



Potential of Use of Electronic Evidence of PPP in form of 2D Matrix Codes in Conditions of the Czech Agriculture from 2020

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Potenciál možností při použití elektronických kódů/evidence u POR formou 2D Matrix kódů v podmínkách zemědělství ČR od roku 2020



2D MATRIX CODES - CZe „HISTORICAL MILESTONES“



The first discussion on this subject was initiated by the Ministry of Agriculture in the summer of 2015

- ❑ experiences of the **tobacco industry** and **PPP producers** approach have been compared
- ❑ cooperation authorities and industry is necessary and will only lead to the objectives set
- ❑ objective: ensured commodity quality and market protection from illegals
- ❑ the reason was to choose 2D Matrix code as the optimal PPP recording path:
 - ❑ being established in both sectors - **more advance tobacco industry**, introducing PPP industry
 - ❑ traceability and transparency is clearly the way forward – above one sector
 - ❑ more PPP crisis - gradual phasing out of the list of authorized active substances in the EU
 - ❑ tool also for processing industry – food consumers protection
 - ❑ Envi and Ecotox health



2D MATRIX CODE or QR CODE for PPP, or another CODES ?



Situation:

The CapSeal 2nd generation was introduced in 2012 and has now been in the market for 3 years. The first well made fakes were detected at the beginning of 2015. The farmer is not able to notice the difference, particularly if s/he is not fully aware of our security features. For this reason, we will introduce a new solution in 2016.



2D DATAMATRIX ECC200



QR CODE

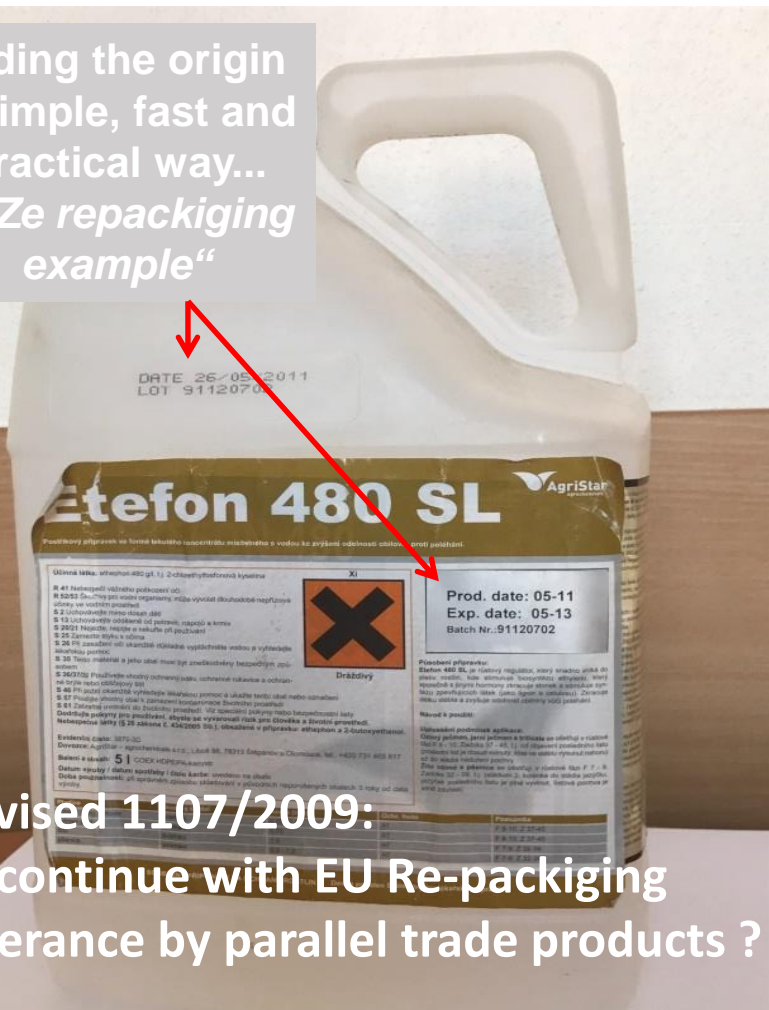
- Both high data capacity more than needed for our future needs,
- Both widely used worldwide,
- Lots of App capable of reading them available,
- Lots of code generator available for free,

WHY 2D DATA MATRIX FOR SERIALIZATION ?

- **Data Matrix** has 10% more of its area available for data and hence they **are more compact** in size and more effective – **using less area to contain same amount of data.**
- **Data Matrix** is more efficient to code small amount of data on a small footprint area (the smallest 2D Data matrix is 10x10 modules where QR is starting with 21x21 modules,
- **Data Matrix** has more Error Correction (EC) included by design (30%) making the data matrix coding stronger for industrial application,

TRACEABILITY ASPECT – FIRST PRACTICAL BENEFIT

Hiding the origin = simple, fast and practical way...
„CZe repackaging example“



Revised 1107/2009:
to continue with EU Re-packaging tolerance by parallel trade products ?

Next, not ideal code:

Les bonnes pratiques phytosanitaires
10 gestes responsables et professionnels

AVANT L'APPLICATION

- 1) Stocker les produits dans un local phytosanitaire conforme et fermé à clé.
- 2) Bien lire l'étiquette et les précautions d'emploi.
- 3) Se protéger efficacement (gants, lunettes, masque, combinaison, boots).
- 4) Vérifier régulièrement et maintenir le bon état et les réglages des matériels d'application.
- 5) Surveiller le remplissage du pulvérisateur et ajuster le volume de bouillie (déjet anti-retour, dispositif de surverse).
- 6) Rincer les emballages trois fois, vider l'eau de rinçage dans la cuve et recycler dans le cadre des collectes Adivalor.

PENDANT L'APPLICATION

- 7) Appliquer la bouillie dans les cultures par temps calme, sans vent et éviter toute dérive de pulvérisation vers les fossés, cours d'eau, chemins, abords de ferme ou bâtiments.

APRES L'APPLICATION

- 8) Appliquer après dilution les fonds de cuve et les eaux de rinçage sur la parcelle.
- 9) Nettoyer les équipements de protection. Se laver les mains. Prendre une douche.
- 10) Gérer les eaux de rinçage et de lavage à la ferme.
Exemple : l'épaveuse Phytobac®

SOULEVER ICI ↑

FR80205767B - FRANCE

No traceability, only product identification, using an EAN13 barcode

Advised direction:

Traceability on batch number or on individual serial number, using a 2D data matrix code

illulaire ; dotée de propriétés mésostémiques, elle éventive.
érol ; il est doté de propriétés systémiques.

ons	DAR (en jours) ou Stades cultures (NC=non concerné)	Précautions environnement (voir légendes)
in	35	1a, 2a, 4a
		1a, 2a, 4a
		1a, 2a, 4a
		1a, 2a, 4a
		1a, 2a, 4a

respecter une zone non cultivée adjacente.
vité
sur grillures polliniques de l'orge.

GTIN: 04051371000014
Batch: EM4L002839
Prod.-Date: 05.10.12
SRNR: 0913H967J&K2

DATA FLOW and OPTION WITHOUT CZe AUTHORITIES

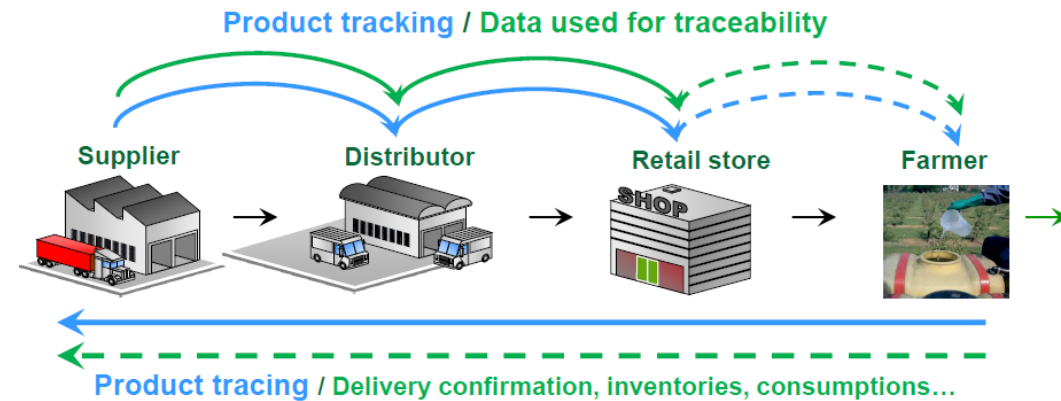


FR/CZe: national approach – suppliers/distributors at first
NLD: global approach with database platform for all stakeholders

„Industry install 2D Matrix codes in their factories, the technology spread no further than to distributor, retailers.

2D Matrix code benefits remains fragmented in many isolated software and paper platforms

FR, CZe:

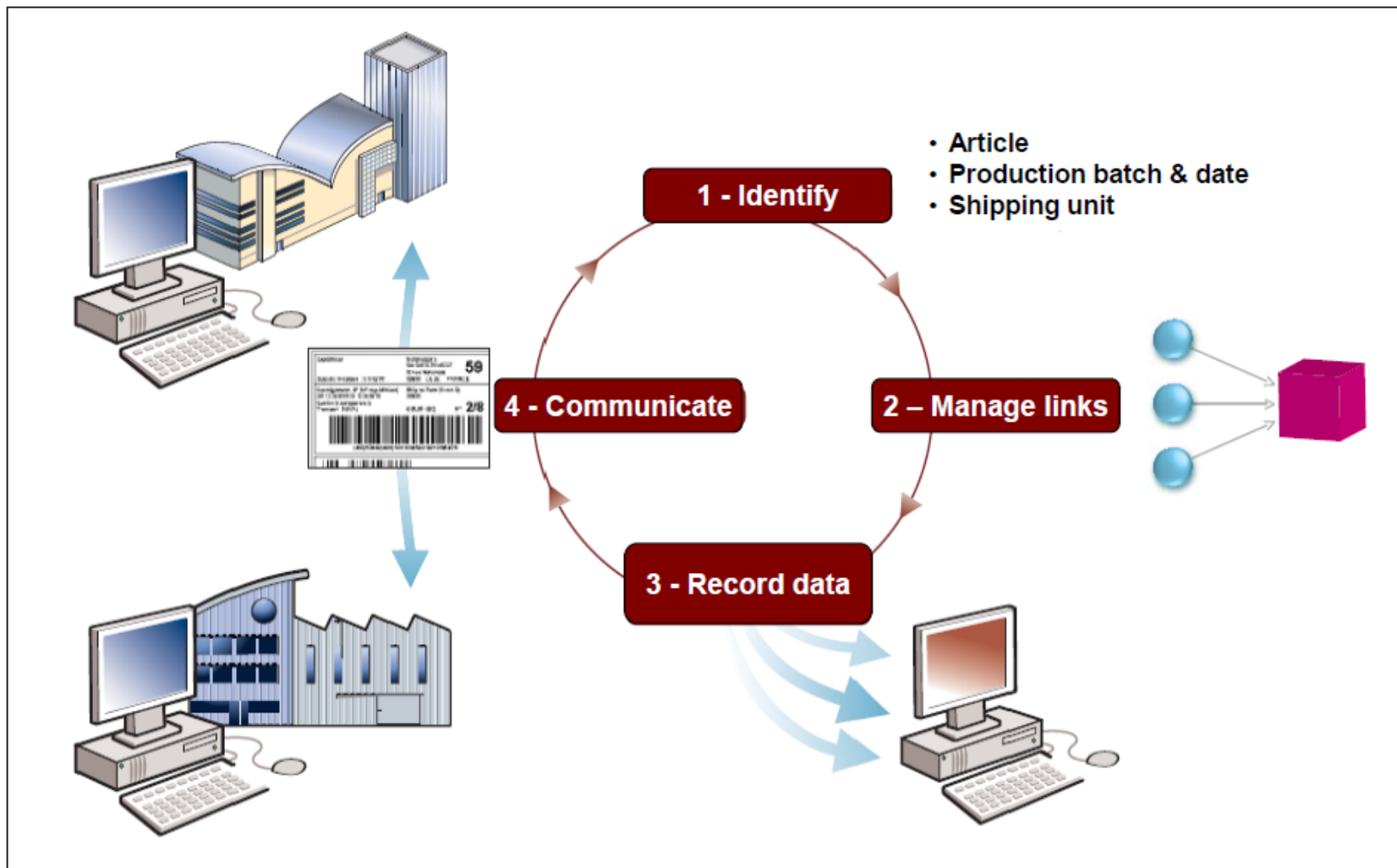


- **Material flows :**
 - **Product Tracking**
Capability to follow and to manage logistics units (pallet, box, but also bottles) through the global supply chain - on all distributions levels - from supplier to end user (farmer)
 - **Product Tracing**
Capability to identify and to locate a specified unit or batch within the supply chain
- **Information flows :** Data communication and integration through the global supply chain

NLD(2020):



BASIC TRACEABILITY PRINCIPLES





LEGAL FRAME

- Common basis: Regulation EU 547/2011 : Batch number and production date have to be indicated on the packaging of plant protection products...+ keep records for 5 years

Which batch number, how to keep, and what about professional end-users ?

FRANCE:

- Law on the future of agriculture – Loi d’avenir (n°2014-1170 - October 13th, 2014 - Art. 53) : modifies the contents of art. L254-6 of the French Rural Code, stating the additional information which **has to be stored in the sale register : batch number and production date. This information has to be archived during 5 years.**
- Law on the future of agriculture (art. 93, XVI) specifies that this requirement applies **from January 1, 2016.**
- The provisions of the **Decree regarding the tax for diffuse pollution** (n°2014-1135 - October 6th, 2014) impose the transmission of the sales register from January 1st, 2016 (instead of the annual sales figures) in order to calculate the pollution tax for the distributors having a tax amount of more than 5 000 Euros.

As a result, batch number and production date have to be stored in the sales register up from January 1st 2016, but the transmission of this register (with batch and prod date) applies ipso facto from January 1st, 2017.

CZECH REPUBLIC:

- New Amendment of the Czech phytosanitary law** – (n°299/2017 – December 1th, 2017 – § 31a, Art. 2; 31b, Art. 3d, § 46c, Art. 1d) batch number and production date of the **formulation producer** have to be included on the product label or on the single pack unit; *stating the additional information, defines which specific batch number and which production date is legally requested as a basic and core product origin identifier*
- Degree conducted with Amendment of the phytosanitary law** (§ 2 art. 2 and art. 8; § 7 art. 2, December 1th, 2017) **from 2020 professional PPP have to be equipped with 2D Matrix codes containing batch number and production date of the formulation producer; suppliers and distributors dealing with professional PPP equipped with 2D Matrix codes are compulsory to conduct their electronical records from 2020**

As a results, visible batch number and production date of the formulation producer have to avoid the hiding the real origin during re-packs and to stop artificial rejuvenation of production dates.

Duties for professional end-users (mainly larger farms) and state electronical records allowing accessible data transfer incl. different Ministries are suggested in revised CZe NAP (2018-2022) as following step.

IMPROVED DATA FLOW

OPPORTUNITIES FOR UKZUZ (CISTA)

Cze Authority status: 3 data tools available on UKZUZ (CISTA)

- Profi End - Users – focus on application data – **records without batch number and production date**
- Suppliers – focus on imports/entry on the market - **records without production date and till 2017 different batch numbers**
- State statistic („Variex“) - focus on PPP use by **professional farms** (principle: crop/product/a.i./region/units (kg,l,))

Main present gaps:

- cross summary for 2-3 data sources related to PPP**
- No end – user duty - **batch number and production date of formulation producer**
- No suppliers duty - **production date of formulation producer**
- Paper and/or fragmented electronical date transfer - end users status
- Limited accuracy level by suppliers, distributors, retailers, farmers
- No access to other Ministries** (revised NAP 2018-2022)
- No online**

Opportunities:

- Basis is existing - data structure from end users – „just to be extended“ ? Electronical Farmer Portal
- data structure from suppliers – „to be extended and connected with previous tool
- Profi End-users are used to work with electronical data for field evidence (LPIS)

Chance: utilize the existing **2D technology** (eliminate the absence of connecting element for cross data transfer)




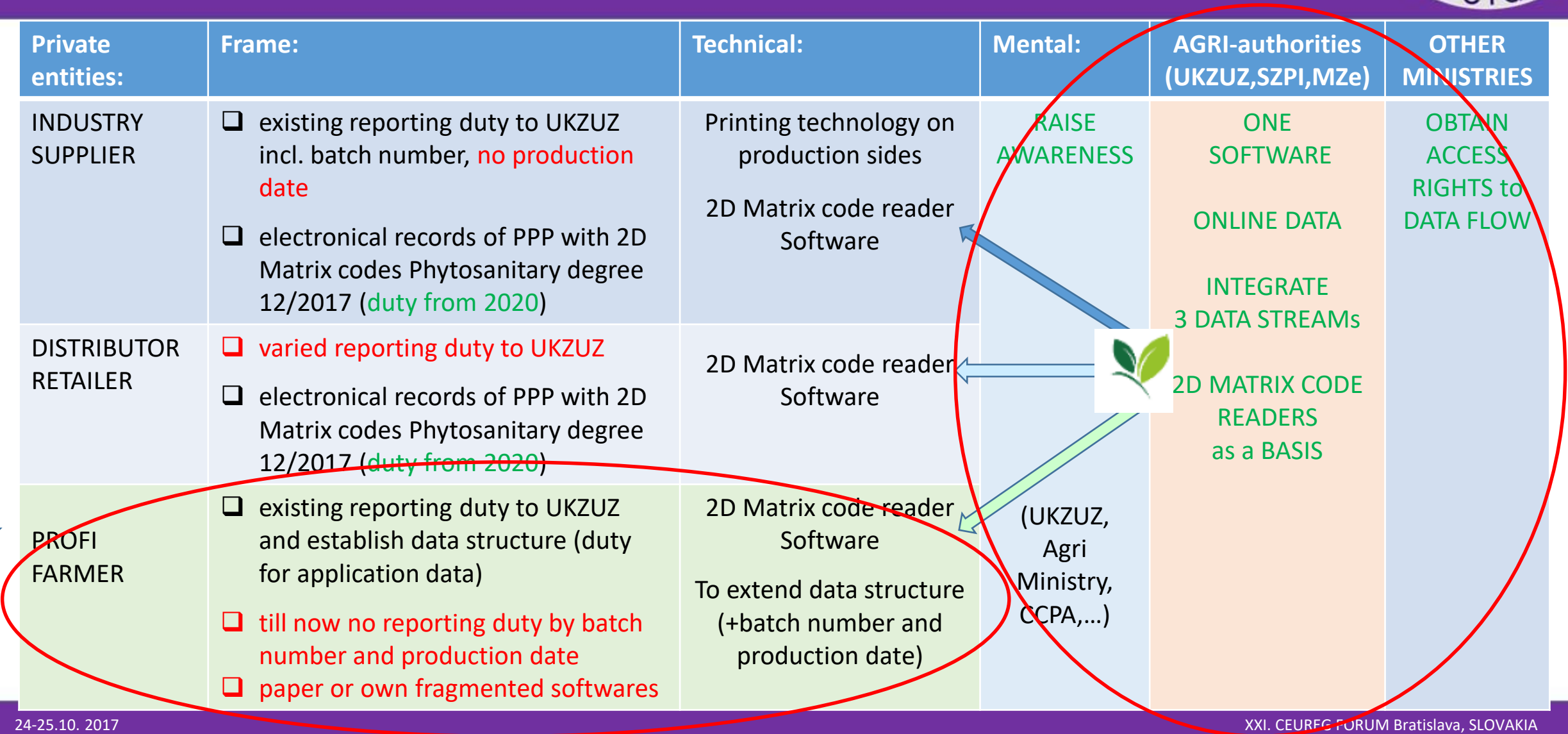
- ❑ Suggestions of successful implementation: **political support** + **good IT team are the key driver**
 - ❑ further **legislative improvements** (degree 32/2012) – paper/or el. datain time/or with delay
 - ❑ 2D matrix codes as platforms
 - ❑ **one unified state (EU) software** (able to manage all different selected **external private units in agricultural sector**)
 - ❑ accessible **software for state 3rd parties** (able to extend data flow to Min. of health, Min. of envi, etc.)
 - ❑ **code readers on smartphones for UKZUZ inspectors** of PPP
 - ❑ **focused employees / optimization of department organization** (focused UKZUZ **partners for custom office, police, layers, court**)

- ❑ Some benefits:
 - ❑ Black market with illegal products in general
 - ❑ Stock re-labeling and control (changes from approval certificates not considered in the product labels)
 - ❑ Specifications out of approved compositions (to assist analytical lab)
 - ❑ Product withdrawals (illegal products banned on 1-2 batch numbers principle, last minute imports after period)
 - ❑ Farmer use in non-approved GAP indications, misuse in water protection bodies (OP II, slopping fields, buffer zones)
 - ❑ Crop injuries (phytotox.) related with specific batch numbers/production dates (phytosanitary inspection)
 - ❑

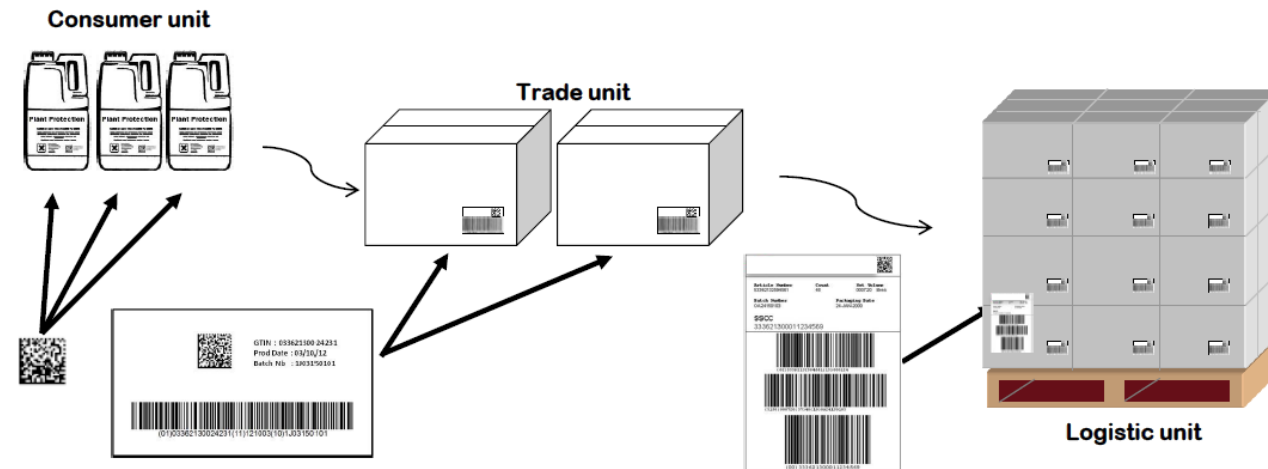
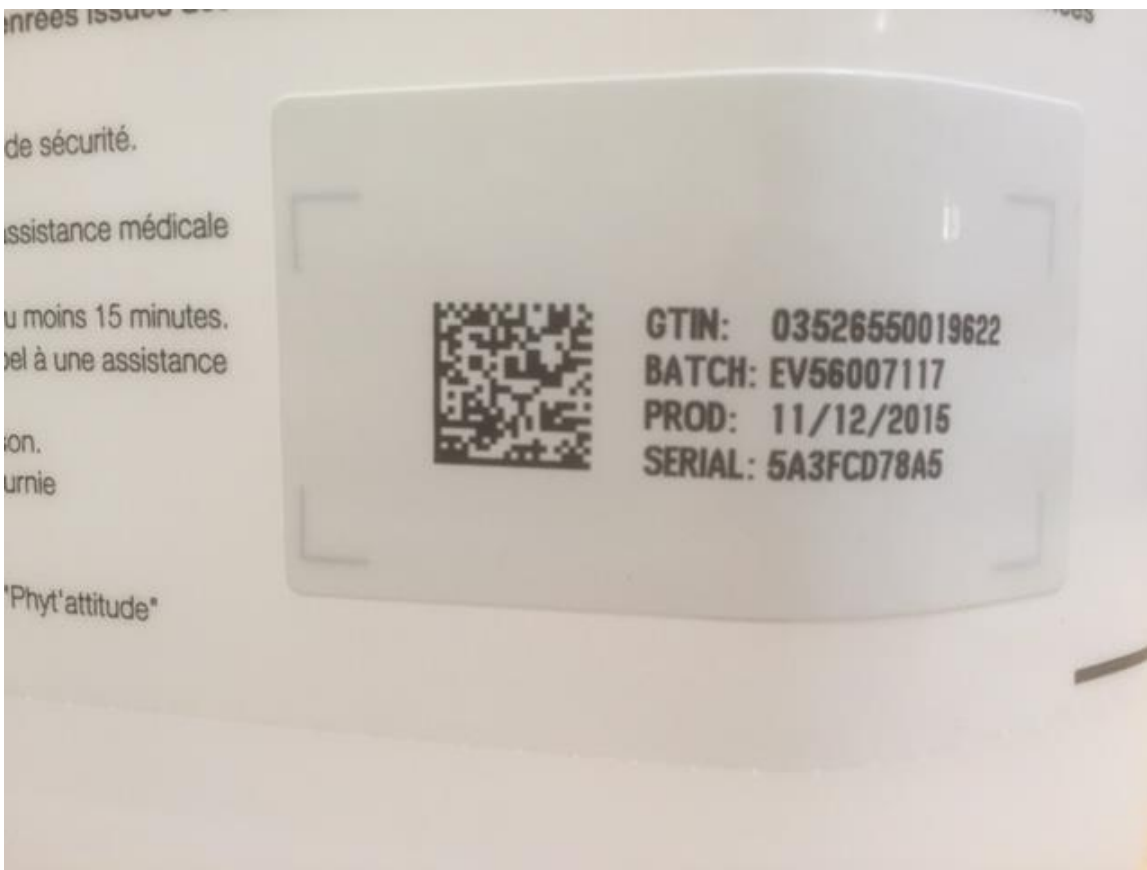
SUPPLIER-DISTRIBUTOR-RETAIL+ PROFI FARMER and CZe AUTHORITIES

Suggested direction by utilization of 2D Matrix code technology

Private entities:	Frame:	Technical:	Mental:	AGRI-authorities (UKZUZ, SZPI, MZe)	OTHER MINISTRIES
INDUSTRY SUPPLIER	<ul style="list-style-type: none"> ❑ existing reporting duty to UKZUZ incl. batch number, no production date ❑ electronical records of PPP with 2D Matrix codes Phytosanitary degree 12/2017 (duty from 2020) 	Printing technology on production sides 2D Matrix code reader Software	RAISE AWARENESS	ONE SOFTWARE ONLINE DATA INTEGRATE 3 DATA STREAMs 2D MATRIX CODE READERS as a BASIS	OBTAIN ACCESS RIGHTS to DATA FLOW
DISTRIBUTOR RETAILER	<ul style="list-style-type: none"> ❑ varied reporting duty to UKZUZ ❑ electronical records of PPP with 2D Matrix codes Phytosanitary degree 12/2017 (duty from 2020) 	2D Matrix code reader Software			
PROFI FARMER	<ul style="list-style-type: none"> ❑ existing reporting duty to UKZUZ and establish data structure (duty for application data) ❑ till now no reporting duty by batch number and production date ❑ paper or own fragmented softwares 	2D Matrix code reader Software To extend data structure (+batch number and production date)	(UKZUZ, Agri Ministry, CCPA,...)		



2D MATRIX CODES - on 3 UNITS of PPP



Based on a **2D data matrix code** for all units

- **Consumer unit**

- **Mandatory** : GTIN – Production date – batch number
- **Optional** : Serial number – expiry date

- **Trade & Logistic unit (e.g. box, pallet, ...)**

- Additional SSCC (Serial Shipment Container Code)

Help for Authority

COMMON BENEFITS FOR ALL STAKEHOLDERS, incl.



Pallet



Box



GTIN (article number)
Batch number
Production date

EAN128 barcode
(transition period)

+

2D data matrix code

Benefits

Logistics Agility, Efficiency & Reliability

- Improve goods receipt, stock taking, stock management in warehouses
- Support FEFO based on production date

Channel Inventory


- Provide stock information at distributors level
- Improve stock management for product with stability issues

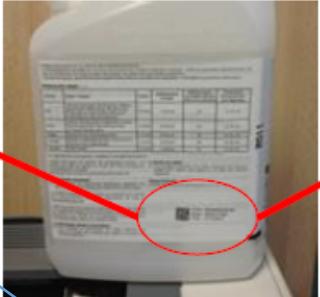
Complaint Management & Product Recalls


- Ability to locate batches within the distribution chain






 GTIN: 03521550018168
 Batch: EM4L100050
 Prod: 01.10.2012




 GTIN: 04051391000014
 Batch: EM4L002839
 Prod.-Date: 05.10.12
 SRNR: 0913H967J8K2

Batch number

- Full channel inventory
- Stock management in the retail stores, based on consumer units
- Sales to the farmers, by quantity and by batch number
- Access to product information “on the field” for the farmer
 - Ability to act more quickly and to be more responsive
 - Proactive approach regarding future regulatory issues

Batch number & serial number

Additional benefits

- Anti Counterfeiting / Parallel Market
 - Reduce / mitigate black market & falsification
- Loyalty / CRM
 - Improve actual customer data quality
 - Extend knowledge management of markets and farmers
 - Food chain requests (food safety)
 - Targeted marketing operations
 - Provide services to farmers
 - Bonus programs

HINTS and TIPS for 2-D CODES TECHNOLOGY

from GLOBAL PERSPECTIVE



- ❑ **Traceability** = Identification of physical units+associated information flow+ supply chain and governmental execution
- ❑ **Barcoding** (EAN 13,2D data matrix,....QR code) = confusion, misunderstanding, lack of knowledge
- ❑ Very **heterogeneous environment** (equipment, IT systems, manual evidence,....)on supplier, distributors, professional farmer and authority level ... **And all different levels of acceptance & awareness**
- ❑ **Important gap between concept and practice** (= implementation stage)...and the devil is in the detail
- ❑ Requirements for a successful implementation on Industry-Distributors/Retails side
 - ❑ A suitable **Information System** (able to manage and to communicate data)
 - ❑ A **WMS** able to process data (scanning of goods receipts and goods issues, location management)
 - ❑ **Equipped production lines, warehouses &retail stores** (marking products, scanning, data management)
 - ❑ **Master data** may be one of the key issues = ability to manage pallets (logistic units), boxes(trade units) and single packs (consume units)
 - ❑ **Supply chain execution** (delivery, reception and handling of products) linked with traceability involves an important **change management**

OVERVIEW OF AVAILABLE TECHNOLOGIES ½ (basic – top) - PRODUCER/SUPPLIER UNITS



Printing solutions (Boxes, bottles, bags, sachets,...)

- Inkjet printing for low rate applications (possible solution possible),



Integration possible on a linear labeling machine
At low speed
Medium printing quality

- Head transfer printing (recommended solution),



Integration possible on a linear labeling machine
Interface possible with the machine API
Fast, precise and reliable (high definition)

OVERVIEW OF AVAILABLE TECHNOLOGIES 2/2 (basic – top)

- PRODUCER/SUPPLIER UNITS

Solutions for printing and application (Box and pallet)

- label printing for manual application,



- Head transfer printing with applicator,



- Reading, verification, scanning of codes with data acquisition



Reading on the filling line



Scanning in the warehouse



2-D MATRIX CODES - MULTI-SIDES UTILIZATION



TIMEFRAME and COSTS for SUPPLIERS/DISTIBUTORS - GLOBAL PERSPECTIVE



- **Timeframe for the implementation = approx. 3 – 5 years,** depending on
 - **Information to be managed** (e.g. batch number and / or serial number), **to be shared** and **to be accessed** (from stakeholder to stakeholder, pooled information, ...)
 - **Involved stakeholders**, i.e. distribution chain (suppliers, distributors), with or without end users (farmers)
 - State of progress of the stakeholders regarding technical requirements (i.e. already existing **technical and IT equipment**)

- **Implementation costs**
 - **Highly depended on the above mentioned topics**
 - **Costs are exponentials**, dependent on the number of productions sites and lines, warehouses and retail stores
 - **Investment effort** reflects the as-it situation regarding equipment on the production sites and IT maturity, but also the requirements for a given project (e.g. product tagging, scope of material and information flows, data to be managed and shared, etc.).

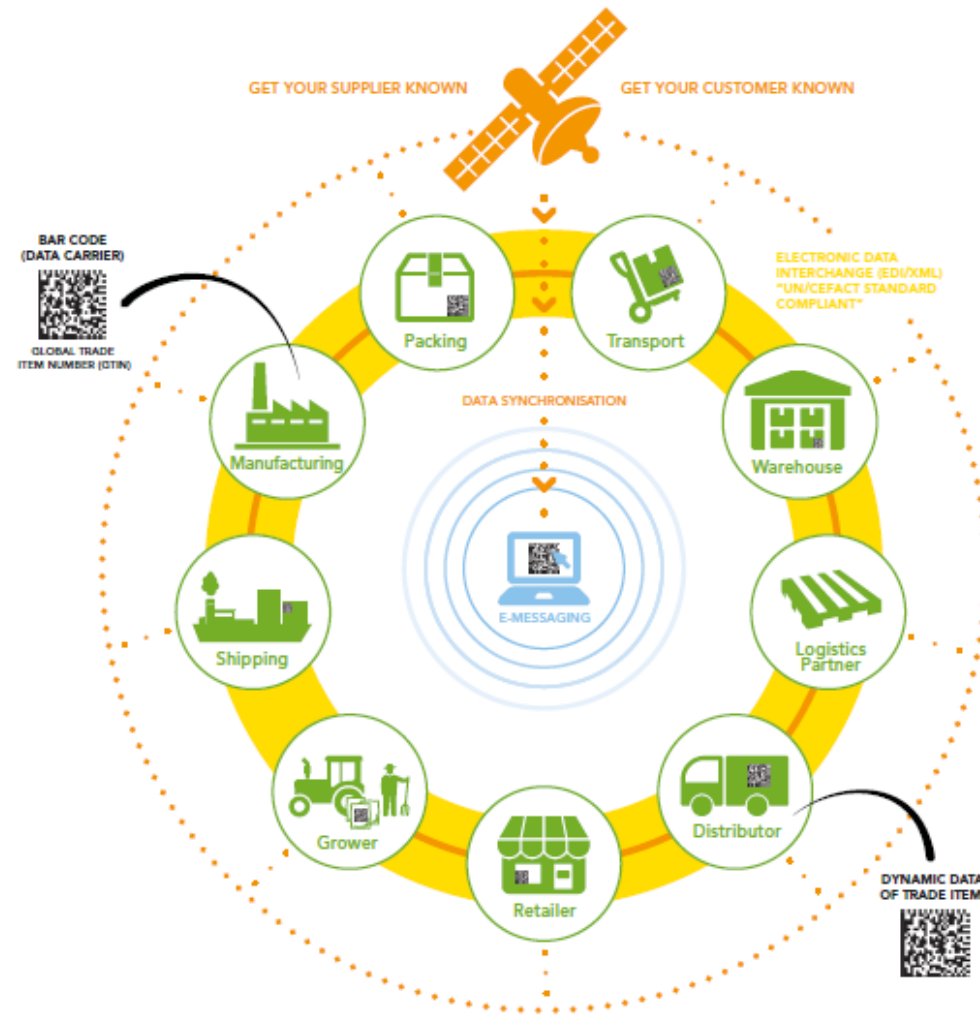
DIFFERENT PERSPECTIVES and BENEFITS - SUMMARY



- ❑ **Traceability** helps farmers, authorities (and all responsible stakeholders) to use and to control registered crop protection products in the right quality and protects against the use of illegal products with unknown contents – an important step to produce safe and healthy food, including environmental and human health protection
- ❑ **Supports** supply chain and Authorities **agility** from production to end users: Improved traceability creates the possibility of **more controlled product recall, re-labeling and withdrawal**
- ❑ **Interoperability** across the supply chain and different Authority levels through **standardized information and messages**
- ❑ **Possibility** for producing companies, distributors, retailers, farmers, authorities **to enhance** their **Total Quality Management** (products and data flow)
- ❑ **Reduces product obsolescence** along the whole distribution chain



„GET YOUR SUPPLIER - END USER KNOWN“



Thank you for your kind attention