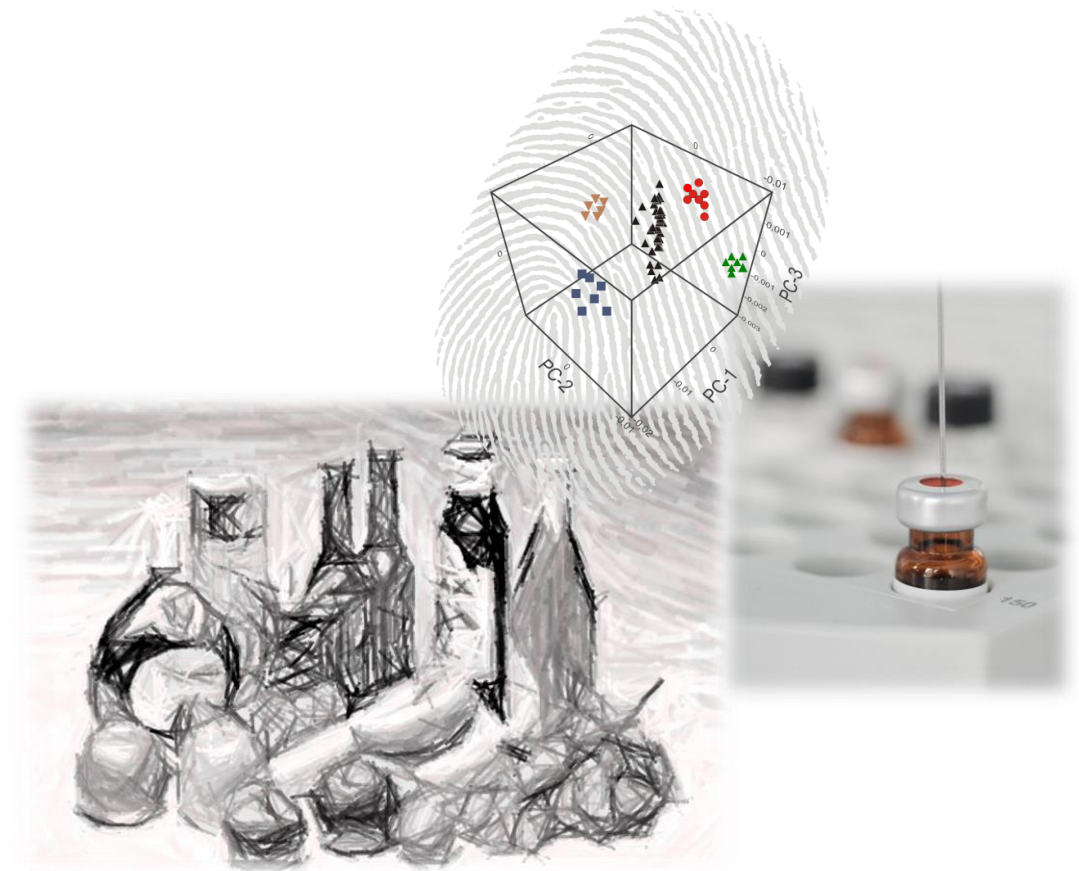


Planned project: FoodAuthent

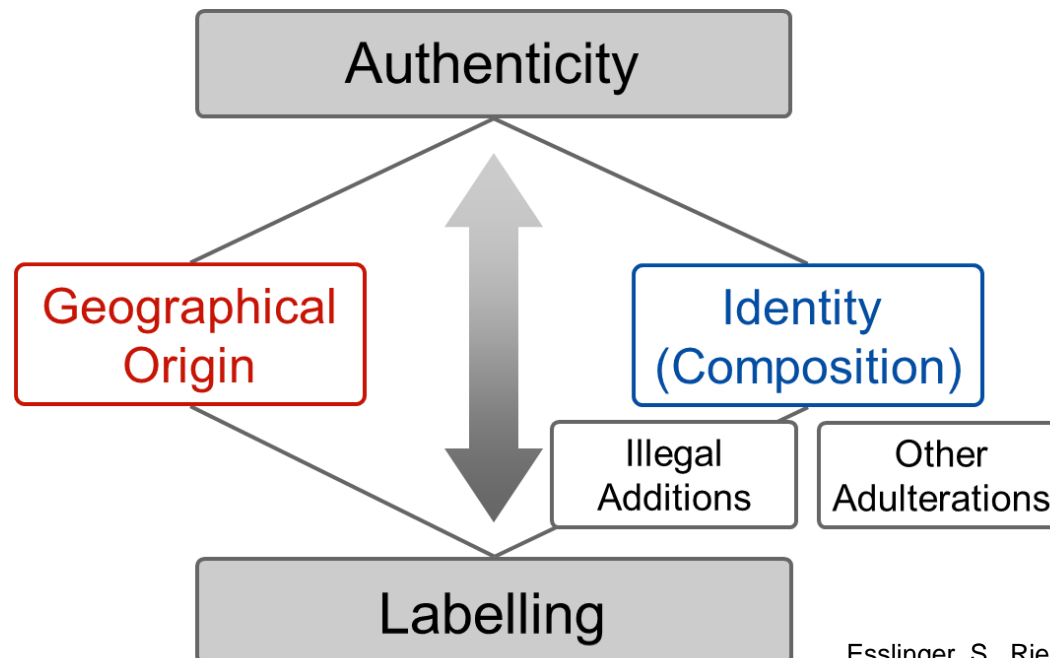
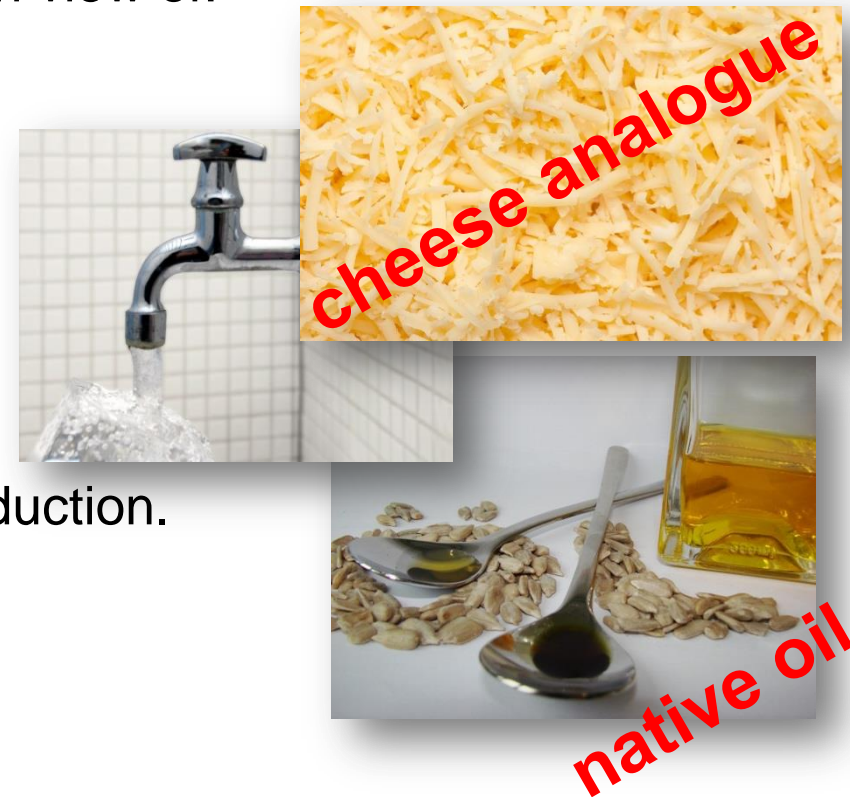
Susanne Esslinger
and Matthias Filter



Authentication of food and feed

Authentication: Confirmation of all requirements regarding the legal product description or the detection of the fraudulent statements, particularly in view of:

- (i) the **substitution** by cheaper but similar ingredients,
- (ii) the **extension** of food using adulterants (e.g. water, starch incl. exogenous material) or blending and/or **undeclared processes** (e.g. irradiation, extraction)
- (iii) the origin, e.g. geographic, species or method of production.

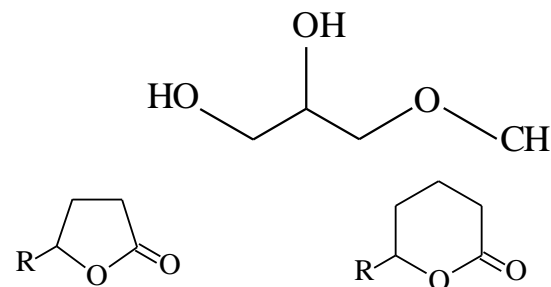


Esslinger, S., Riedl, J., Fauhl-Hassek, C., Food Research International, 60, 189-204 (2014)

Analytical methods for authentication

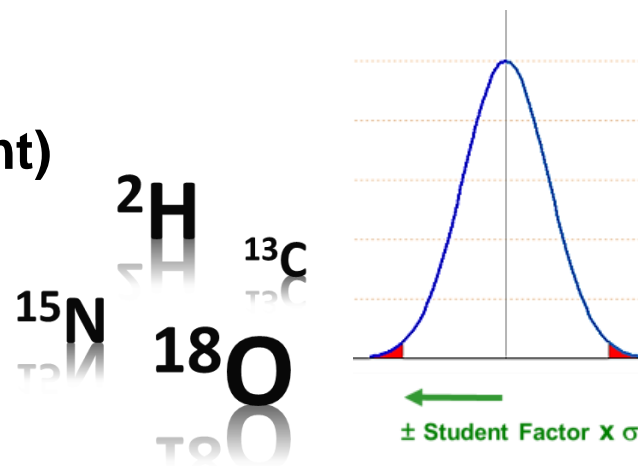
1. Certain exogenous compounds

- targeted analysis
- validated analytical method
- “absence” scientifically accepted



2. Authenticity range of analyte (natural ingredient)

- validated analytical method,
- “ranges” scientifically accepted?

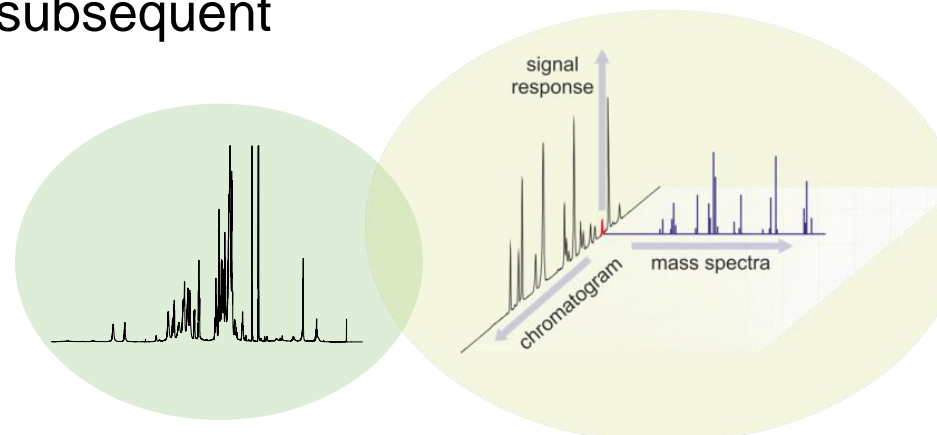


3. Food Profiling

- targeted analysis of parameters and subsequent chemometric data evaluation

4. Novel approaches: Fingerprinting

- non-targeted analytical method



“Court-proof”

Authentication by non targeted analysis/fingerprinting

Aim: Identification of deviations from the expected product

Non-targeted analysis

Database creation/establishment

Data pre-processing
(e.g. baseline correction, alignment)

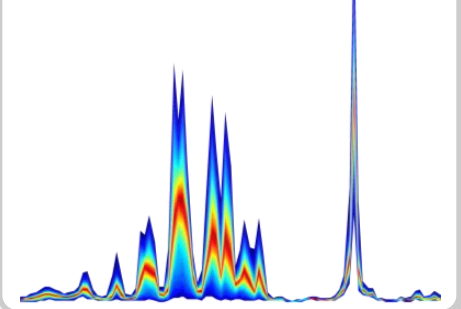
Data evaluation
- univariate and/or multivariate -

Identification of characteristic key
compounds

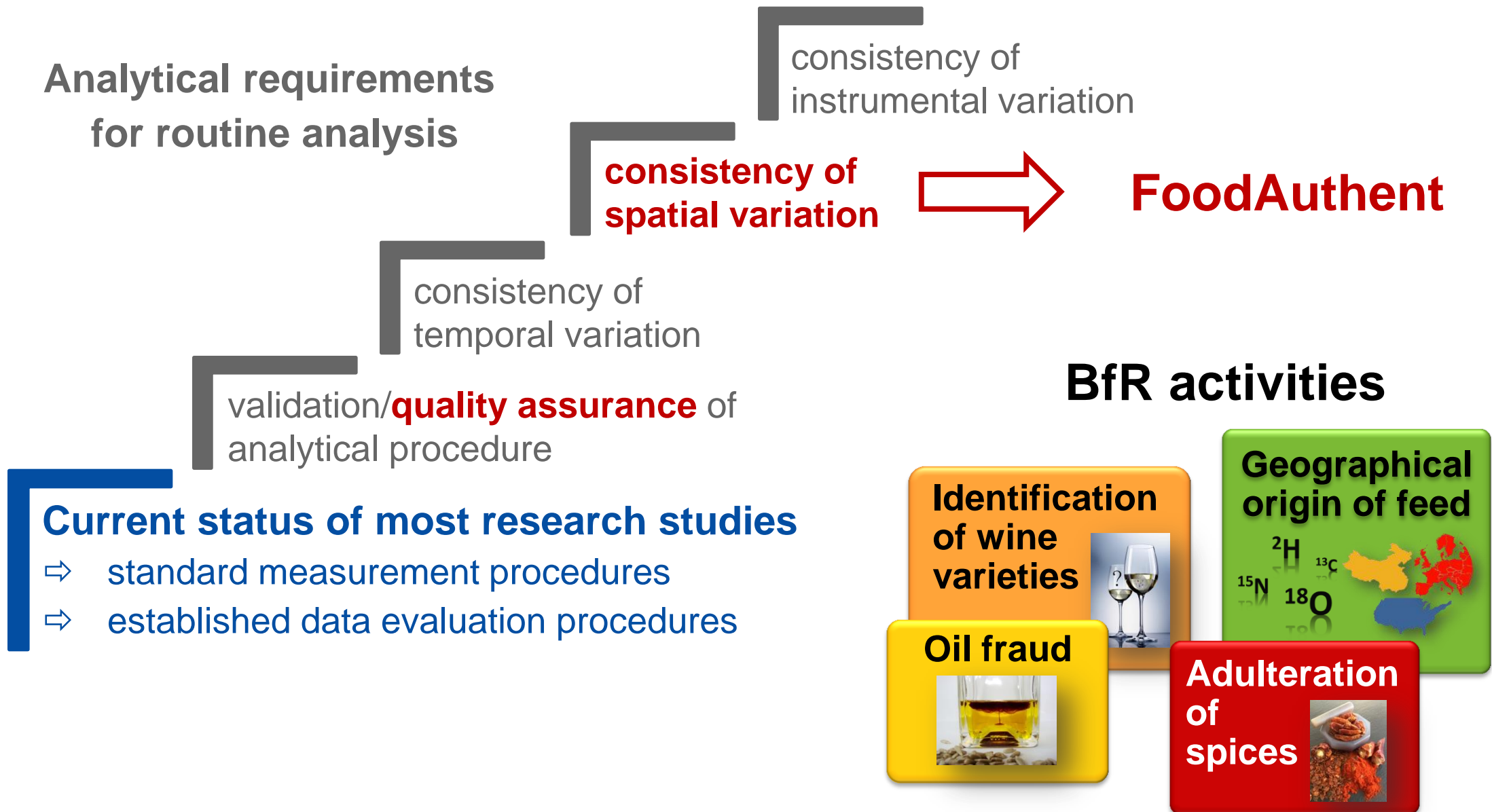
Applicability:

- ✓ comprehensive characterization
- ✓ differentiation of samples due to:
 - ✓ botanical origin
 - ✓ geographical origin
 - ✓ adulterations
 - ✓ ...
- ✓ detection of emerging adulterated products
⇒ **early detection of risks/hazards**

Data base



Challenges of fingerprinting in official food control



Esslinger, S., Riedl, J., Fauhl-Hassek, C., Food Research International, 60, 189-204 (2014)

FoodAuthent – the project

“Programm zur Innovationsförderung – Herkunftsnachweis von Lebensmitteln” (Federal Ministry of Food and Agriculture (BMEL))

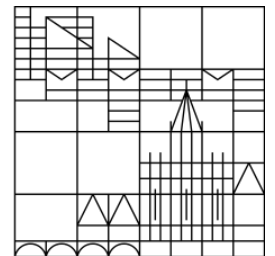
FoodAuthent

„Entwicklung eines Systems zur Sammlung, Analyse und Verwertung von Produktauthentizitätsdaten im Lebensmittelbereich“

Project partner	6
Budget	~ 2.0 million Euro
Duration	3 years
Project start	July 2016
Coordinator	GS1 Germany



Universität
Konstanz



FoodAuthent – Aim

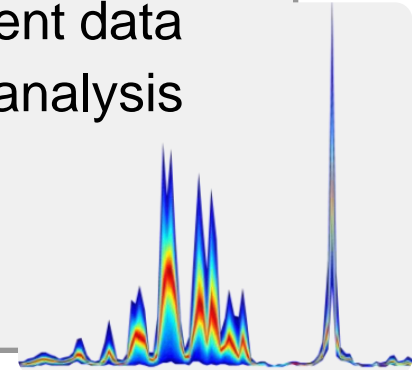
Standardised fingerprinting analysis

- NMR spectroscopy
- comparable data
- data format
- quality assurance measures



Data base

- analytical procedure
- raw/measurement data
- statistical data analysis
- meta data



characteristic fingerprint



Application

- availability for potential/certain clients
- for authentication of food
- for quality assurance
- for increased transparency

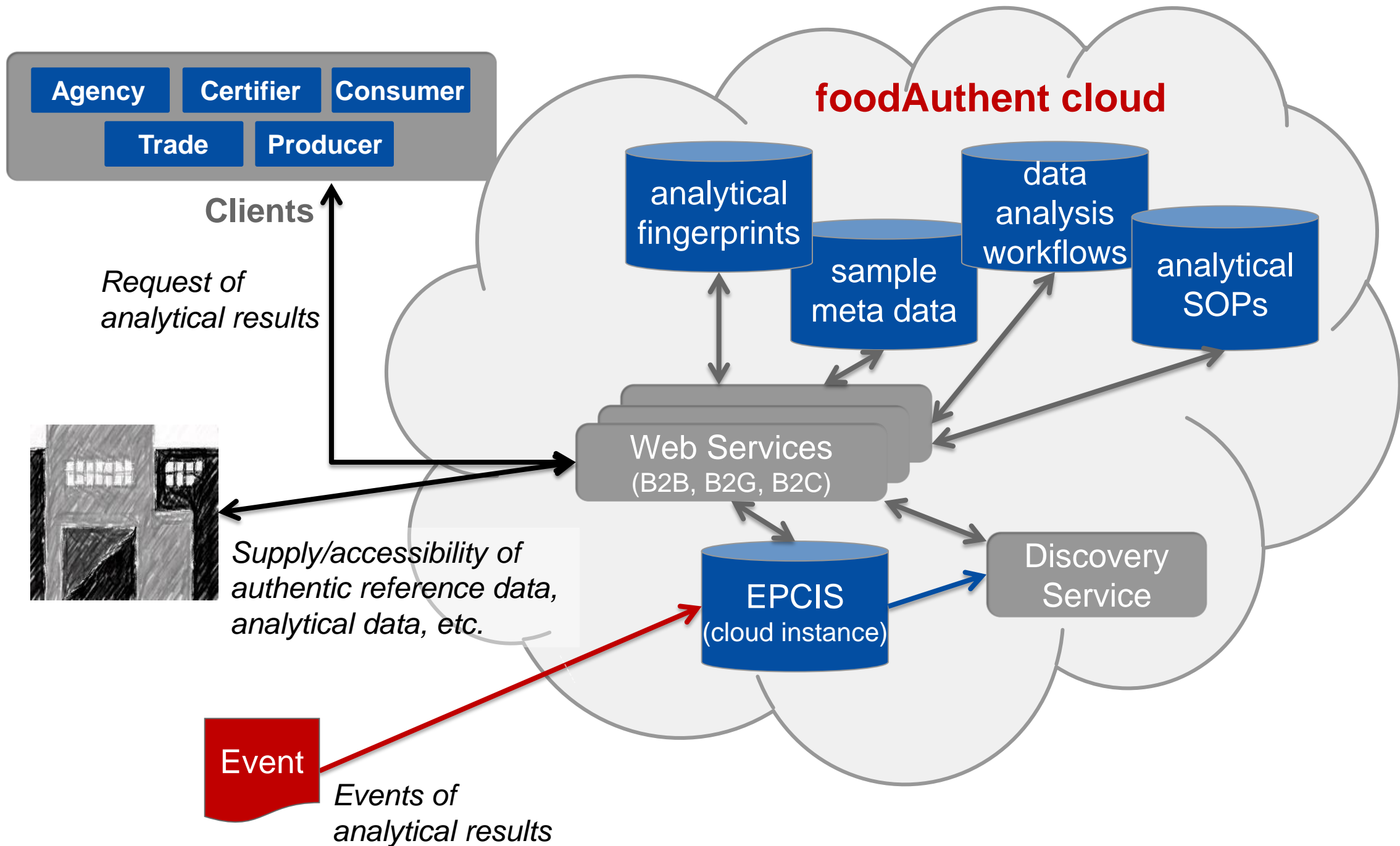


Cloud Computing

- incl. data base information
- web services
- EPCIS
- discovery services



FoodAuthent – Implementation



FoodAuthent – integrated data analysis solutions

oodrisklabs.bfr.bund.de/index.php/foodrisk-labs/

Google

FoodRiskLabs

FoodChain-Lab

Predictive Microbial Modeling Lab (PMM-Lab)

FoodProcess-Lab

Open Food Safety Model Repository

Events

Contact

Search

Information on BfR

BfR
Bundesinstitut für Risikobewertung

FoodRisk-Labs

BfR
Bundesinstitut für Risikobewertung

FoodRisk-Labs is a portal

to the following tools

developed by the Federal Institute for Risk Assessment (BfR):

Food Chain Lab
Created by BfR

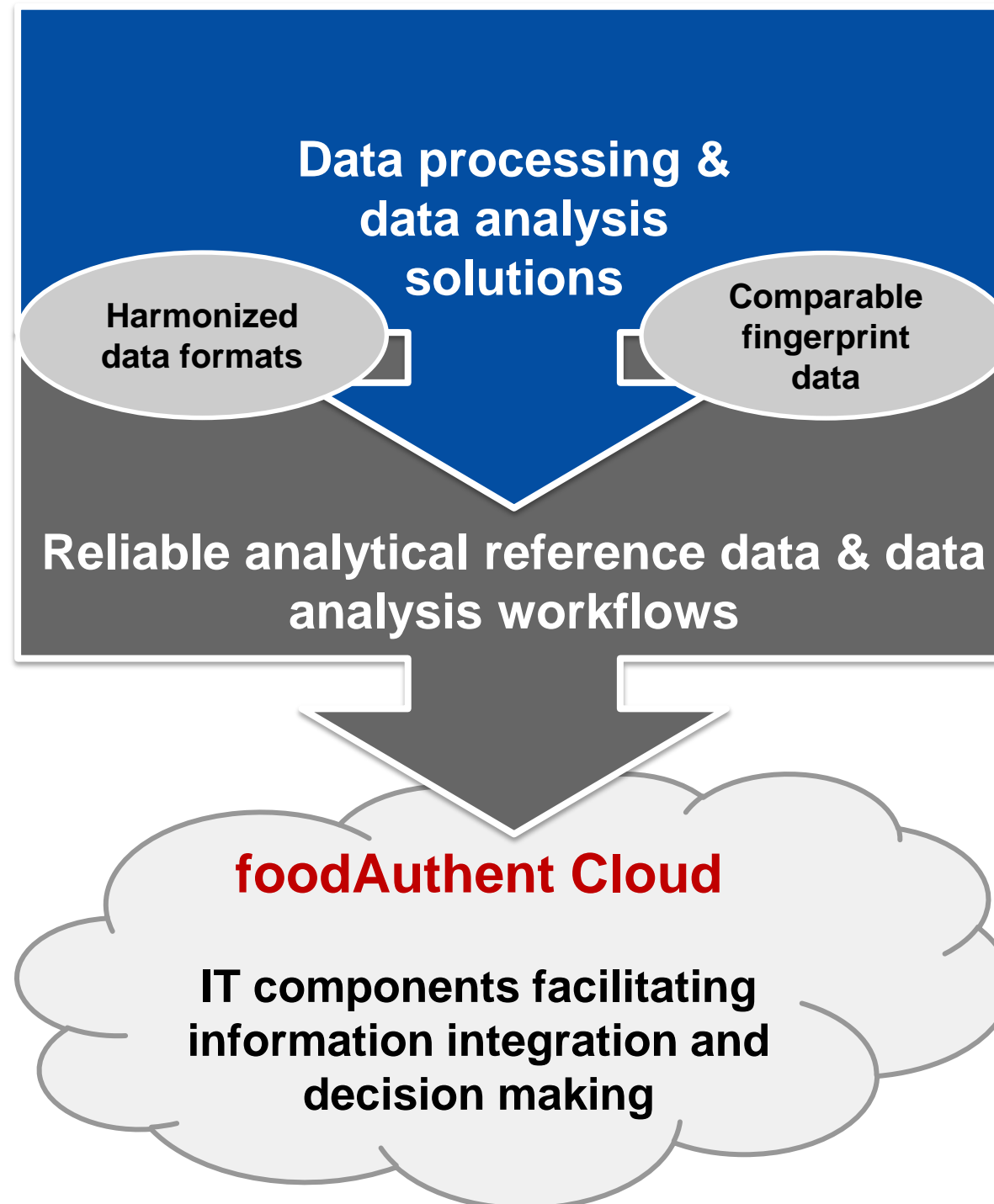
PMM-Lab
Created by BfR

Food Process Lab
Created by BfR

Planned FoodAuthent Modules

open FSMR
Created by BfR and UFA

FoodAuthent – core concept



Thank you for your attention

Susanne Esslinger and
Matthias Filter

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