tds exposure

Quality Standards

Paul Finglas (IFR), Luisa Oliveira (INSA) and Hannah Pinchen (IFR)

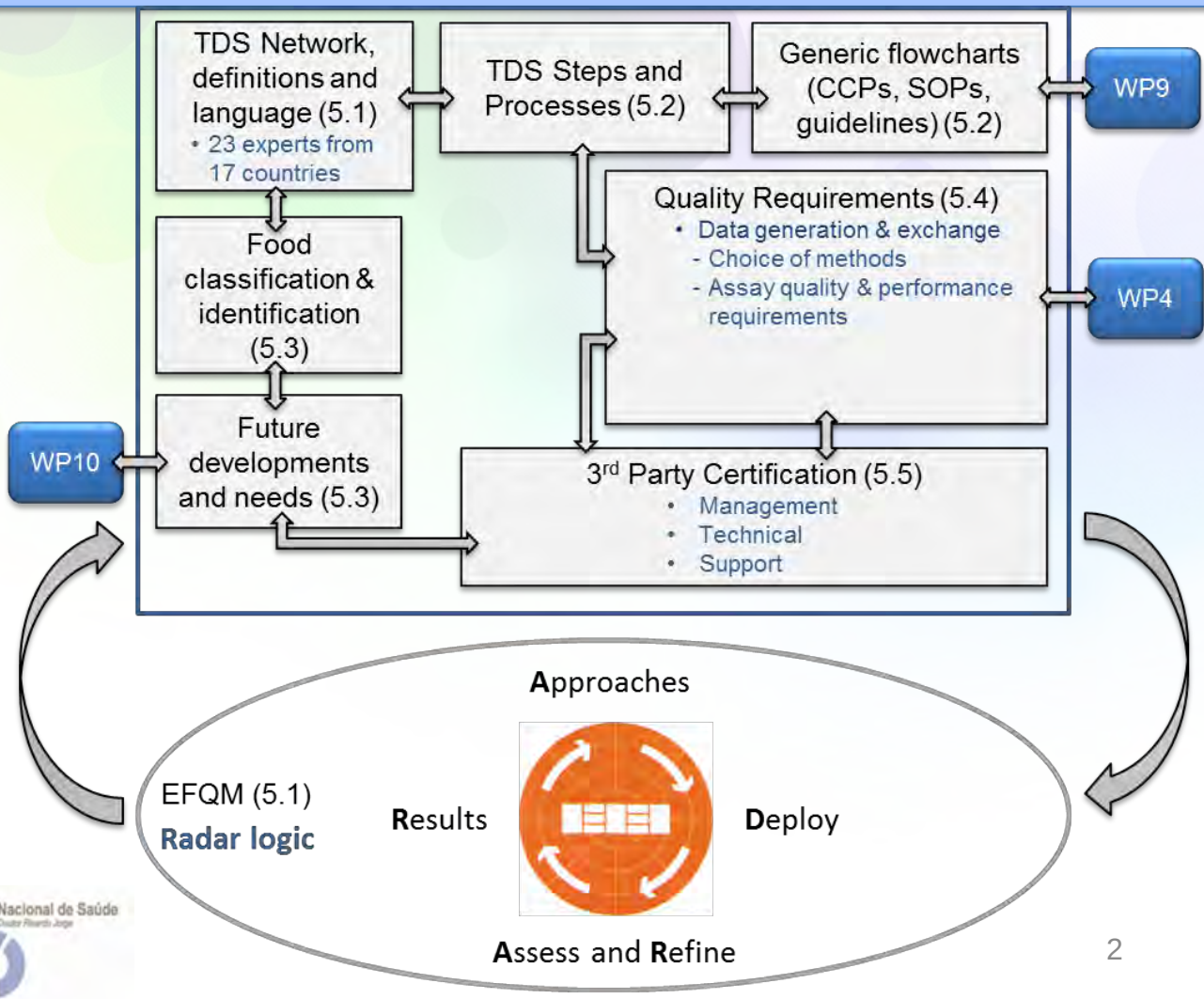
Total Diet Studies: Better Data – Better Decisions

5 February 2014, Brussels

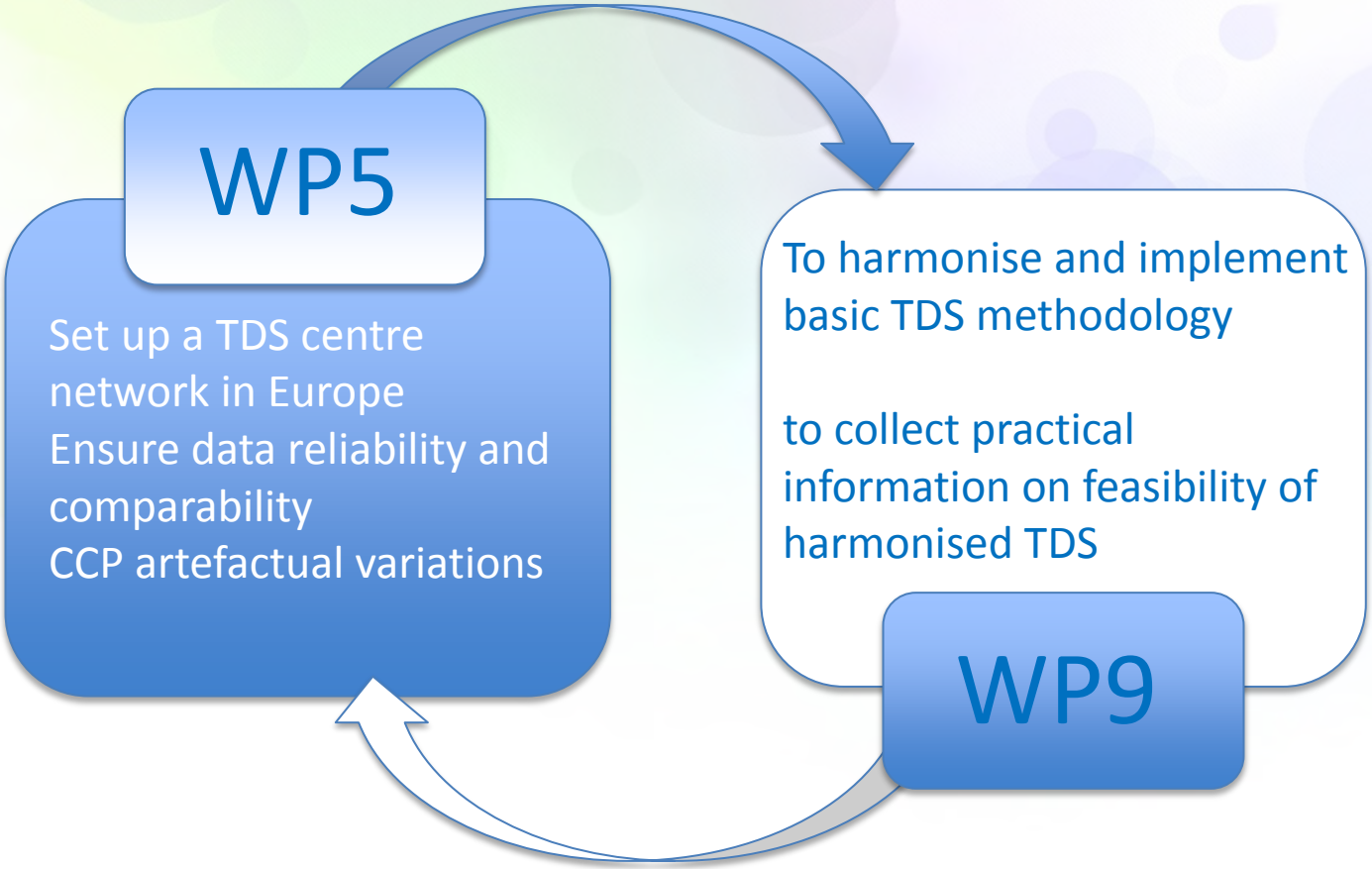
Outline and Objectives

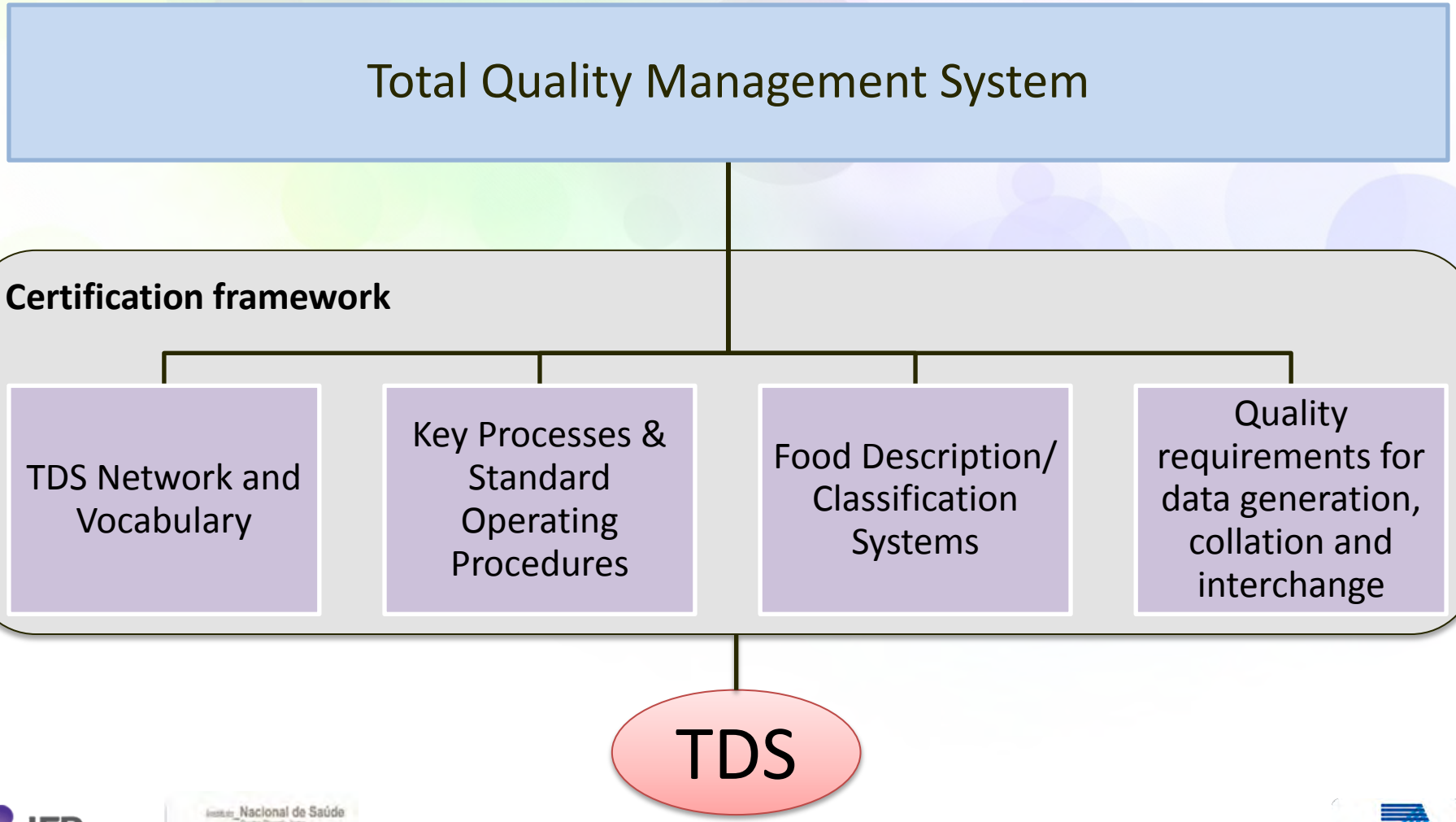
To develop, test and implement a Total Quality Management System for TDS in Europe:

→ Improve the quality of the data and comparability between countries for use by risk assessors and managers



Total Quality Management in TDS




Total Quality Management System
Certification framework
TDS Network and Vocabulary
Key Processes & Standard Operating Procedures
Food Description/ Classification Systems
Quality requirements for data generation, collation and interchange
TDS

TDS Network and Vocabulary

TDS Network

23 experts from 11 countries outside of Europe

Uniform Vocabulary

TDS Vocabulary

- **209 terms**

Examples

Exposure

The concentration or amount of a particular agent that reaches a target organism, system or (sub) population in a specific frequency for a defined duration, via a specific or several routes (adapted from FAO/WHO, 2009)

Food basket

An assortment of foods representative for relevant aspects of a population diet

EFQM Vocabulary

- **29 terms**

Examples

Process

A set of activities that interact with one another because the output from one activity becomes the input for another activity. Processes add value by transforming inputs into outputs, using resources

Radar logic

A dynamic assessment framework and powerful management tool that provides a structured approach to questioning the performance of an organisation

Total Quality Management System

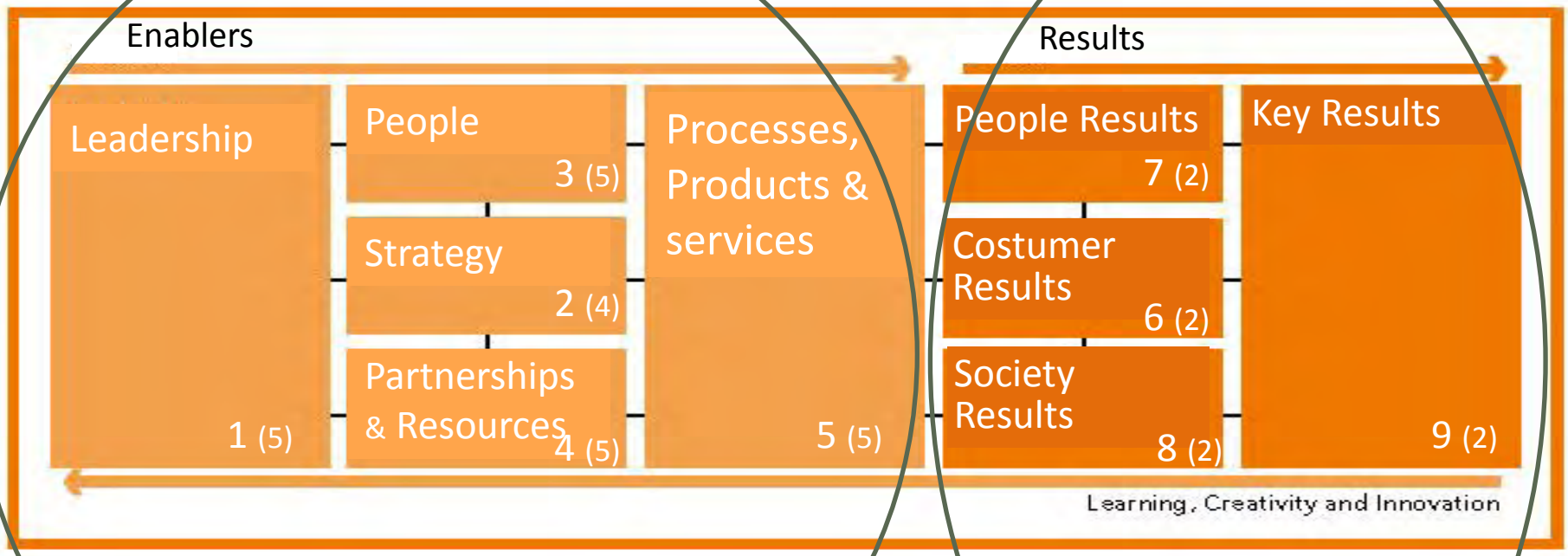
- European Foundation of Quality Management (EFQM) System

EFQM Excellence Model

To support organisations performing Total Diet Studies (TDS Centers) in their journey towards Excellence, through a Total Quality Management (TQM) approach

- Comparison of different organisations with a common assessment language
- Not used to score organisations – provides a Benchmark for organisations to improve

EFQM Excellence Model (itself)

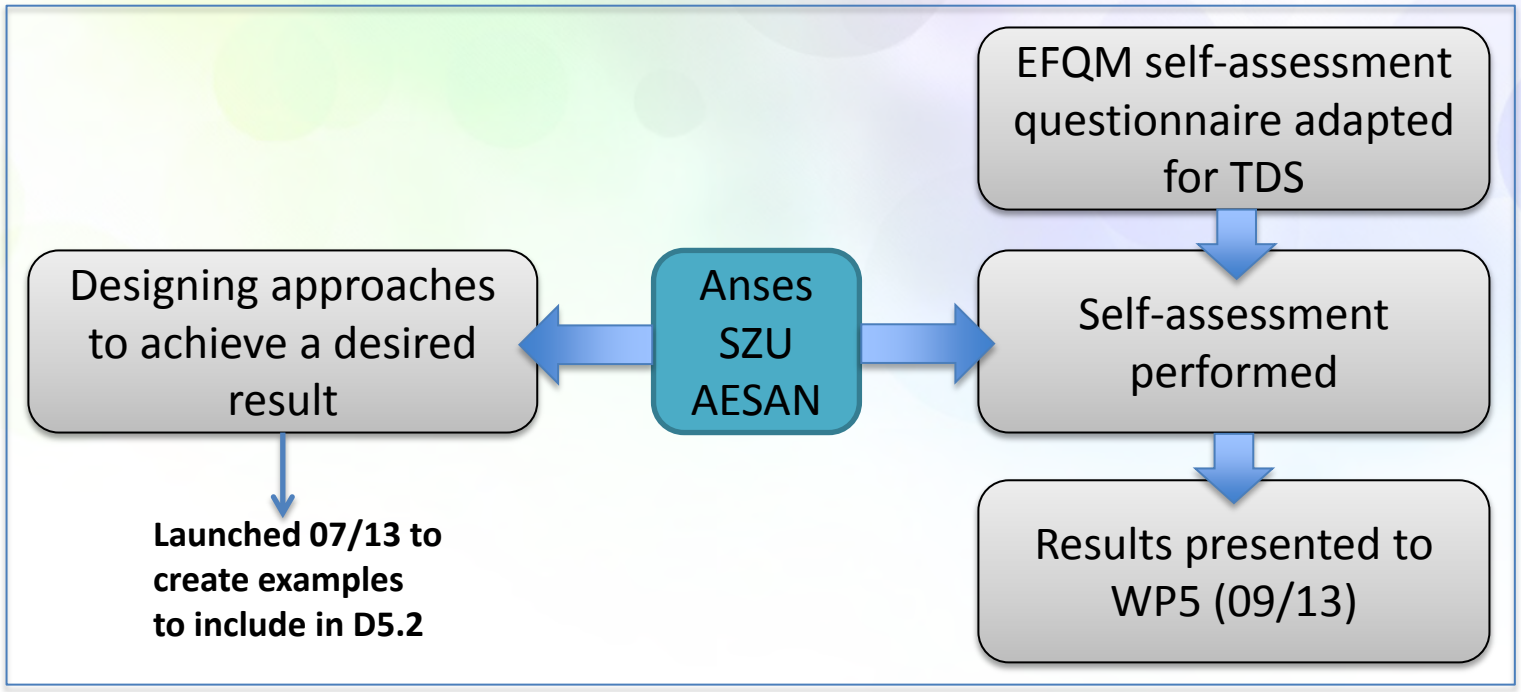


What the organisation does and how it does it

What the organisation achieves "footprint"

Identification of required TDS results and development of approaches

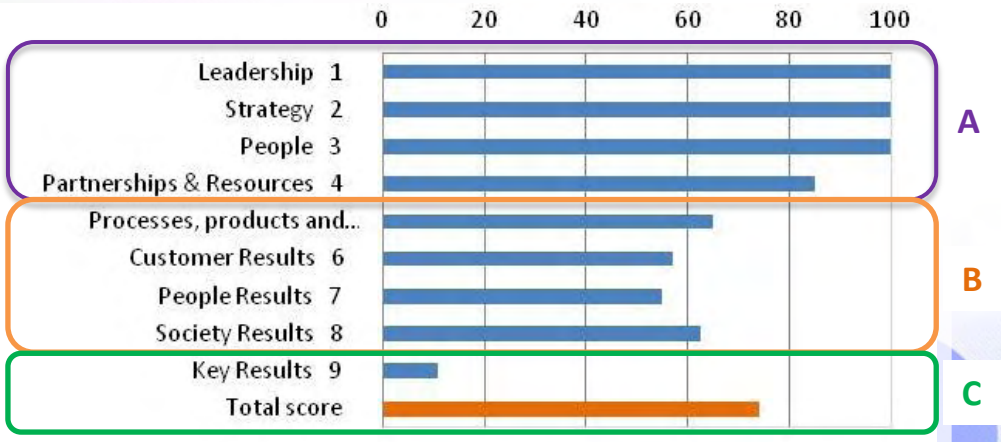
Brainstorming of Excellence Model (EFQM) took place in Rome (09/12). The results from this brainstorming session are being integrated to develop the TQM system

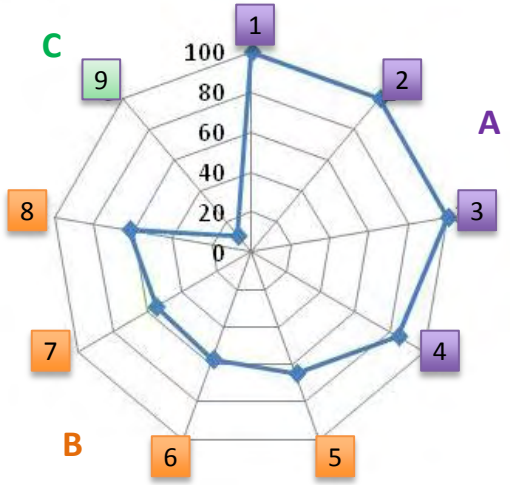


- Once the complete Guidance document is drafted, WP5 partners will provide feedback and suggestions on the proposed strategy and its implementation.

Preliminary results of self-assessment – Organisation A

		E	D	C	B	A	% Achivement (from previous sheets)
1	Leadership 1	0	0	0	0	5	100
2	Strategy 2	0	0	0	0	5	100
3	People 3	0	0	0	0	5	100
4	Partnerships & Resources 4	0	1	0	0	4	85
5	Processes, products and services 5	1	0	1	1	2	65
6	Customer Results 6	0	1	4	1	1	57
7	People Results 7	0	1	2	2	0	55
8	Society Results 8	0	1	0	3	0	63
9	Key Results 9	0	3	0	0	0	11
	Total score						74
Total number of ticks (a)		1	7	7	7	22	
Factor (b)		0	25	50	75	100	
Value (a x b)		0	175	350	525	2200	
Total / 49 (44)=		74	% Achivement of the Organisation				





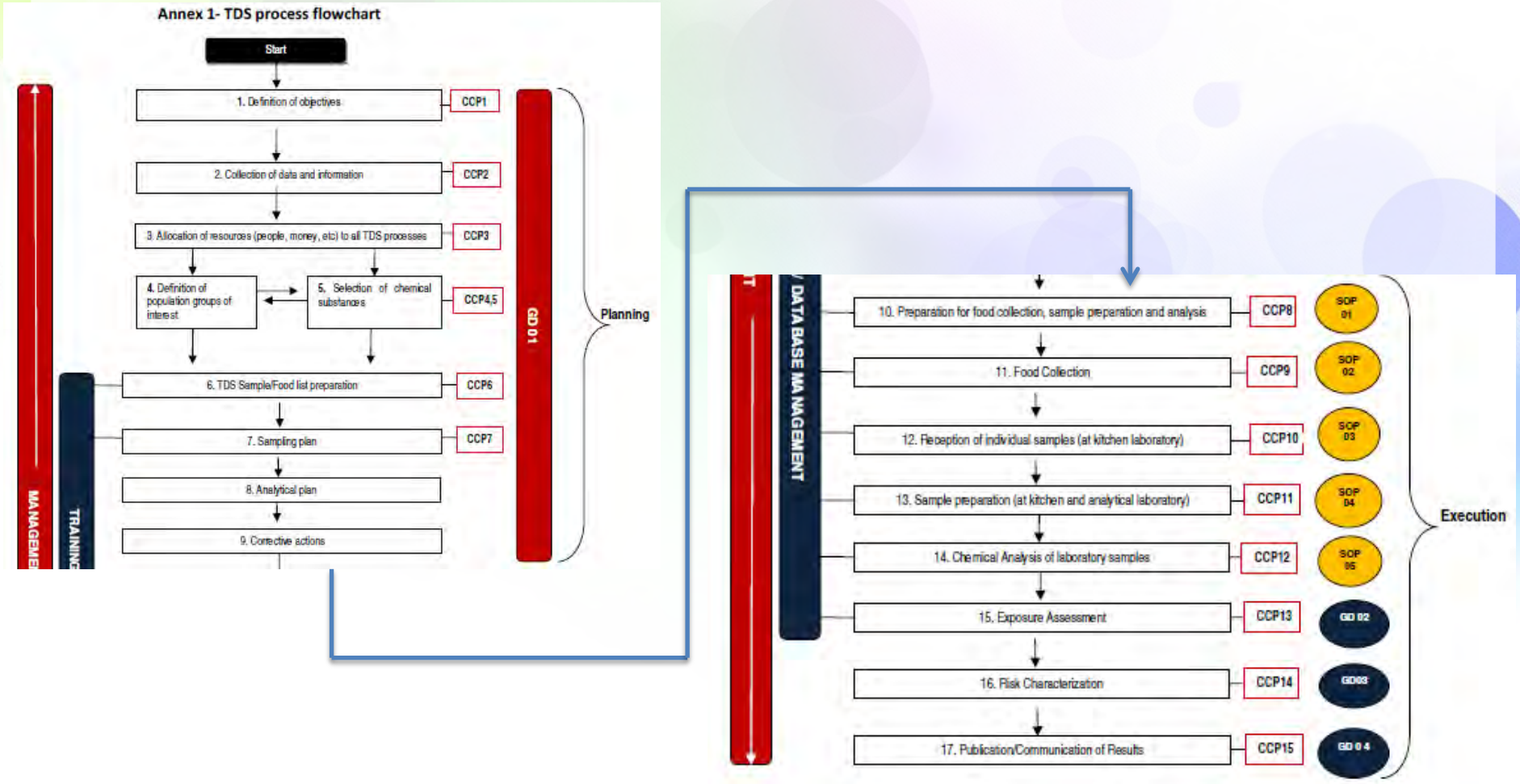
Learnings and Future Tasks

- ✓ It was possible to apply the self assessment
- ✓ Different organisations had different questions – potential to learn together
- How to apply EFQM Model language specifically to a TDS Centre is difficult to understand
- Clarification/harmonisation of the interpretation of the scoring system

Overall achievement of organisation **74** %

Key Processes and SOPs

TDS Flowchart – developed by WP9



SOPs (according to flow chart)

Guidance DOCs

Description of General Principles, Rules & Requirements for:

- Planning a TDS Study
- Exposure Assessment
- Risk Characterisation
- Publication & Communications

Three types of activity:

- Management
- Technical
- Support

Generic SOPs

- Preparation for food collection, sample preparation and analysis
- Food Collection
- Reception of individual samples (at kitchen laboratory)
- Sample preparation (at kitchen laboratory)
- Sample chemical analysis (at analytical laboratory)

Specific SOPS

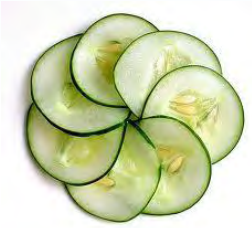
- Country Specific
- Method Specific

SOP1 Preparation for food collection, sample preparation and analysis

- **Scope**
  - This procedure is a generic SOP applicable for the preparation for collection, kitchen processing and analysis of food samples for TDS (step 8 of flowchart). It should be applied before starting the collection of food samples. It is intended to be used by TDS Centres as basis for preparing their country specific documents.

- **Objective**
  - To describe a generic procedure for the preparation of materials, kitchen and laboratory environment, within the 2014 pilot TDS.

- **Definitions**
  - This document follows the terminology adopted in TDS Vocabulary

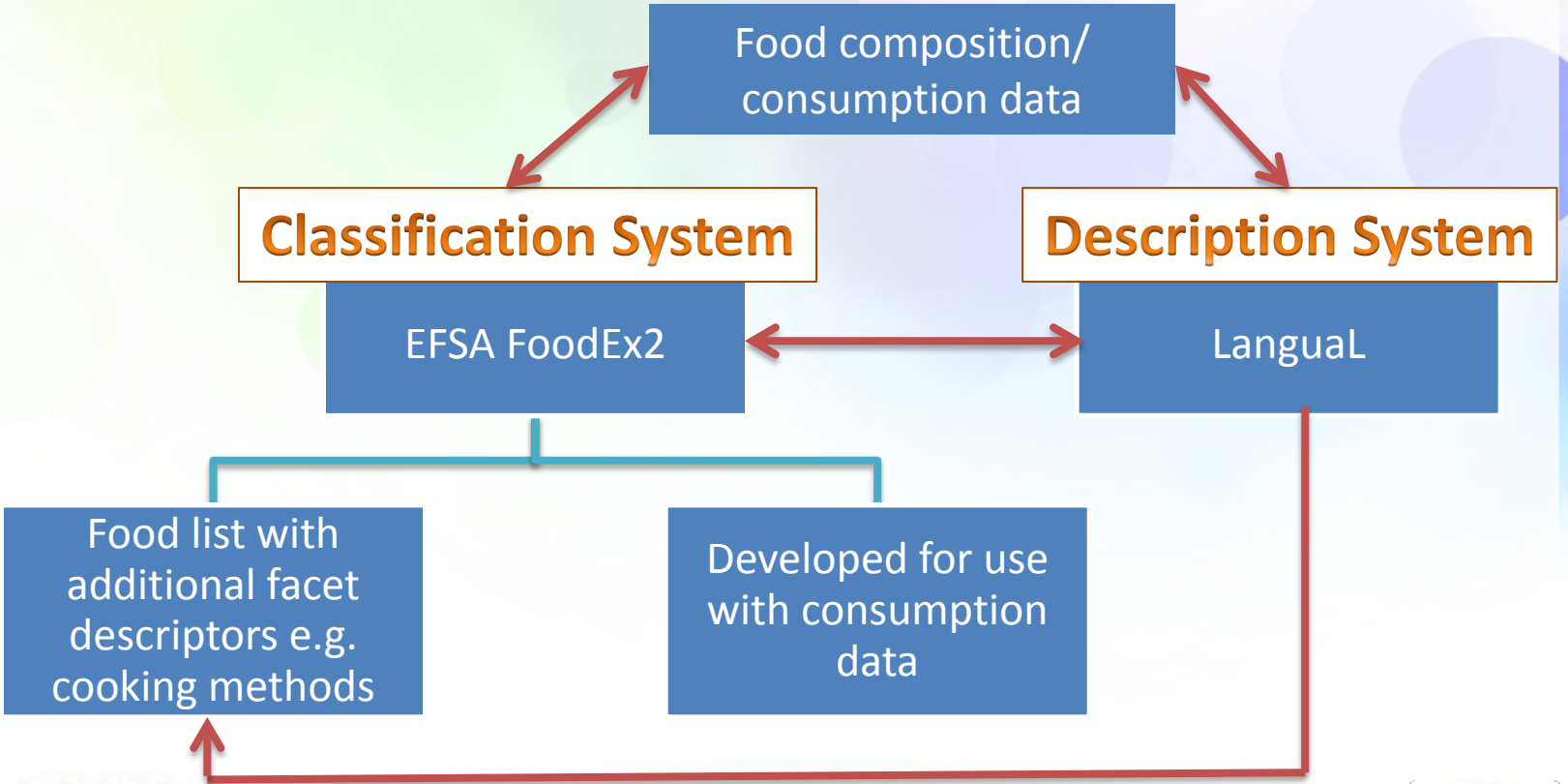


- **Responsibilities**
  - According to job descriptions and /or competence matrices

Food Description/Classification Systems

Why do we need them in TDS?

- Foods are grouped or described in a common way
- Prevents misinterpretation
- Allows data to be used between countries



Example of FoodEx2 codes – parent/child relationship

H	A04KY	**Single grain bread and rolls**	s
C	A004Y	**Wheat bread and rolls, white (refined flour)**	s
E	A004Z	Wheat bread and rolls, white with maize	s
E	A005A	Wheat bread and rolls, white with potato	s
E	A005B	Wheat bread and rolls, white with rice	s
E	A005C	Wheat bread and rolls, white with soya	s
C	A005E	**Wheat bread and rolls, brown or wholemeal**	s
C	A005G	**Rye bread, refined flour**	s
C	A005H	**Rye bread, wholemeal**	s
E	A005J	Pumpernickel	s
C	A005K	**Bread and rolls with special ingredients added**	s

(Back to the core and extended list index)

Type	*Code*	*Food Group*	*flag*
H	A005L	**Multigrain bread and rolls**	s
C	A005N	**Rye-wheat bread, refined flour**	s
C	A005P	**Rye-wheat bread, wholemeal**	s
C	A005Q	**Multigrain (not only rye-wheat) bread and rolls**	s

(Back to the core and extended list index)

Type	*Code*	*Food Group*	*flag*
H	A04KZ	**Unleavened bread and similar**	s
C	A006T	**Matzo**	s
C	A006S	**Pita bread**	s

EFSA; The food classification and description system FoodEx 2 (draft-revision 1). Supporting Publications 2011:215 [438 pp.]
Available online: www.efsa.europa.eu

FoodEx2 – Advantages and Problems

- Results from the pilot studies and food composition work (EFSA project)

Advantages

- FoodEx2 has been designed for exposure studies in Europe
- Allows a basic classification of foods, linking different food group levels were required
- It is still under development which allows input from the TDS-Exposure project
- Contains different facets
- Easy to use – scope notes available

Problems

- Some country specific foods cannot be mapped
- Contains some 'unspecified' food codes
- Some language may be confusing e.g. laminated doughs
- Level of detail inconsistent e.g. no distinguishment between peeled/unpeeled potatoes, mashed potatoes and the prepared product 'mashed potato'

Roe, M. et al. (2013) Updated food composition database for nutrient intake. EFSA supporting publication 2013:EN-355, 21 pp
Available online: www.efsa.europa.eu/publications

Quality requirements for data generation, collation and interchange

Definition of quality profiles for TDS laboratories

Identify:

- Accreditation
- Method validation
- Participation in proficiency schemes (PTs)

TDS laboratory questionnaire

Questions	Substances
General	Five trace elements
Method Performance	Dioxins-PCDDs
Internal Quality	PCBs
External Quality	Acrylamide
	Mycotoxins

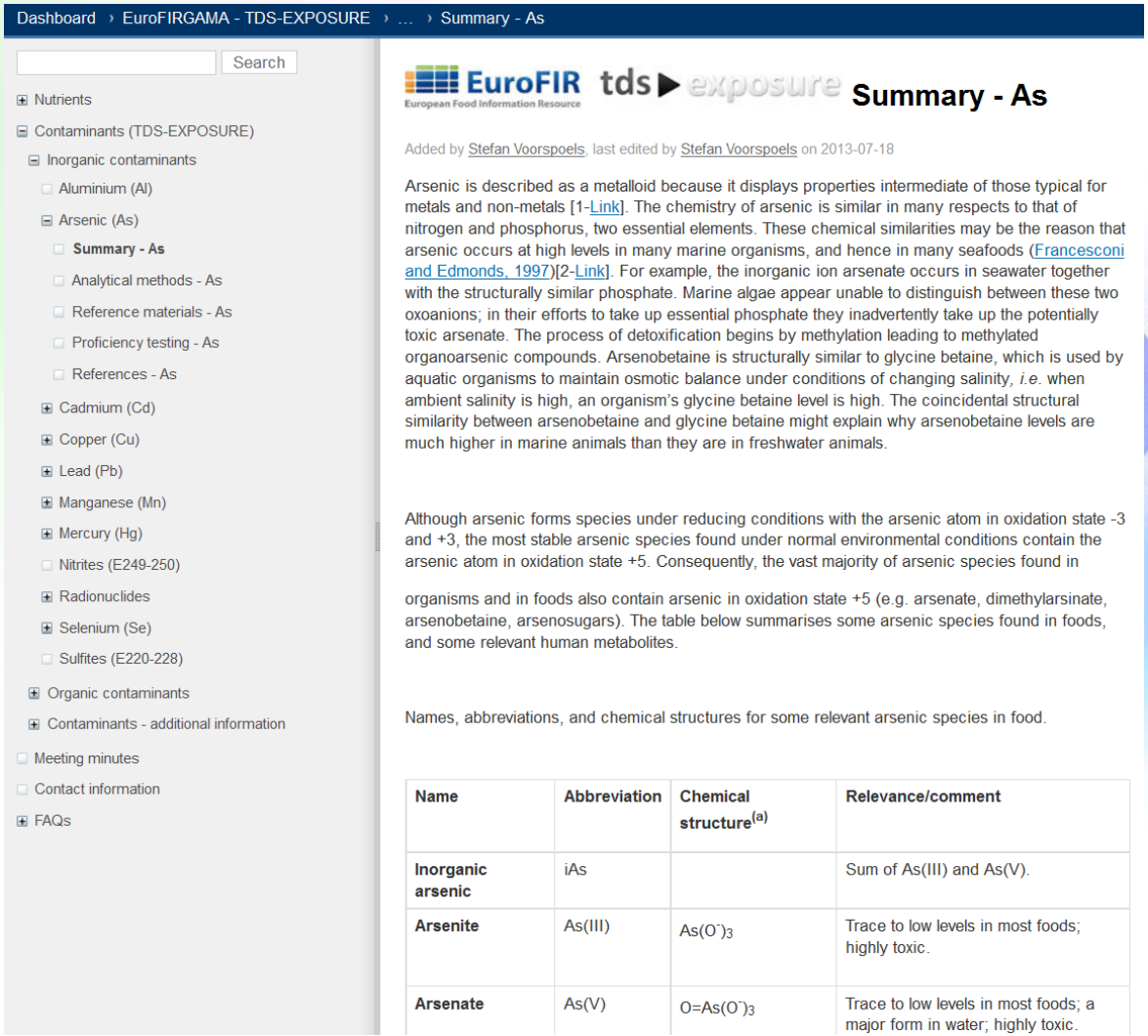
Example of method performance results

Analyte	Validation level of the method?		Reference for validation study	Limit of Detection (LoD)	Limit of Quantification (LoQ)	Working range	Selectivity/ specificity	TRUENESS (Recovery%)			PRECISION			
											RSDr		RSDR	
	% Lab	Level						Conc. Level	Rec.%	RM/CRM	Conc. Level	%	Conc. Level	%
Acryamide	100	Fully validated	- EUROCHEM - Eerola, Hollebekkers, hallikainen & Peltonen. Mol. Nutr. Food Res. 2007, 51, 239-247.	1-20 µg/kg	2,5-50 µg/kg	2,5-7500 µg/kg	No interference	10-1000 µg/kg	74-125	ERM, FAPAS (Crispbread, rusk, toasted bread)	10-350 µg/kg	0,9-14	10-350 µg/kg	2-11
PCBs	75	Fully validated	- EUROCHEM - EC 2002/657 - EC 252/2012	0,003-2,5 pg/g fat	0,01-8,2 pg/g fat	0,01 – 12500 pg/g fat	No interference	-	65-110	ERM (Pork Fat),	-	3-12	-	7,2-30
	25	In-house validated								In house (fish oil)				

TDS Wiki

Information of target compounds

- Details of the appropriate analytical methods for each contaminant:
  - Reference methods
  - Other available validated methods
- Key steps in each method
- Available Certified Reference Materials (CRMs)
- Appropriate Proficiency Testing Schemes
- Legislative requirements (both national and EC Directives)



Definition of assay quality and performance requirements

Objectives	Results
Identification of assay parameters and performance criteria (LoD and LoQ)	Eight performance criteria idenfitied
Definition of requirements for acceptance of Proficiency Testing results	Literature review showed that the best criteria were those based on z or En-scores
Establishment of target uncertainties	Questionnaire launched to identify which substance groups each participant works with

Links to WP4

Certification framework

Importance of a certification framework

- Monitors and harmonises how organisations operate – enables an opportunity to improve processes by identifying strengths and weaknesses

- Helps to produce good quality and traceable data

- Allows full implementation of standards and best quality practices by TDS Centres
  - Ensuring quality and validity of data

EuroFIR Nexus FP7-KBBE-2010-4, D1.5 Report on framework for certification scheme

Where to begin?

Previous work in the EuroFIR Nexus project e.g. “Report on framework for certification scheme”

TDS SOP list from 5.2.2 used to identify current areas of importance

Identify features of EuroFIR Nexus framework that apply to TDS

Modify EuroFIR NEXUS framework to fit current TDS practices - identify the standards TDS Centres are working towards

Three or four TDS Centres will be involved in an audit visit to test the framework

Framework Review

1. Management Requirements	2. Technical Requirements
• Organisation structure and management policy • Description of work • Contracts and sub-contracts • Document control • Review of the Quality Management System	• Personnel • Equipment • Sampling • Analysis • Publication process • Compilation process

- Outcomes will be based on three/four pilot reviews
- Review Quality Management Systems
- Highlight strengths and weaknesses with a view to continuing improvement
- Consider possibility of Certification Standards

Any questions?