



Joint FAO/IAEA Division
of Nuclear Techniques in Food and Agriculture
50 years, 1964–2014

Online Information System for Optimizing Decision Making in Food Safety

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Joint FAO/IAEA Division of Nuclear Techniques in Food and Agriculture

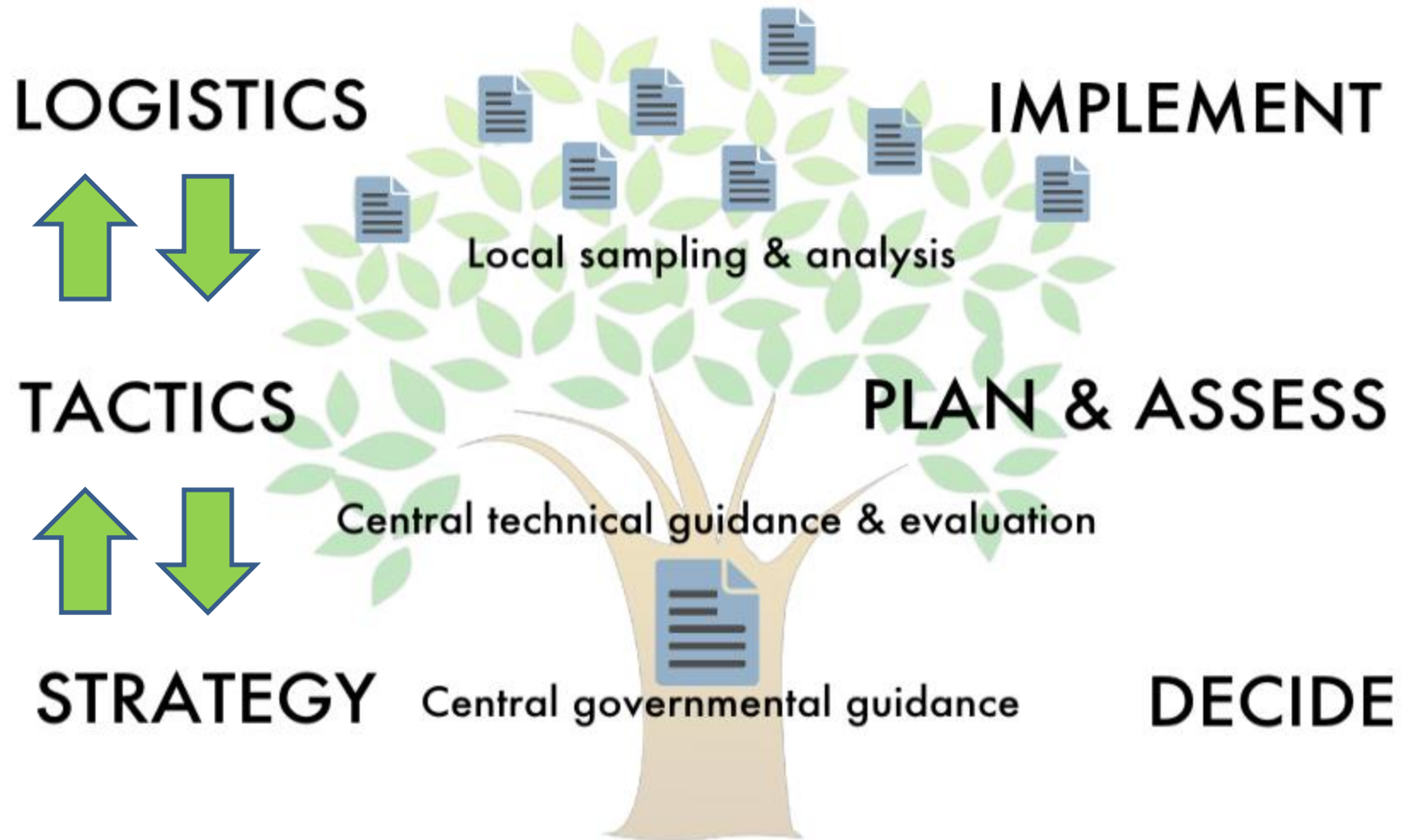
Challenges for food safety in nuclear or radiological emergencies

- **Optimize response time and effectiveness** of decision making on food safety
- **Ensure integration** of various levels of decision making
- **Achieve longevity** of decision making tools (decades)



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How can we address these challenges?



Response to Nuclear Emergencies Affecting Food and Agriculture

IAEA Coordinated Research Project (2013-2018)

Objectives

- Development of protocols for **sampling and analysing food products**
- Development of an **Online Information System** for Optimizing Decision Making **in Food Safety** (Routine-Emergency monitoring)



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Participants

CRP participants from the following countries:

Austria, Belgium, Brazil, China, France, India, Italy (JRC-EC), Japan, Macedonia, Morocco, Russian Federation and Ukraine.



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Online Information System Principles

- **Grounded on** innovative and mainstream open source technologies
- **Quick and easy** deployment anytime and anywhere (Cloud service)
- **Agility and pragmatism**
- **Simplicity and elasticity**
- **Ownership and Community** to ensure **sustainability**



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Four Components of the system

- Back-end Relation **Database Management System** with GIS enabled functionality – PostgreSQL/PostGIS
- **Middleware component** – Business logic (Ruby on Rails)
- Front-end **visualization component** (d3.js and Mapbox)
- **Mobile application** (Android, iPhone)



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1 - Register event

IAEA CRP D1.50.15


Administration ▾

Registries ▾

Tasks ▾

Samples ▾

Data Visualizations

 Logged in as: **Franck Albinet** | [Log out](#)

Registry of events

Registry of restrictions

Registry of laboratories

Registry of events

Search

Name

Event Type

Description

Date occurred (>=)

Date registered (>)

Search

Reset

Advanced mode

Export to CSV

Table

Map

Displaying events 1 - 5 of 9 in total

Event name	Event type	Parent event	Description	Latitude	Longitude	Date occurred	Registered			
Bayonne monitoring demo	Routine monitoring		Demo event in Bayonne	43.4833	-1.4833	01.02.2014	18.12.2014 13:27	Show	Edit	Delete
Tanger demo exercise	Radiological accident		Demo event in Tanger	35.78058	-5.81365	01.05.2013	18.12.2014 13:27	Show	Edit	Delete

2 – Assign collection tasks

IAEA CRP D1.50.15


Administration ▾

Registries ▾

Tasks ▾

Samples ▾

Data Visualizations

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Assigned Tasks

Search

Event

Date finished (=)

Search

Reset

Advanced mode

Export to CSV

Assign collection tasks

My tasks

DOWNLOAD MOBILE APP FOR:

Android (>4.2)

Windows Phone (>8.0)

iPhone (pending)

No assign tasks found

Event	Event desc	Event type	Event date	Number of collectors	Max. samples per collector	Barcode start sequence	Barcode end sequence	Registered	Finished
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New assignment

3 – Collector get assigned tasks

IAEA CRP D1.50.15

Administration ▾

Registries ▾

Tasks ▾

Samples ▾

Data Visualizations

Logged in as: **Franck Albinet** | [Log out](#)

Assign collection tasks

My tasks

DOWNLOAD MOBILE APP FOR:

Android (>4.2)

Windows Phone (>8.0)

iPhone (pending)

My tasks

Search

Event

Date finished

Search

Reset

Advanced mode

Export to CSV

No tasks found









Event	Event desc	Event type	Event date	Collector	Barcode start sequence	Barcode end sequence
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Collected samples sheet

IAEA CRP D1.50.15 Response to Nuclear Emergency effective Tool and Institution

COLLECTED SAMPLES SHEET

Event: Fukushima Daiichi NPP accident Description: Fukushima Daiichi NPP accident Assigned Location: Temba (Chi) Group Food Category: Mushrooms
Collector: Sample Collector 1 Batch: 7 Sampling SOP: sop1 Food Category: Matsutake (mushrooms)

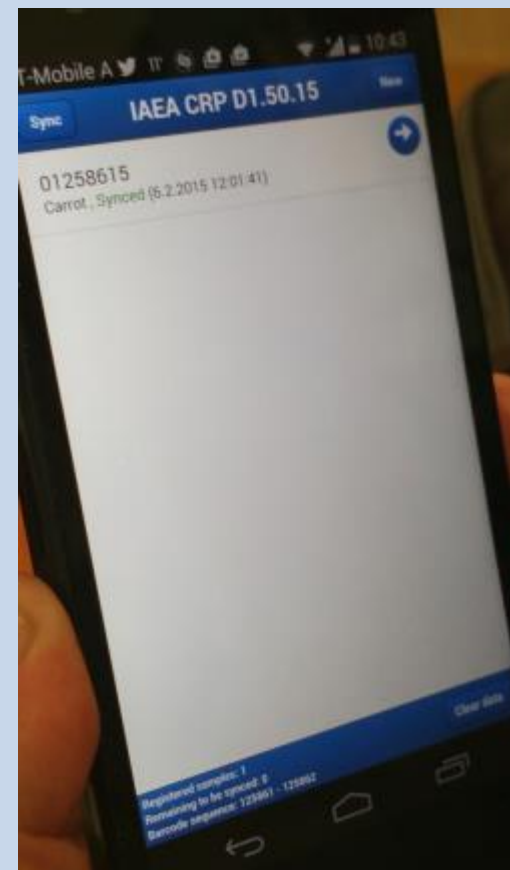
Barcode	Barcode	Sample type	Admin Unit	Date of sampling	Location	Market status	Market name	State	SOP	Min. dist. to roads
										
										
										
										

2014-03-18 10:00:00 Page 1 of 1

4 – Collectors collect and register sample data



Registering sample attributes
via mobile devices (automatic
geo-referencing)



Synchronisation with
central database (cloud)

5 – Labs analyze collected samples

IAEA CRP D1.50.15


Administration ▾

Registries ▾

Tasks ▾

Samples ▾

Data Visualizations

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Collected Samples

Analyzed Samples

Analyzed Samples

Search

Barcode

Substance

Date result

Registered at

Search

Reset

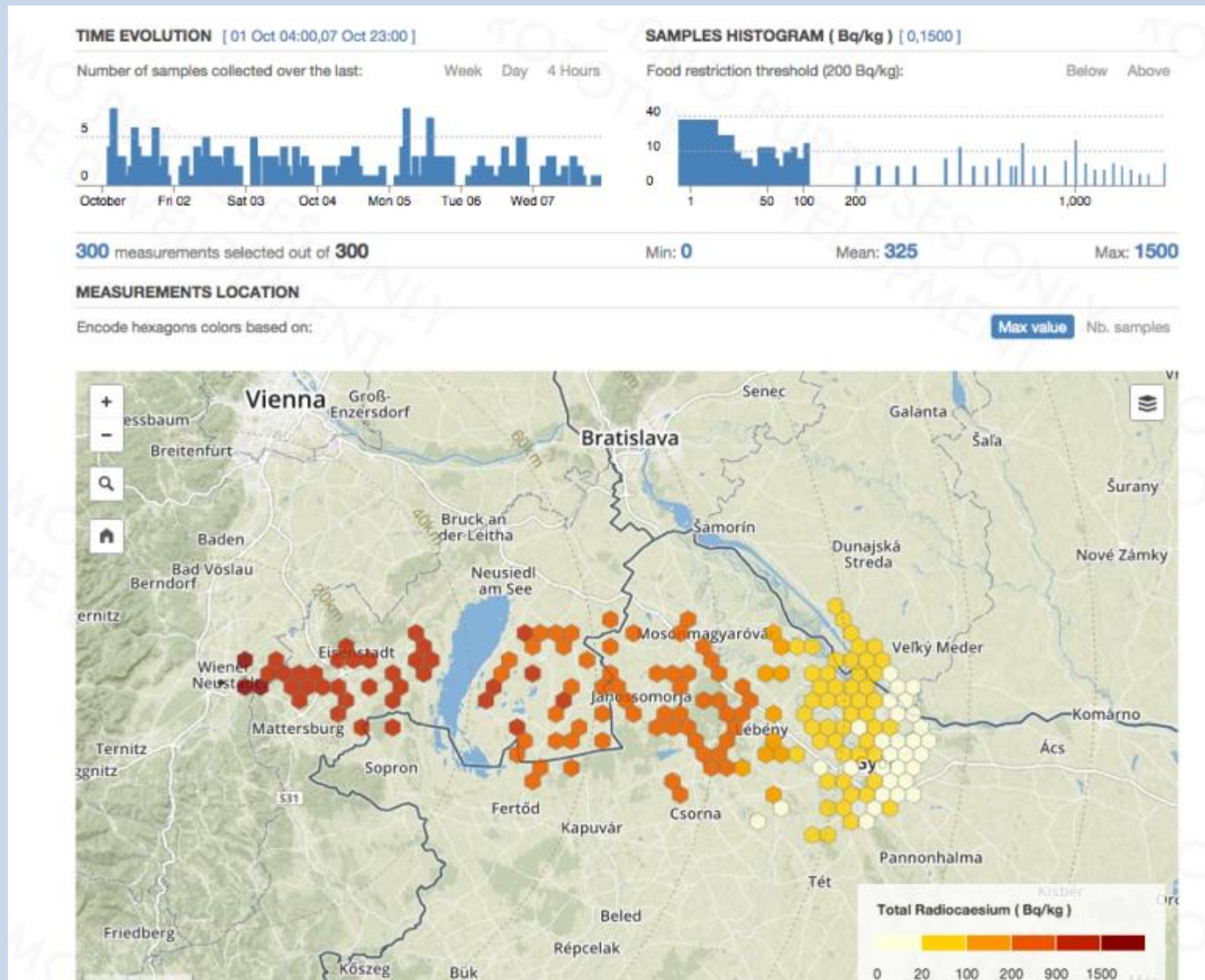
Export to CSV

Displaying analyzed samples 1 - 10 of 377478 in total

Barcode	Substance	Date received	Date analyzed	Date result	Result	Measurement unit	Results uncertainty	Laboratory	Registered			
00000055	Cs-137	19.03.2011	19.03.2011	19.03.2011	262.0	Bq/kg	0.0	Fukushima Fictive Laboratory	18.12.2014 13:28	Show	Edit	Delete
00000086	Cs-137	19.03.2011	19.03.2011	19.03.2011	4.0	Bq/kg	0.0	Fukushima Fictive Laboratory	18.12.2014 13:28	Show	Edit	Delete
00000031	Cs-137	19.03.2011	19.03.2011	19.03.2011	10.0	Bq/kg	0.0	Fukushima Fictive Laboratory	18.12.2014 13:28	Show	Edit	Delete
00000048	Cs-137	19.03.2011	19.03.2011	19.03.2011	3.5	Bq/kg	0.0	Fukushima Fictive Laboratory	18.12.2014 13:28	Show	Edit	Delete

6 – Visualize at different scales

Simulated data



7 – Share visualizations / analysis with relevant actors (in progress)

IAEA CRP D1.50.15

Administration ▾

Registries ▾

Tasks ▾

Samples ▾

Data Visualizations

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Registry of Data visualizations

Search

Type

Description

Date registered (>)



Search

Reset

Displaying visualizations 1 - 5 of 6 in total

Visualization type	Description	Event name	Registered	Registered by	Updated	Last updated by	
Food restrictions	Beef/cattle restrictions in Fukushima Prefecture	Fukushima	23.09.2011 00:00	8	20.10.2011 00:00	3	Show Edit Delete
Events	Over the last year	All	19.05.2014 00:00	4	18.05.2014 00:00	4	Show Edit Delete
Analyzed samples	I-131 in Fukushima Prefecture for Milk.	Fukushima	23.12.2011 00:00	3	05.02.2012 00:00	4	Show Edit Delete
Collected samples	Food samples collection in Iwaki-shi village. Collection task undergoing	Fukushima	11.01.2015 00:00	3	11.01.2015 00:00	3	Show Edit Delete
Analyzed samples	Cs-137 in Ukraine	Chernobyl	05.03.2014 00:00	4	05.03.2014 00:00	4	Show Edit Delete

8 – Raise food restrictions (in progress)

IAEA CRP D1.50.15


Administration ▾

Registries ▾

Tasks ▾

Samples ▾

Data Visualizations

 Logged in as: **Franck Albinet** | [Log out](#)

Registry of events

Registry of restrictions

Registry of laboratories

Registry of restrictions

Search

Village name

Date enforced



Date cancelled



Date cancelled



Search

Reset

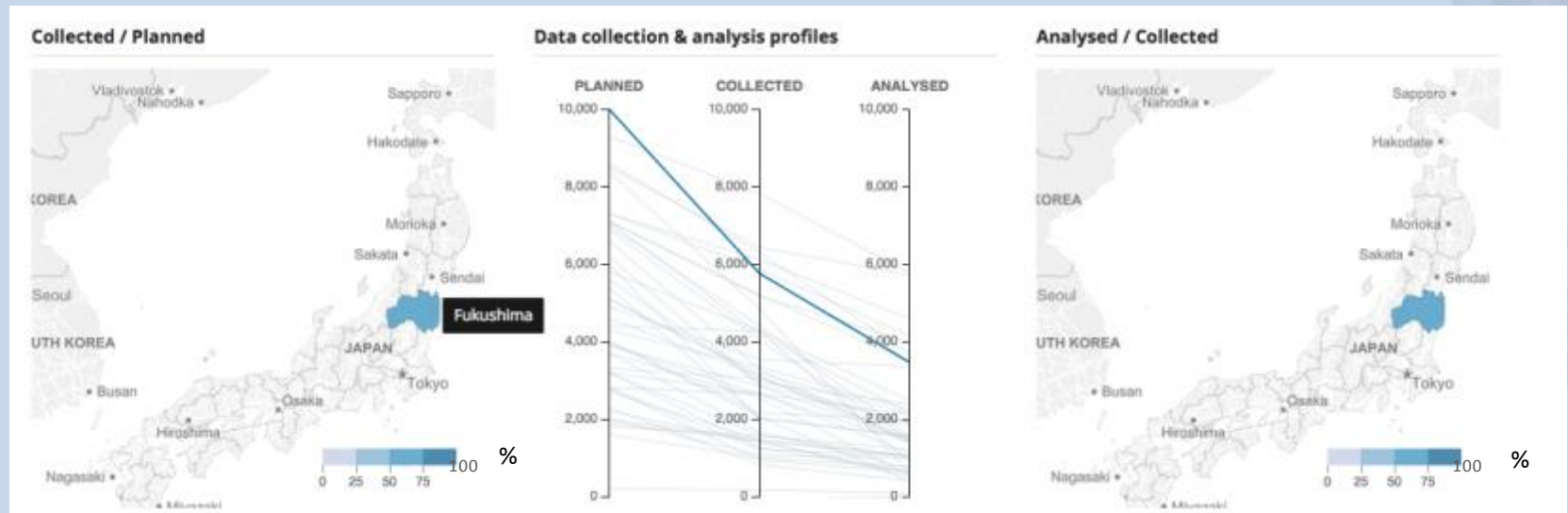
Export to CSV

Displaying restrictions **1 - 7** of **186** in total

Village name	Date enforced	Date cancelled	Remark	Registered			
Iwaki-shi	15.09.2011		Wild mushroom	18.12.2014 13:27	Show	Edit	Delete
Minamisoma-shi	20.09.2011		Wild mushroom	18.12.2014 13:27	Show	Edit	Delete
Tanagura-machi	06.09.2011		Wild mushroom	18.12.2014 13:27	Show	Edit	Delete
Iidate-mura	13.04.2011		Log-grown shiitake (grown outdoor)	18.12.2014 13:27	Show	Edit	Delete

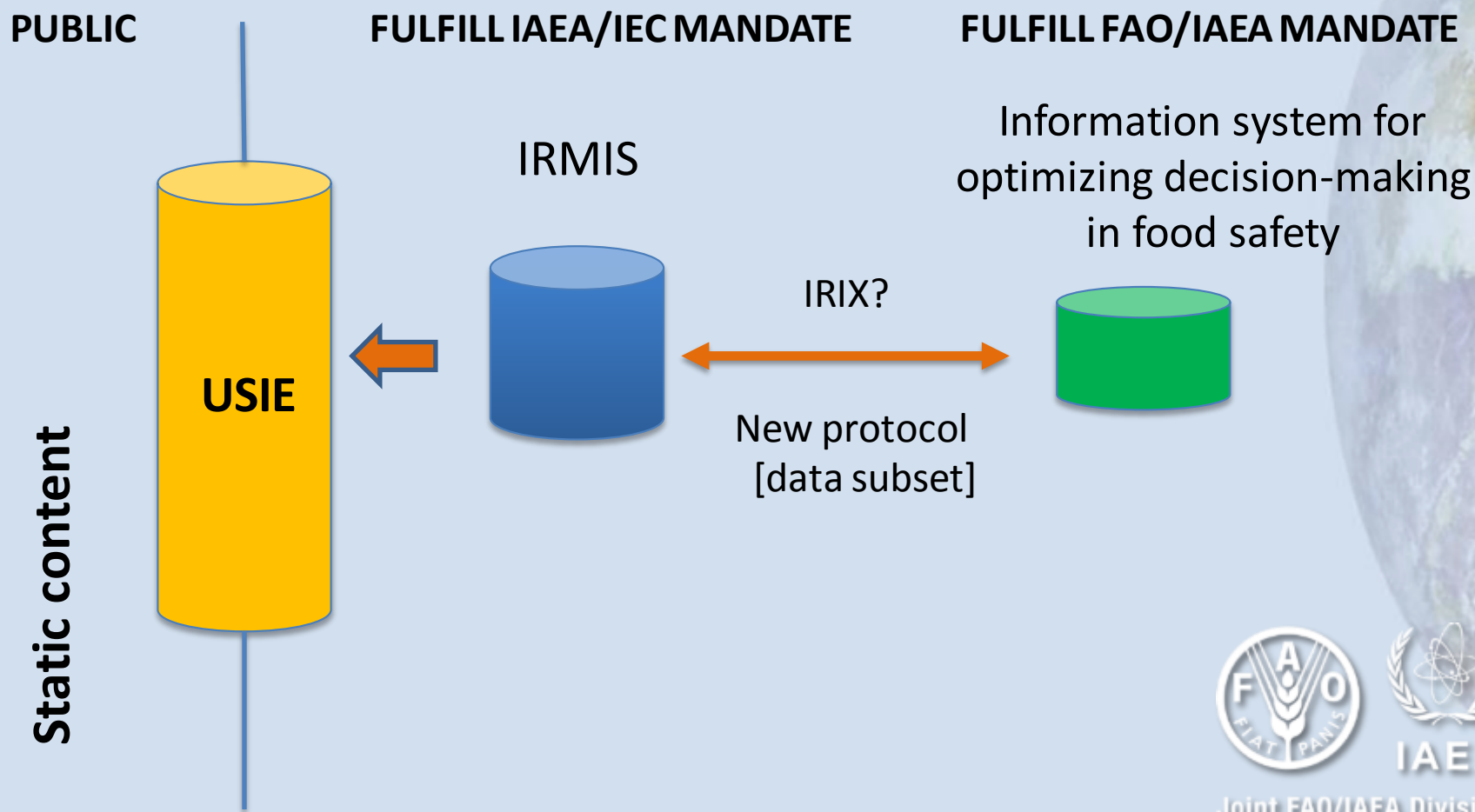
9 – Gap Analysis (Data flow)

Simulated data



+ Resource analysis (planned)

Integration of system within IRMIS/USIE



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Current focus of the team

- **Continuous improvement** of Information System with end-user involvement (including simulation exercise)
- **Fostering synergisms with national and international organizations**
- Agency supervised **cloud service** is envisaged
- **Advanced prototype** expected for October 2015



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Thank you !

