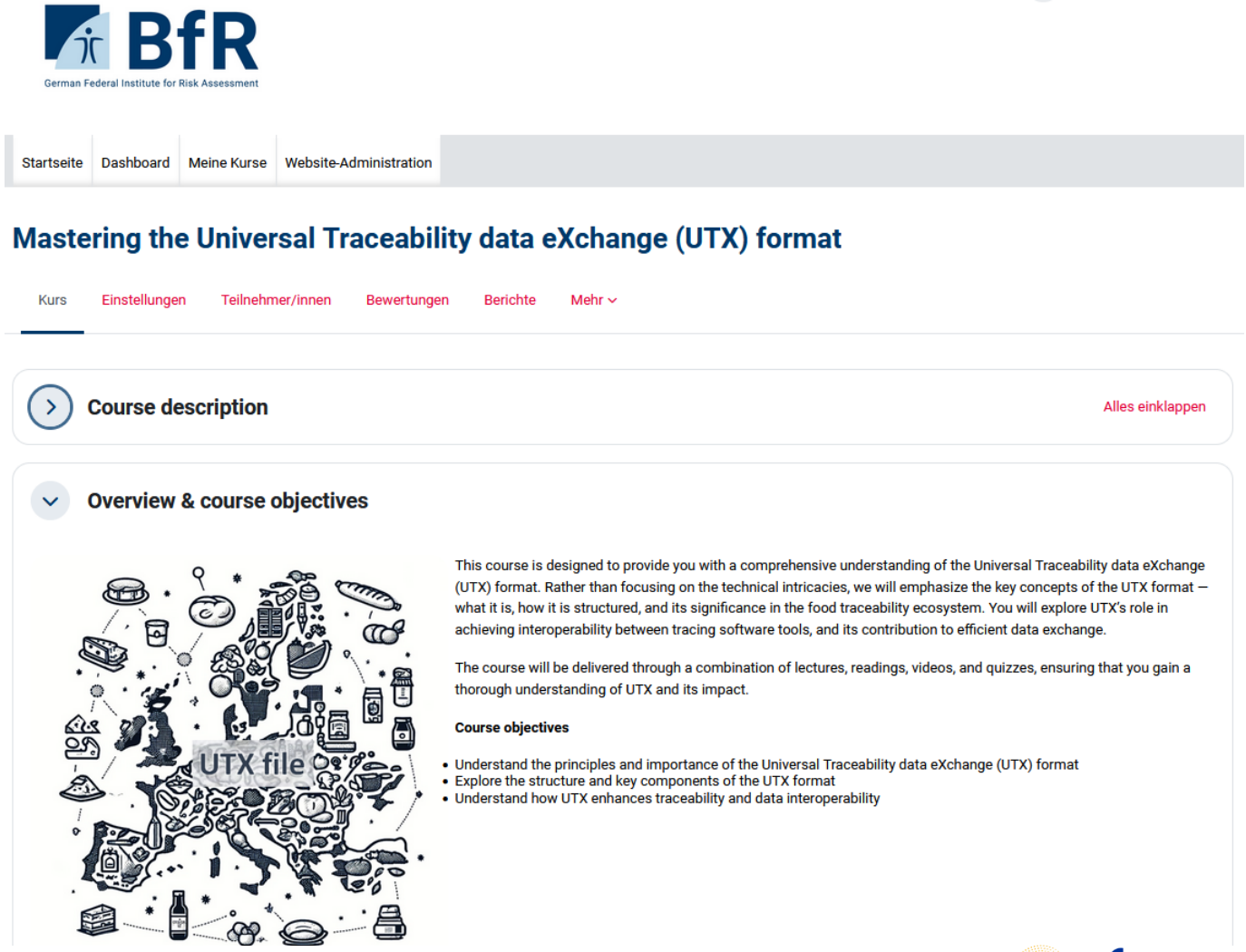
Understanding UTX – A moodle course

The course clarifies…

- Why the data format is needed for the exchange of tracing data
- The concept behind the new data format
- The properties of the data file

Course material

- Slides, pictures, a video
- Quizzes
- A forum for questions and answers



Thank you for your attention!

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EFSA-BfR tracing team

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EFSA: Olaf Mosbach-Schulz

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