

Backward and forward tracing analyses with FoodChain-Lab: Data collection, data structures, potential data needs

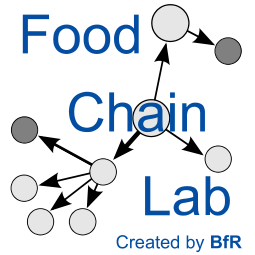
22.02.2023, Oeiras

Alexander Falenski, Marion Gottschald, Marco Rügen, Birgit Lewicki, Christian Thöns, Matthias Filter, Annemarie Käsbohrer, Bernd Appel, Karsten Nöckler, Armin A. Weiser

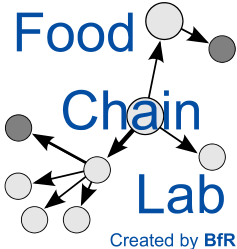
Outbreak: Tracing workflow using FoodChain-Lab I

First information on food producing company
involved in foodborne disease outbreak

Template
Start tracing template



Start Forward tracing template: Bakery and patients



Bakery

Inquired Company:	Bakersfield Bakery	[Address]	DE	Manufacturer
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For questions please contact the FoodRisk-Labs team, +49 (30) 18412-4444, foodrisklabs@bfr.bund.de

Products in Focus:	Relevant period of sale:	Onset of disease:

Information to complete the sheet:

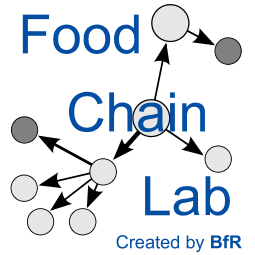
Please keep track of all delivered products matching the product descriptions that were sold during the relevant period in a lot-based manner.

<u>Recipient</u>				<u>Product</u>		<u>Lot Information</u>		<u>Delivery</u>			<u>Comments</u>	
<u>Name</u>	<u>Address</u> (e.g. Street, ZIP, City)	<u>Country</u>	<u>Type of Business</u>	<u>Name</u>	<u>EAN</u>	<u>Lot Number</u>	<u>Best Before</u> <u>Date or</u> <u>Use-by Date</u>	<u>Delivery Date</u>				<u>Amount</u> (e.g. 45 kg)
								<u>Day</u>	<u>Month</u>	<u>Year</u>		
Patient01		DE	Patient	Summer Cake		SC01		6	11	2017	1 Piece	
Patient02		DE	Patient	Summer Cake		SC02		6	11	2017	1 Piece	
Patient03		DE	Patient	Summer Cake		SC03		6	11	2017	1 Piece	
Patient04		DE	Patient	Summer Cake		SC04		6	11	2017	1 Piece	
Patient05		DE	Patient	Summer Cake		SC05		6	11	2017	1 Piece	

Patients

Contaminated product

Outbreak: Tracing workflow using FoodChain-Lab II



First information on food producing company involved in foodborne disease outbreak

Template
Start tracing template

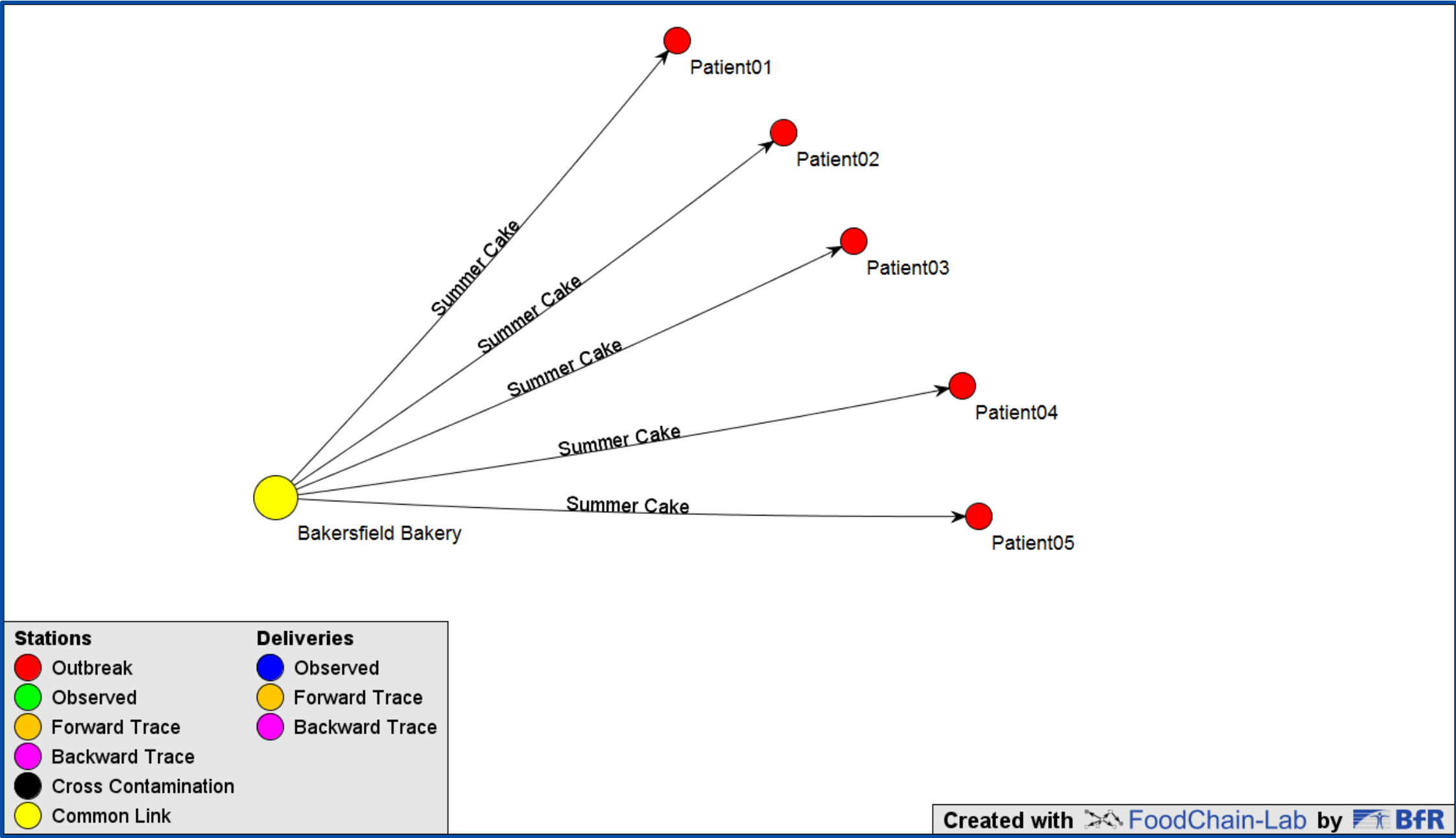
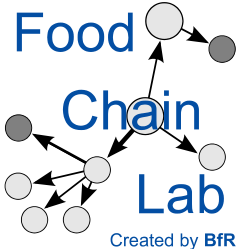


Database
Import tracing template

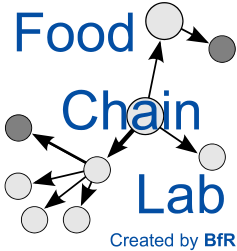


Tracing View
View network
Generate hypotheses

Tracing View: Bakery and patients



Outbreak: Tracing workflow using FoodChain-Lab III



First information on food producing company involved in foodborne disease outbreak

Template
Start tracing template



Database
Import tracing template



Tracing View
View network
Generate hypotheses

Template
Pre-filled tracing template



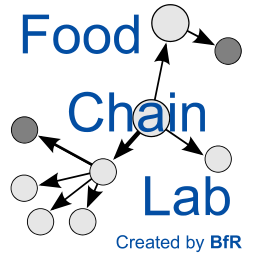
Database
Generate templates (backward / forward)



Pre-filled backtracing template generated by the database

Inquired Company:	Bakersfield Bakery	[Address]	DE	Manufacturer									
For questions please contact the FoodRisk-Labs team, +49 (30) 18412-4444, foodrisklabs@bfr.bund.de													
Outgoing Goods													
	Product		Lot Information		Delivery			Recipient			Comments		
	Name	EAN	Lot Number	Best Before Date or Use-by Date	Delivery Date			Amount (e.g. 45 kg)	Name	Address (e.g. Street, ZIP City)		Country	Type of Business
					Day	Month	Year						
	Summer Cake		SC01		6	11	2017	1 Piece	Patient01		DE	Patient	
	Summer Cake		SC02		6	11	2017	1 Piece	Patient02		DE	Patient	
	Summer Cake		SC03		6	11	2017	1 Piece	Patient03		DE	Patient	
	Summer Cake		SC04		6	11	2017	1 Piece	Patient04		DE	Patient	
	Summer Cake		SC05		6	11	2017	1 Piece	Patient05		DE	Patient	
Information to complete the sheet:													
Fill in outgoing goods which are already known (see grey fields above).													
Please keep track of the ingredients of all sent products - do it in a lot-based manner.													
In Column A starting with Line Number 22 please enter the line number of the outgoing good being the product of this ingredient. Afterwards, enter the ingredient information in													
Please repeat the outgoing good as often as necessary in order to capture all its ingredients.													
Incoming Goods - lot-based Ingredient List													
Line Number or Lot Number from Outgoing Goods	Ingredient		Lot Information		Delivery			Supplier			Comments		
	Name	EAN	Lot Number	Best Before Date or Use-by Date	Delivery Date			Amount (e.g. 45 kg)	Name	Address (e.g. Street, ZIP City)		Country	Type of Business
					Day	Month	Year						

REGULATION (EC) No. 178/2002, Article 18, Traceability

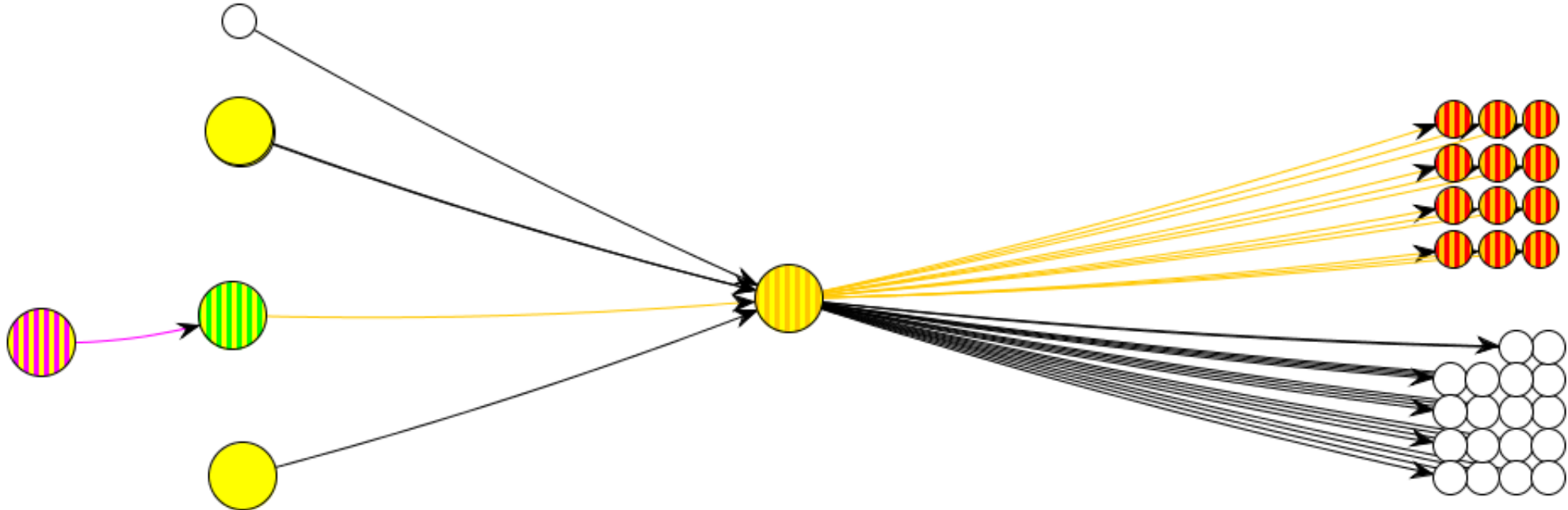
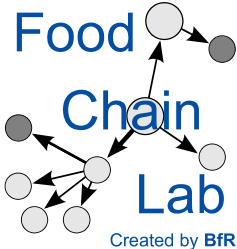


- (1) **at all stages of production, processing and distribution** intended to be, or expected to be, incorporated into a food or feed shall be established **at all stages of production, processing and distribution**.
- (2) **food and feed business operators** shall be able to **identify any person** from whom they have been **supplied**

To this end, such operators shall have in place **systems and procedures** which allow for this information to be made available to the competent authorities **on demand**.

- (3) **to** which their products have been **supplied** **identify the other businesses to** which their products have been **supplied**. This information shall be made available to the competent authorities **on demand**.

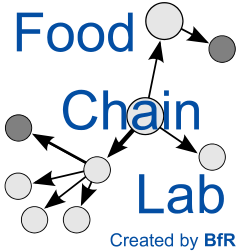
Inquiry at a cake manufacturer



The pre-filled backtracing template has been completed

Inquired Company:	Bakersfield Bakery		[Address]			DE		Manufacturer					
For questions please contact the FoodRisk-Labs team, +49 (30) 18412-4444, foodrisklabs@bfr.bund.de													
Outgoing Goods													
	Product		Lot Information		Delivery			Recipient			Comments		
	Name	EAN	Lot Number	Best Before Date or Use-by Date	Delivery Date			Amount (e.g. 45 kg)	Name	Address (e.g. Street, ZIP City)		Country	Type of Business
					Day	Month	Year						
	Summer Cake		SC01		6	11	2017	1 Piece	Patient01		DE	Patient	
	Summer Cake		SC02		6	11	2017	1 Piece	Patient02		DE	Patient	
	Summer Cake		SC03		6	11	2017	1 Piece	Patient03		DE	Patient	
	Summer Cake		SC04		6	11	2017	1 Piece	Patient04		DE	Patient	
	Summer Cake		SC05		6	11	2017	1 Piece	Patient05		DE	Patient	
Information to complete the sheet:													
Fill in outgoing goods which are already known (see grey fields above).													
Please keep track of the ingredients of all sent products - do it in a lot-based manner.													
In Column A starting with Line Number 22 please enter the line number of the outgoing good being the product of this ingredient. Afterwards, enter the ingredient information in columns B													
Please repeat the outgoing good as often as necessary in order to capture all its ingredients.													
Incoming Goods - lot-based Ingredient List													
Line Number or Lot Number from Outgoing Goods	Ingredient		Lot Information		Delivery			Supplier			Comments		
	Name	EAN	Lot Number	Best Before Date or Use-by Date	Delivery Date			Amount (e.g. 45 kg)	Name	Address (e.g. Street, ZIP City)		Country	Type of Business
					Day	Month	Year						
SC01	Butter		Bu100		3	11	2017	6,3 kg	Dairy Products Ltd.		DE	Supplier	
SC01	Sugar		Su200		1	11	2017	12,8 kg	Dry Stuff Inc		DE	Supplier	

Outbreak: Tracing workflow using FoodChain-Lab IV



First information on food producing company involved in foodborne disease outbreak

Template
Start tracing template



Template
Completed tracing template



Database
Import tracing template



Food Safety Officer
Conducts interviews with companies

Tracing View
View network
Generate hypotheses

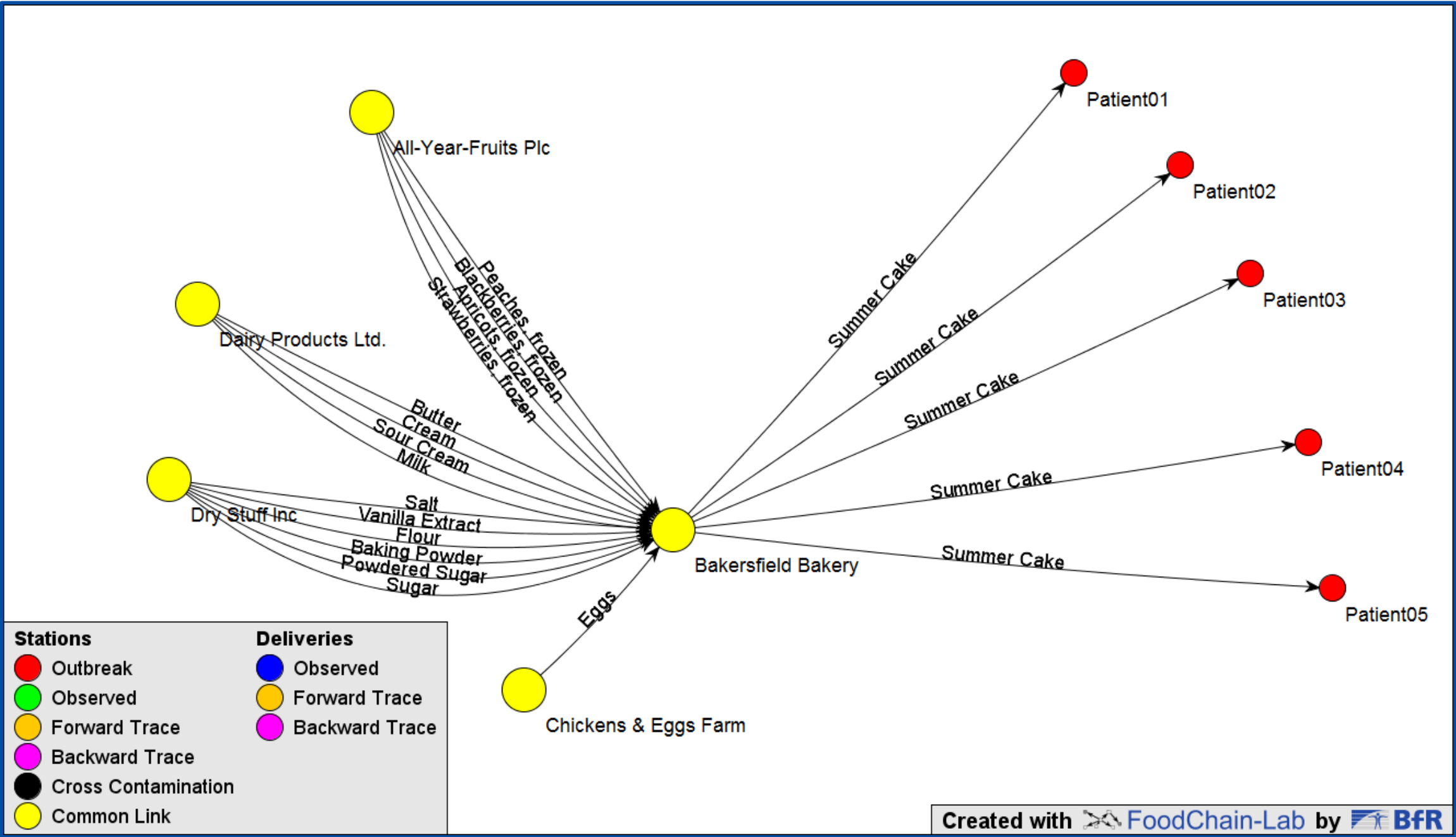
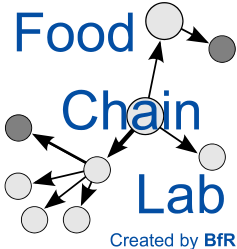
Template
Pre-filled tracing template



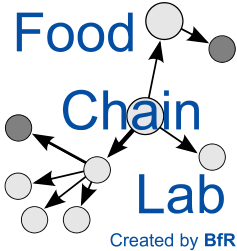
Database
Generate templates (backward / forward)



Tracing View: Bakery and patients



Outbreak: Tracing workflow using FoodChain-Lab V



First information on food producing company involved in foodborne disease outbreak

Template
Start tracing template



Template
Completed tracing template



Database
Import tracing template



Food Safety Officer
Conducts interviews with companies

Tracing View
View network
Generate hypotheses

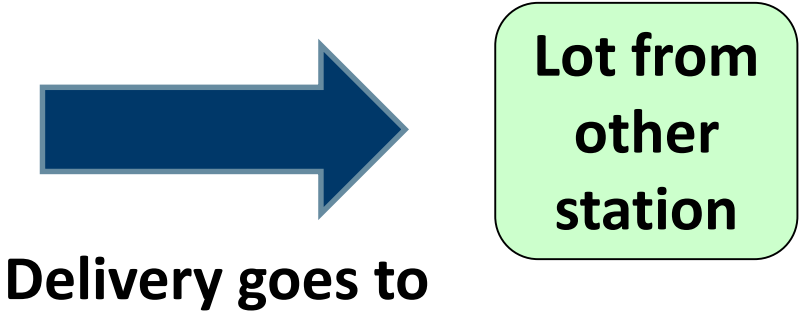
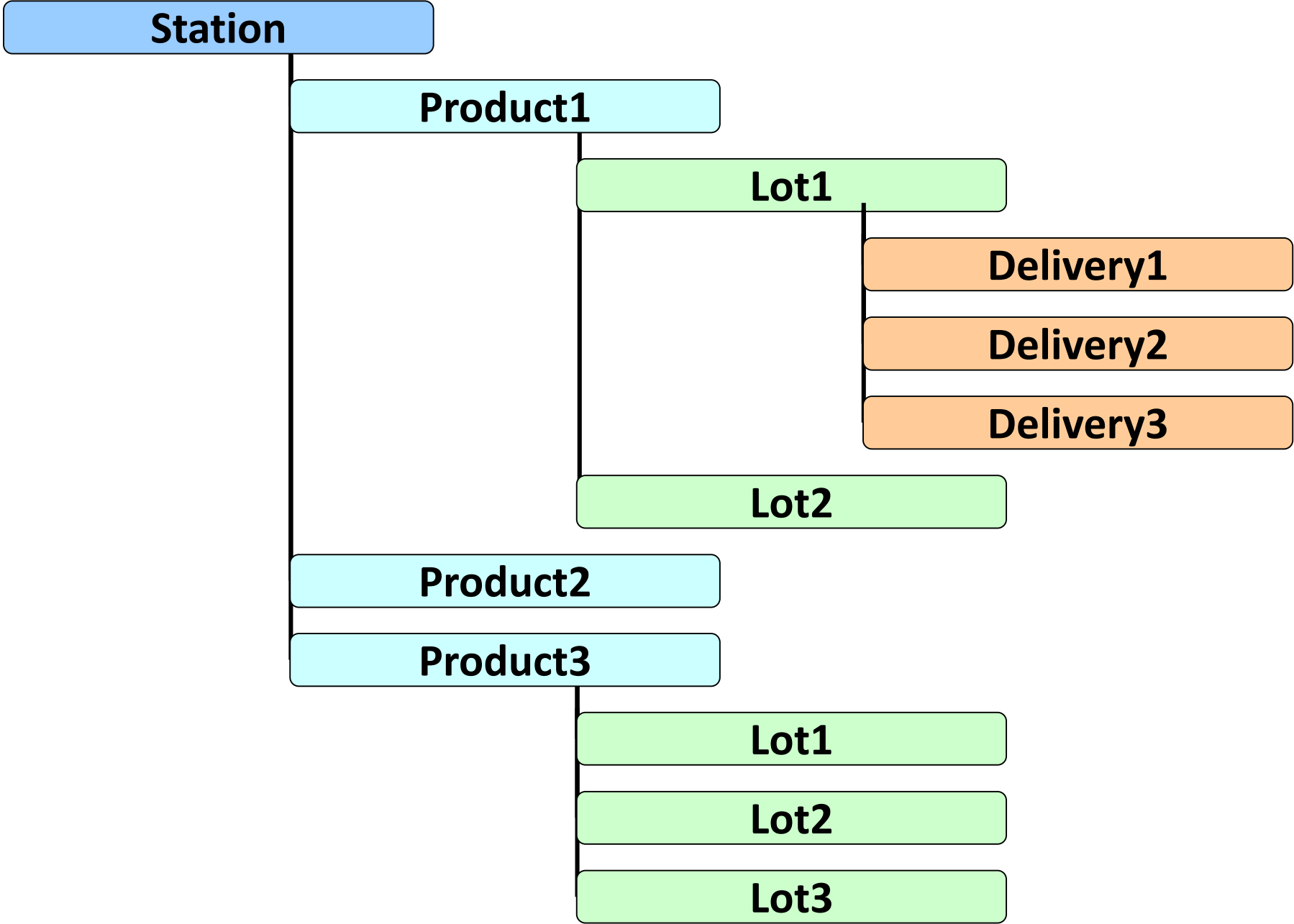
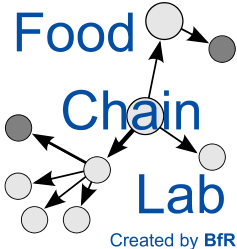
Template
Pre-filled tracing template



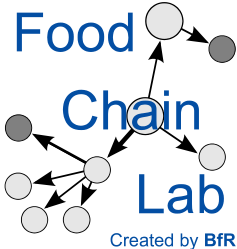
Database
Generate templates (backward / forward)



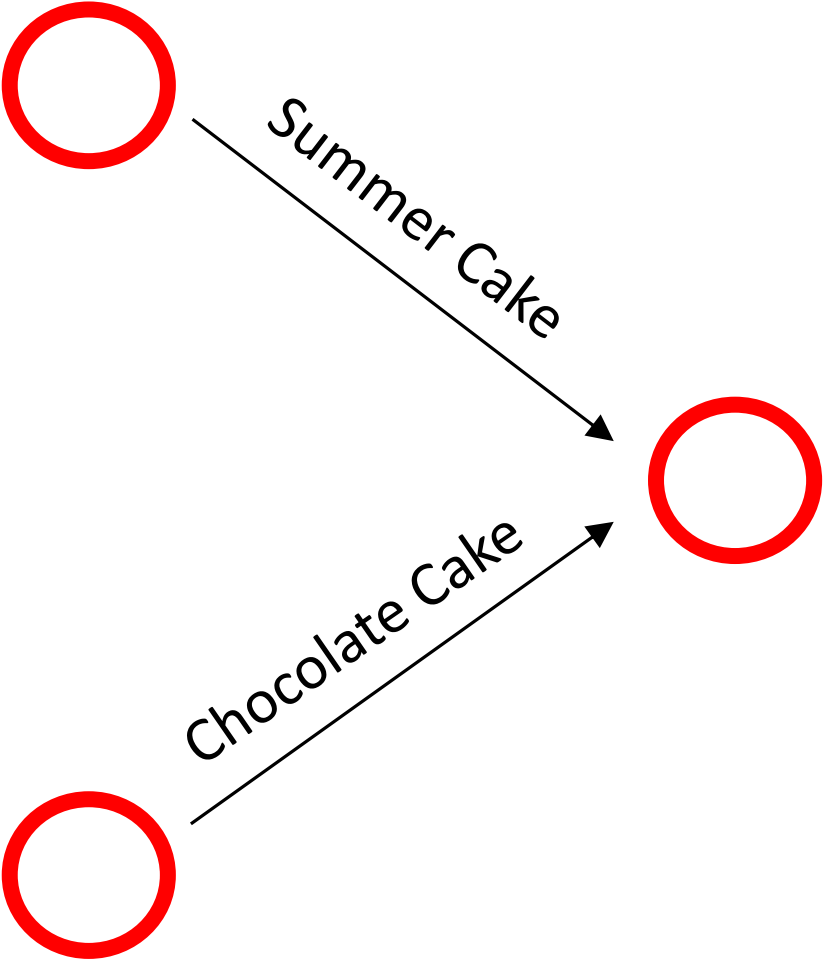
Database: Structure of food chains



Database: Data Cleaning



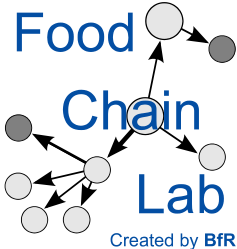
Bakersfield Bakery
Sesame Street 15
12345 Crumbling Hills
Germany



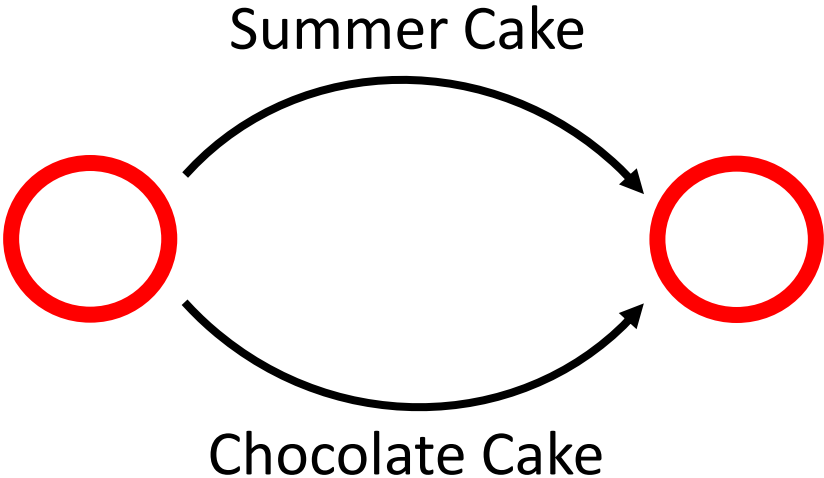
Luxury Hotel
Hilltop 1
12234 Pompous Hills
Germany

Bakersfield Bakery
See Same Street 15
12345 Crumbling Hills
Germany

Database: Data Cleaning

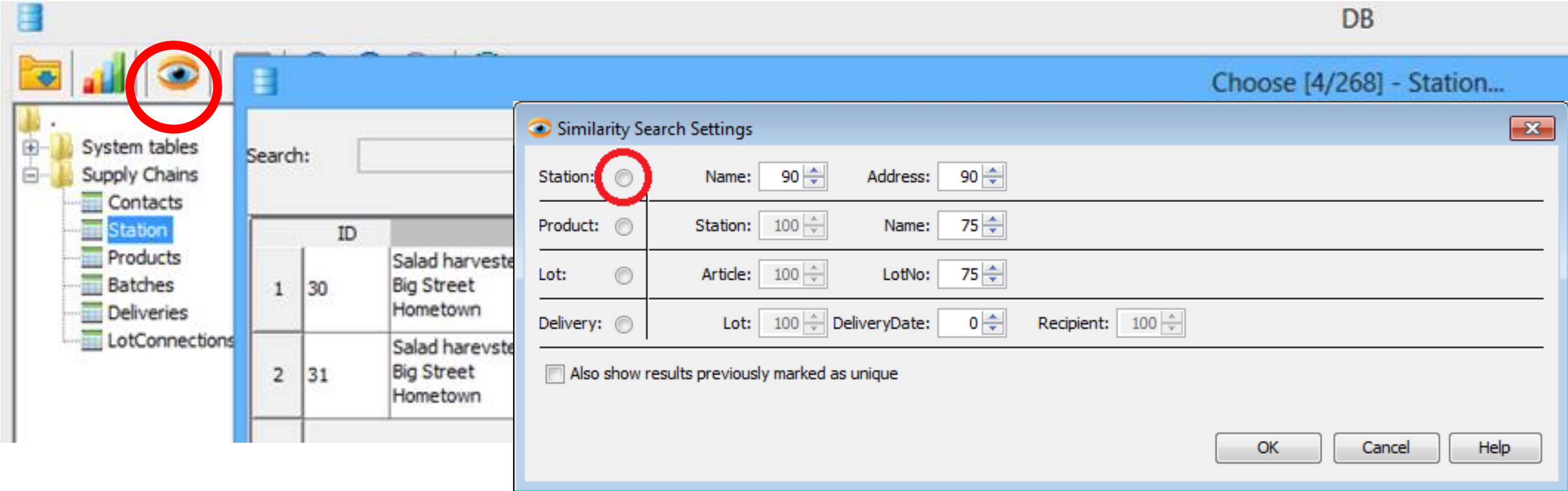


Bakersfield Bakery
Sesame Street 15
12345 Crumbling Hills
Germany



Luxury Hotel
Hilltop 1
12234 Pompous Hills
Germany

FoodChain-Lab: Data Cleaning

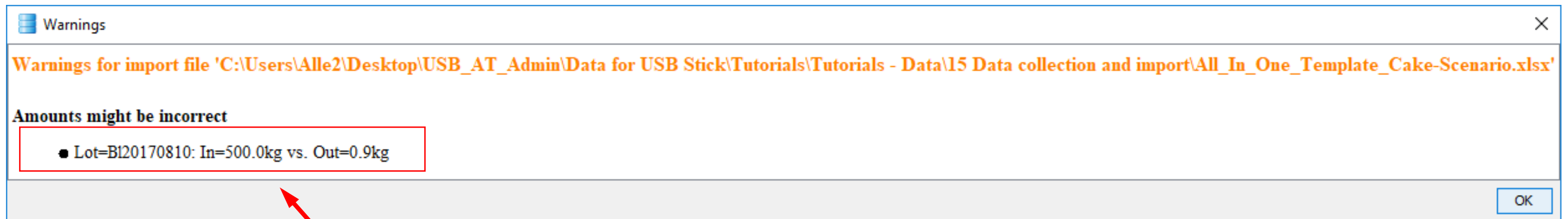
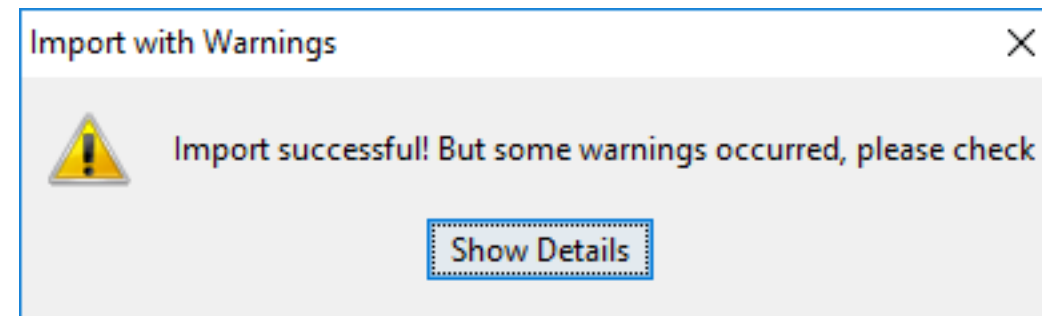
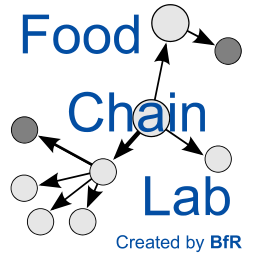


Finding duplicates

M	A	Y	O	N	N	A	I	S	E
=	=	=	=	=	-	=	=	=	=
M	A	Y	O	N		A	I	S	E

E:	L	E	P	H	A	N	T
=	=	=	o	-	=	=	=
E	L	E	F		A	N	T

Database: Plausibility checks



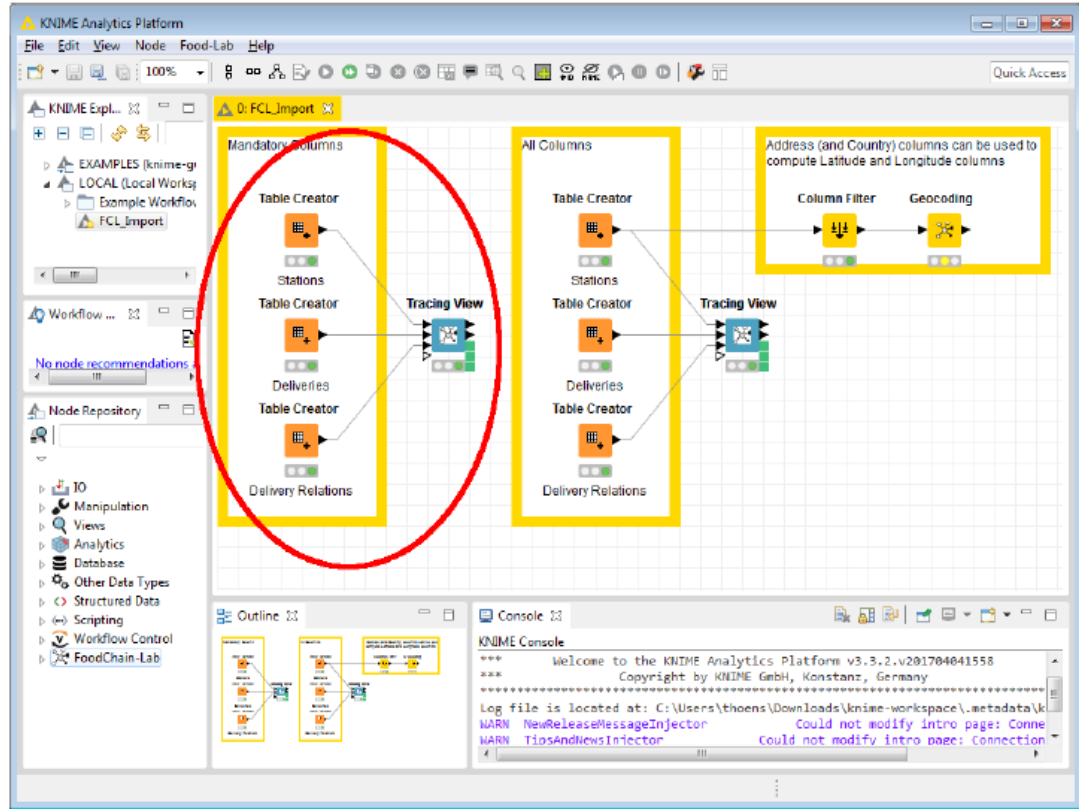
● Lot = Bl20170810: In = 500.0kg vs. Out = 0.9kg

Individual import of data from external sources

Import Data from External Sources

Topics

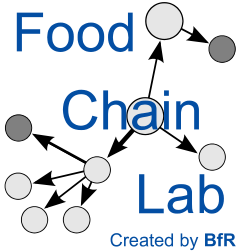
- 1
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11
- 12
- 13
- 14
- 15
- 16



- FoodChain-Lab needs three tables to perform a tracing analysis: **Stations**, **Deliveries** and **Delivery Relations**.
- The **Table Creator** nodes on the left show all mandatory columns for these three tables.

Tutorial: <https://foodrisklabs.bfr.bund.de/data-import-from-external-sources>

Classification



Station

- Company name
- Address
- Geolocalisation
- Type of business

Type

- String
- Address formats
- GIS formats
- String

Content

Several types of business possible

Delivery

- Product name
- Product type
- Lot no.
- Delivery date
- Best before date
- Amount
- Temperature
- Delivery relations

- String
- String
- String
- Date formats
- Date formats
- Units
- Units

Food category, hierarchical classification

Food catalog

Alexander Falenski

German Federal Institute for Risk Assessment
bfr.bund.de/en


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Protect Health

Consumer health protection to go
BfR2GO – the BfR Science Magazine


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