

DATE 11 October 2016

End-user driven
DEmo for cbrNe

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WP40 – Food demonstration

A European Commission Seventh Framework Programme

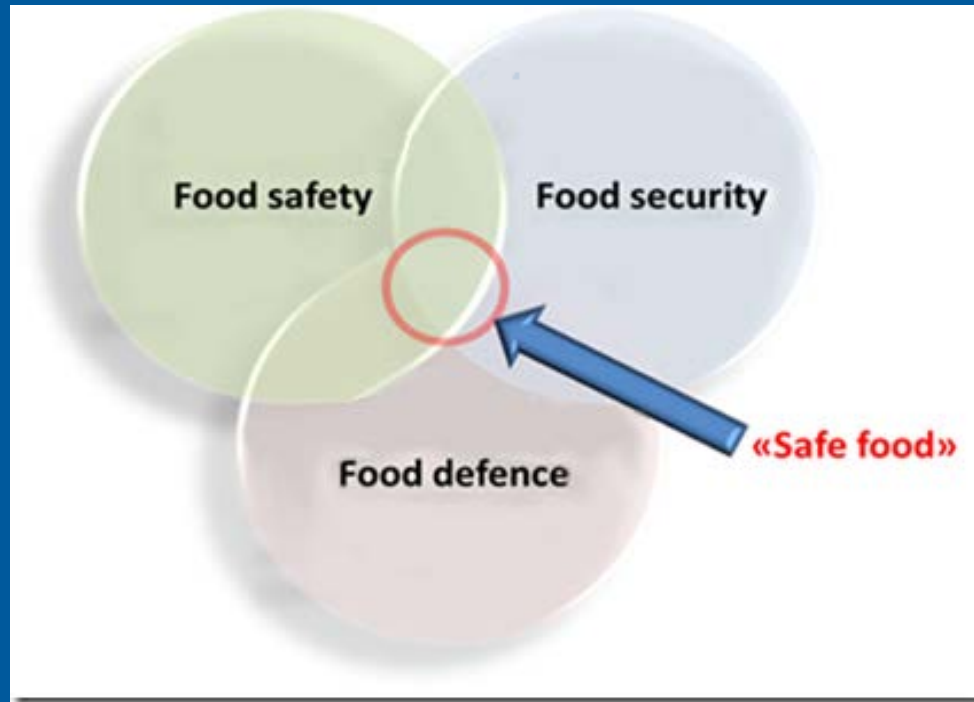
This document is produced by the EDEN consortium and the research leading to these results has received funding from the European Community's Seventh Framework programme (FP7/2012-2016) under grant agreement no 313077



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Food defence vs food safety

The terminology used to describe different contaminations in the food chain is confusing



Food defence vs food safety



- **Food defence** is a term used to describe activities associated with protecting food supply from deliberate or intentional acts of contamination or tampering. It refers to **intentional contamination**
- **Food safety** refers to production, handling, preparation, and storage food in way to prevent foodborne illness
- **Food security** is the term that describe all the actions taken in order to ensure the availability and accessibility of foods

Understanding Food Defence

- **Food Defence:** prevention of *intentional contamination* of food
- **Food Safety:** prevention of *unintentional contamination* of food



| Food Safety | Food Defence |
|--|--|
| HACCP: Science based approach | TACCP: human based approach |
| Hazard Identification (bacteria, virus, foreign bodies, etc..) | Who might want attack us? |
| Process assessment (heat treatment parameters, etc.) | How might they do it? |
| CCP establishment | Threats and vulnerabilities assessment |
| Control measures | Mitigation measures and vulnerabilities surveillance |

- **Background**

- **2002**, the FDA issued the Public Health Security and Preparedness and Response Act also known as the “Bioterrorism Act”
- **2004**: USA sets up the “Food Defense” policy”, protecting agricultural and food systems against terrorist actions, disasters and other emergencies.
- **2011**, the Food Safety Modernisation ACT (FSMA) was adopted as law
- **July 2016**, FDA has finalized a new food defence rules which require to food industries to elaborate and maintain a WRITTEN FOOD DEFENCE PLAN (deadline July 2019)
- **The EU food industry, regulatory and politicians, systems are totally unprepared**

The 5 steps of the WP40 (food demo) approach



- 1) Demonstrate the feasibility of large scale attacks
- 2) Perform vulnerabilities assessment
- 3) Design scenarios of the attacks (B and C)
- 4) Select tools able to fill the gaps and reduce the vulnerabilities
- 5) Organise large scale events *“on the field”*

1) Demonstrate the feasibility of large scale attacks

The major part of the attacks has been realized, in the final part of the food chain,



EDEN has tried to deal with attacks, in a food factory, potentially able to create:

- large number of contaminated items = several thousand of contaminated items
- wide geographical spread of the products

2) Perform vulnerabilities assessment

The vulnerability assessment was conducted using 2 different methodologies:

1. CARVER tool = FDA software designed in order to help food operators to protect their products from deliberate contamination (cooked meat facilities)
2. TACCP methodology = based on the HACCP methodology for threat assessment and vulnerabilities identification along the food production chain

3) Design scenarios of the attacks

Starting from the N&G and vulnerabilities we designed

- Two **B** scenarios in cooked meat production facilities
- Two **C** scenarios:
 - Cooked meat production facility: replacement of one ingredient
 - Sugar packaging facility: tampering and contamination of packaged food items

In the scenarios, the attacks involved disloyal employees* or external people with access to vulnerable areas inside the production facilities

*2014 a factory worker poisoned frozen foods with pesticides, causing more than 2,800 people to fall ill (6 million product items recalled)

3) Design scenarios of the attacks 2/2

Selection of B and C agents (threat analysis)

The agents were selected taking into account:

- Ease of introduction in quantities compatible with the attack
- Severity of adverse health effects
- Agent stability during the food production process
- Compatibility with the sensory characteristics of the food products

- Detection capability: tests were performed and none of the selected agents were detected

4) Select tools able to fill the gaps and reduce the vulnerabilities



Selection of the tools was performed taking into account:

- The readiness and the TRL level of the tools of the project partners and the EDEN platforms members
- The N&Gs that had to be filled
- The ease of using these tools in a food production facilities

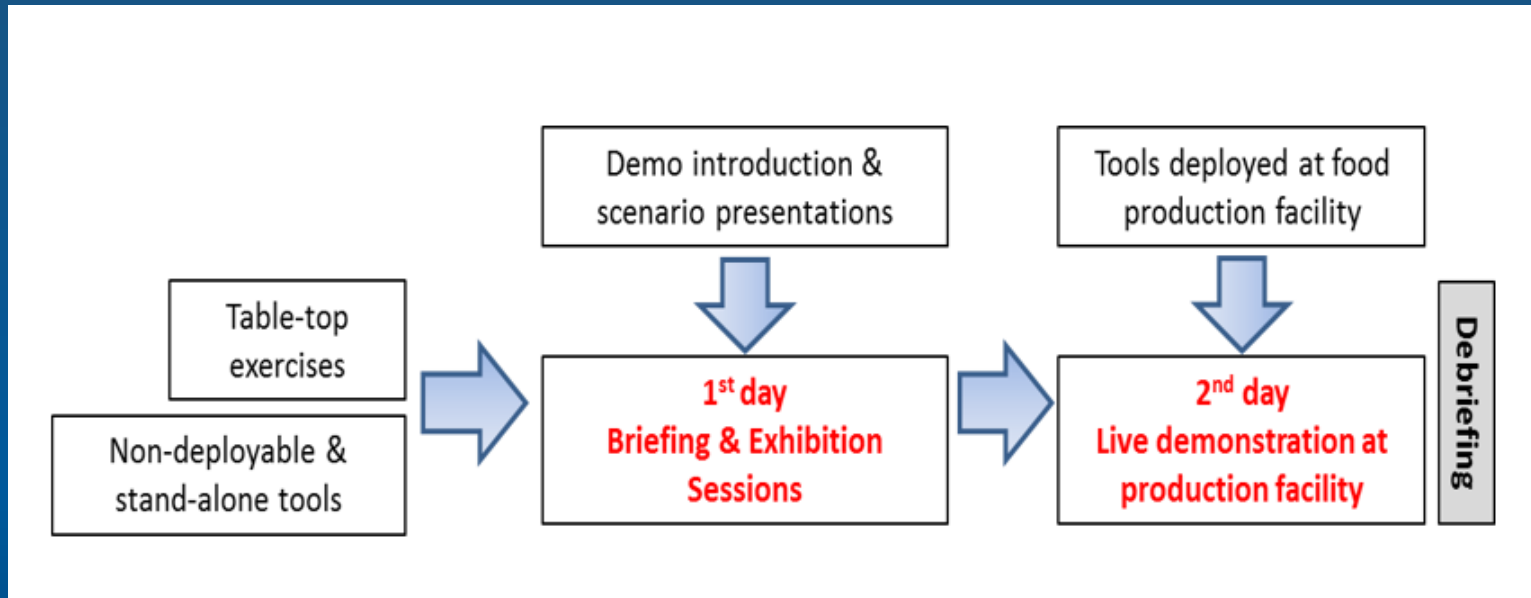
5) Organise large scale events “on the field”

- B and C1 demonstrations:
- The 14-15 April 2016 in Bologna, deliberate contamination in meat production facilities with **B** and **C** agents
- **9 gaps** were selected and linked to the **20 tools**
- A total of **80 experts** from 12 different EU countries (FR, FI, HU, DE, CZ, IT, UK, DK, BE, SE, NO and SP) attended

5) Organise large scale events “on the field”

- C2 demonstrations:
- On 10-11 May 2016 in Benavente, deliberate contamination of a sugar packaging facility with a C agent
- 15 gaps were selected and linked to the 14 tools
- A total of 42 experts from 7 different EU countries attended the event

The Food demonstrations



- **Exhibition session:** showing tools able to improve the food defence capabilities
- **Demo session:** demonstrating of tools able to detect the agents and able to produce “alerts”

5) Demonstrating the performance of the tools “on the field”

- Tools used during the exhibition session:**

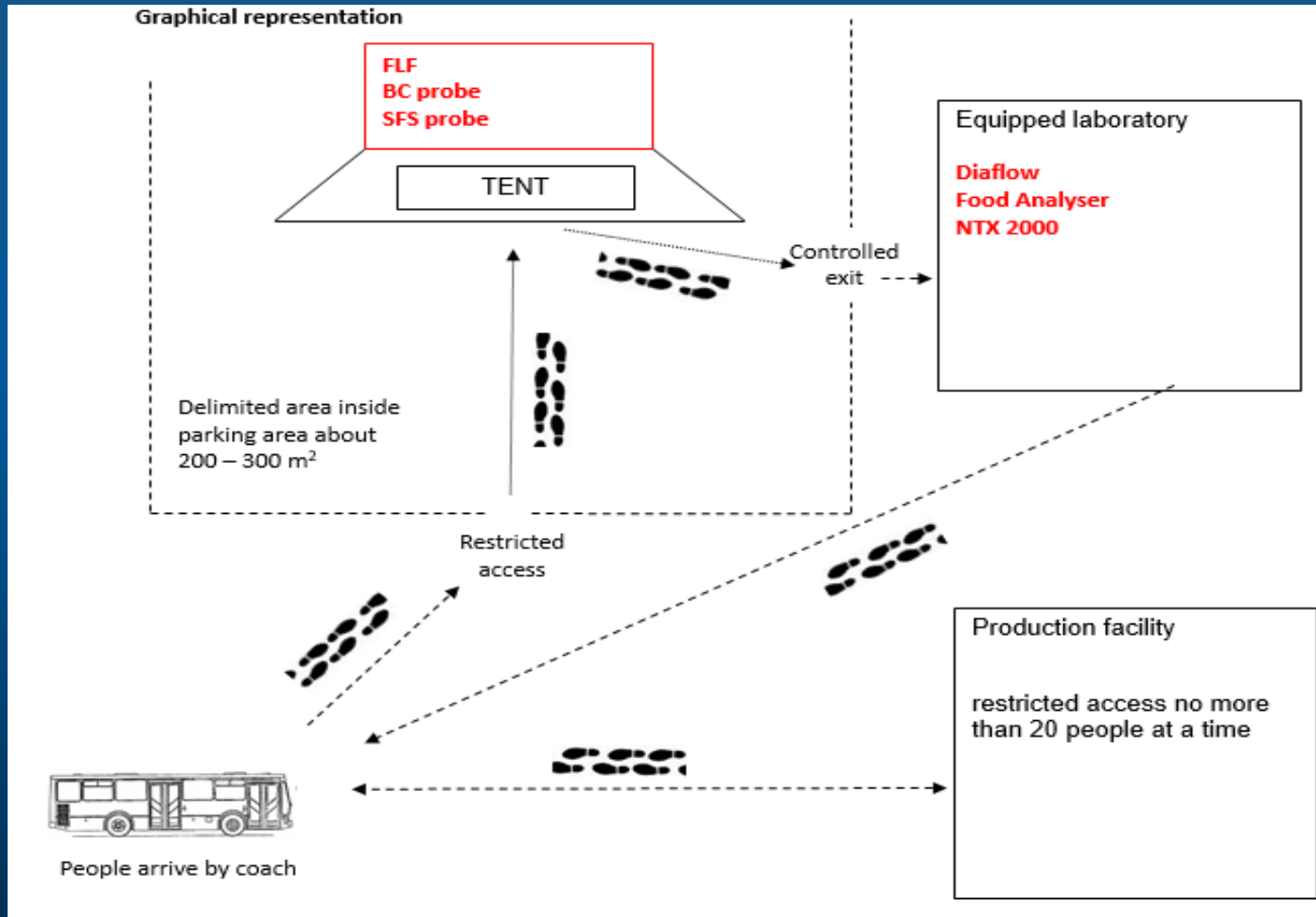


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5) Demonstrating the performance of the tools “on the field”

- B demo session:**



5) Demonstrating the performance of the tools “on the field”

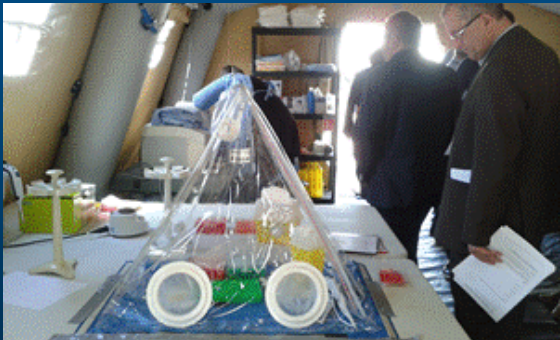
- **B demo session:**



area dedicated to the demo

5) Demonstrating the performance of the tools “on the field”

- B demo session:**



- The threat is real, attacks are possible.
- EU food safety infrastructure is not ready to prevent and to react to this threat
- Need of **Food Defence Community** : food industries, food safety agencies, law enforcement authorities, scientific communities and end users

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End User Driven Demonstrator for CBRNe (313077)

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Project co-funded by the European Commission within the
Seventh Framework Programme (2012-2016)



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