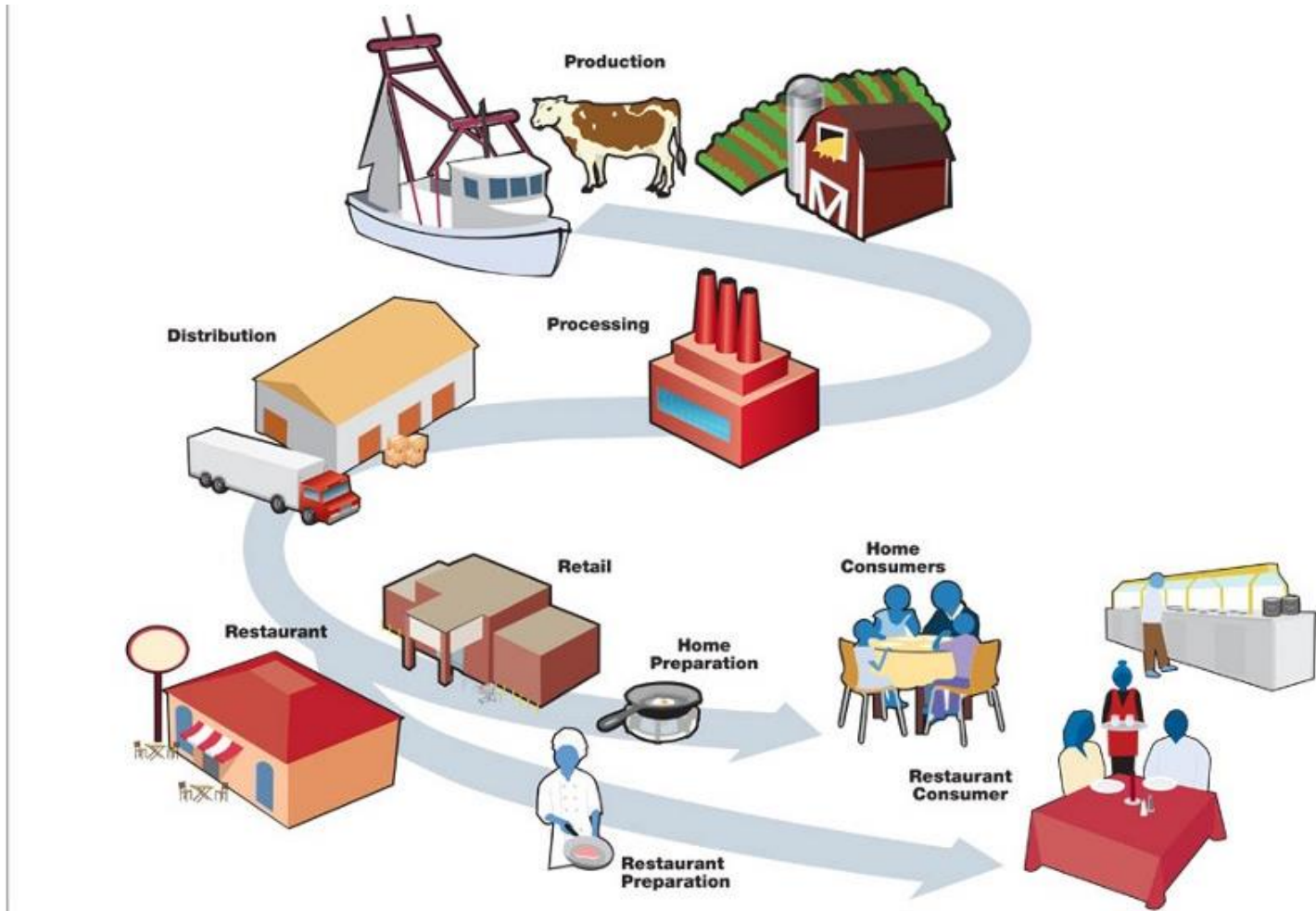# Adoption of global data standards in supply chain to enhance food integrity, visibility and efficiency

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Today's Global Food Supply Chain

Characteristics:

✓ **International:** Food supply chains are increasingly internationalized

✓ **Intricate:** Different countries/regions with different culture and regulations

✓ **Unclear:** Involving multiple actors, hence information is fragmented
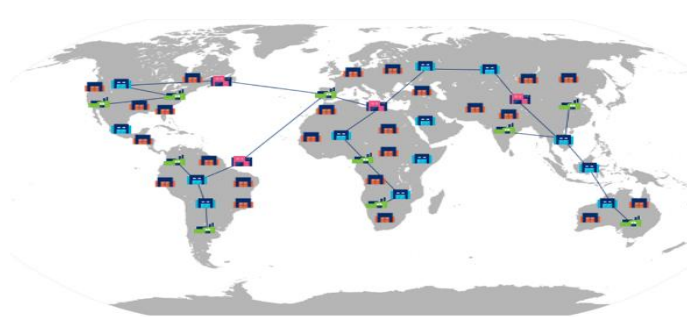
An example of the complexities

A pizza may have over 35 ingredients
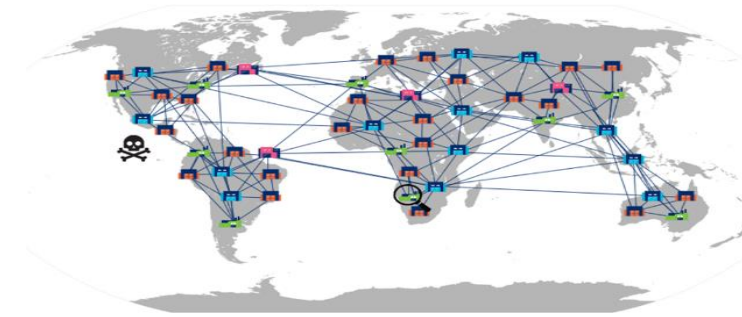

Ingredients may be globally sourced
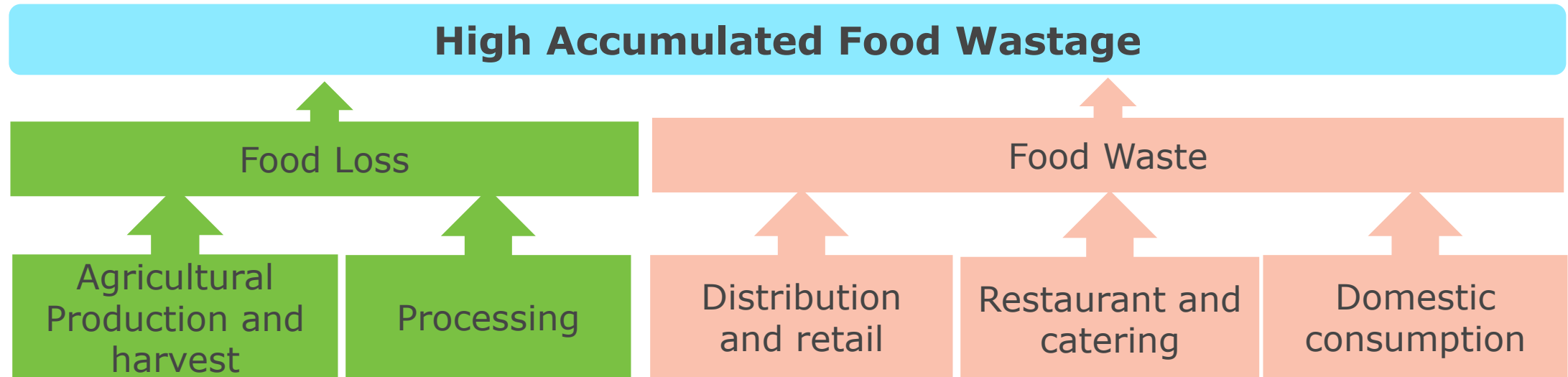

How would we know where are all the ingredients coming from and when they are being produced?

And how are these ingredients manufactured and distributed through the supply chain?

As a result…

High Accumulated Food Wastage

Food Loss

Food Waste

Agricultural Production and harvest

Processing

Distribution and retail

Restaurant and catering

Domestic consumption

The need of information systems

- Traceability
- Risks management & Recall
- Fight fraud & counterfeit
- Compliance
- Consumer Trust & Transparency
- Efficiency & Planning

Interoperable?

Traceable?

Benefits of interoperability & traceability
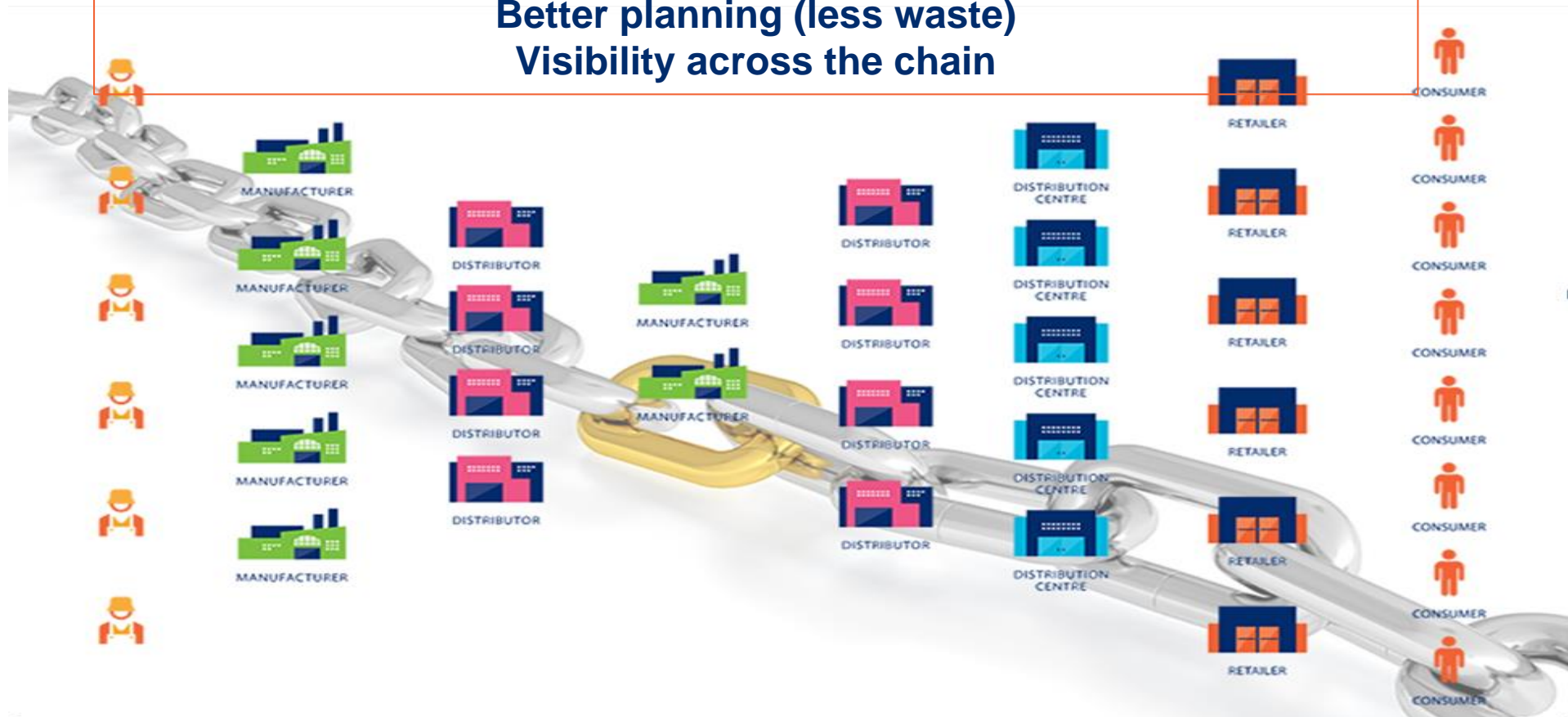
GS1 Standards Can Help With:
Seamless sharing of information between supply chain stakeholders
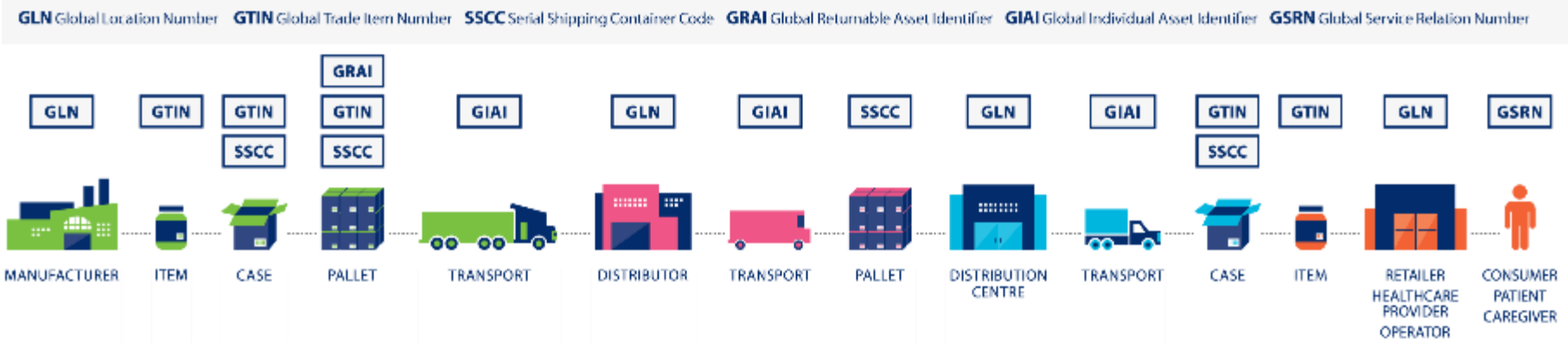Automation
Data quality
Better planning (less waste)
Visibility across the chain

Standards Overview

IDENTIFY: GS1 Standards for Identification

GLN Global Location Number   **GTIN** Global Trade Item Number   **SSCC** Serial Shipping Container Code   **GRAI** Global Returnable Asset Identifier   **GIAI** Global Individual Asset Identifier   **GSRN** Global Service Relation Number

| GLN | GTIN SSCC | GTIN SSCC (GRAI) | GIAI | GLN | GIAI | SSCC | GLN | GIAI | GTIN SSCC | GTIN | GLN | GSRN |

MANUFACTURER   ITEM   CASE   PALLET   TRANSPORT   DISTRIBUTOR   TRANSPORT   PALLET   DISTRIBUTION CENTRE   TRANSPORT   CASE   ITEM   RETAILER HEALTHCARE PROVIDER OPERATOR   CONSUMER PATIENT CAREGIVER

CAPTURE: GS1 Standards for Barcodes & EPC/RFID

GS1 BARCODES   **GS1 EPC/RFID**

EAN/UPC   GS1-128   ITF-14   GS1 DataBar   GS1 DataMatrix   GS1 QR Code   GS1 Composite Barcode   EPC HF Gen 2   EPC UHF Gen 2

SHARE: GS1 Standards for Data Exchange

MASTER DATA Global Data Synchronisation Network (GDSN)   **TRANSACTIONAL DATA** eCom (EDI) (Despatch Advice, Recall notification)   **Event Data** EPC Information Services (EPCIS)

USE : GS1 Standards for business processes

GLOBAL TRACEABILITY STANDARD (GTS)   **CONTROL POINTS AND COMPLIANCE CRITERIA** (GTC checklist)   **PRODUCT RECALL** in Multiple Recall Jurisdiction guidelines

FRESH FRUITS AND VEGETABLES Traceability guidelines   **FISH** traceability guidelines   **MEAT & POULTRY** traceability guidelines

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GS1 Barcodes

EAN/UPC   GS1 DataBar   GS1 Data Matrix   GS1-128   EPC RFID

What we will be focusing on today

EAN/UPC   GS1 DataBar   GS1 Data Matrix   GS1-128   EPC RFID

Barcode that can carry expiry date and batch/lot information

Batch/expiry date encoded in GS1 DataBar :

➔ Quick sales / discounted close to expired produce

➔ Better stock management / planning

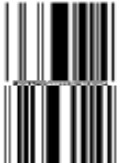➔ Support product recall/block sale for selected batch/ expiry date

Technology insights - Point of Sale

In addressing food loss waste issues at retail and supply chain levels, it is important to understand what is already possible today

- **POS barcode scanning technology in place today** – food retail outlets are using 1D (red laser) scanning technology which means that they can only scan EAN/UPC barcodes.
  - They have the capability to scan GS1 DataBar 1D barcodes containing variable data such as – expiry date, batch/lot data, serial numbers etc. This means that it is possible for retailers to capture expiry data on items scanned at POS
- Use of **pallet identification labels (SSCC)** in supply chain functions to monitor batch and expiry date to enable improved planning, stock management, supply

GS1 Databar

GS1 DataBar Family

The GS1 DataBar family consists of seven types of barcodes. Four of the barcodes are applied in scanning at retail point-of-sale (POS), two of which are able to carry additional information such as a serial number, lot number of expiry date. GS1 DataBar is also applied in general distribution and logistics environments.

	For use at POS			Not for use at POS
	GS1 DataBar Omnidirectional	**GS1 DataBar Stacked Omnidirectional**	**GS1 DataBar Expanded Stacked**	**GS1 DataBar Stacked**
	(01) 0 9501101 53000 3	(01) 0 9501101 53000 3	(01) 0 9501101 53000 3 (3103) 000480	(01) 0 9501101 53000 3 **GS1 DataBar Limited** (01) 0 9501101 53000 3 **GS1 DataBar Truncated** (01) 0 9501101 53000 3
Symbol id	]e0	]e0	]e0	]e0
Capacity	14 Numeric	14 Numeric	Maximum 74 Numeric/ 41 Alphanumeric	14 Numeric
Omnidirectional?	Yes	Yes	Yes	No
GS1 Keys	GTIN, GCN	GTIN, GCN	GTIN, GCN	GTIN
Attributes?	No	No	Yes (in example: net weight 0.48 kilogram)	No

GS1 DataBar Expanded

(01) 0 9501101 53000 3 (17) 140704

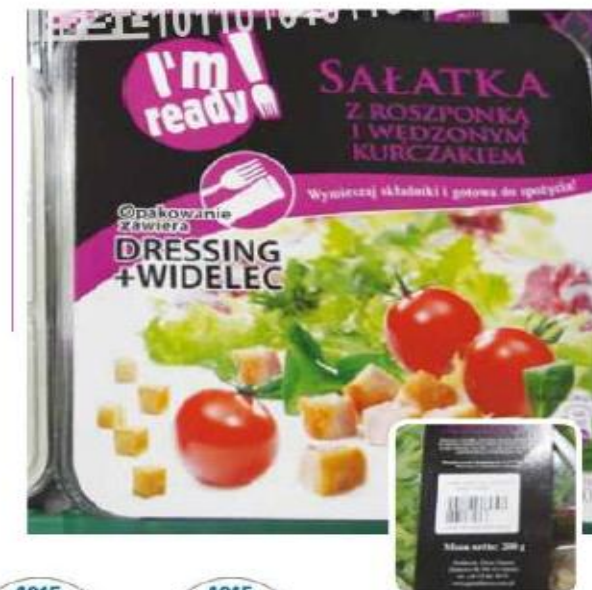|	
Symbol id	]e0
Capacity	Maximum 74 Numeric / 41 Alphanumeric
Omnidirectional?	Yes
GS1 Keys	GTIN, GCN
Attributes?	Yes (in example: expiry date 4-July-2014)

GS1 Databar standard

INTERNATIONAL STANDARD

ISO/IEC 24724

Second edition
2009-01-28

Information technology — Automatic identification and data capture techniques — GS1 DataBar bar code symbology specification

How does it look in practice

Incorporating product life information in barcodes

Benefits of automatic expiry date management

- More accurate information on the expiry date profiles of fresh foods, which in turn can provide the following benefits:
  - Optimisation of fresh foods stocks including more accurate forecasting/ordering from suppliers
  - Ability to block the sale of near-expired product
  - Ability to sell-out near-expired products at attractive markdowns for consumers

- Likely results:
  - Significant reductions of in-store loss and waste
  - Elimination of manual fresh foods stock management
  - Elimination of reverse supply chain logistics processes of fresh foods delivered through online sales

Additional Use of GS1 2D barcodes: Shanghai Pilot work

GS1 and Fudan University:

- in China there is a significant pilot using 2D barcodes in retail outlets in Shanghai to improve food safety run by GS1 partner University Fudan.

- Even though this is a ground breaking approach we could work with the project team to **show how it would be possible to leverage the pilot to demonstrate how it could also deliver added value in terms of reducing food/loss waste**.

Waste Reduction
Main benefit for all stakeholders

Retailers	Suppliers

Retailers

- Waste reduction
- Better inventory control
- Improved expiry date management
- Lower carbon footprint
- Better visibility of product across the supply chain
- More effective traceability and recall readiness
- Opportunity to offer consumers fresher products and improved product availability in store

Suppliers

- Waste reduction
- Fewer product returns
- Better planning
- Tighter traceability and recall system

GS1 added value in APEC supply chains to combat food waste/loss

GS1 has a unique opportunity to encourage retailers and their suppliers (through pilots and implementation) to start the journey to leverage technology solutions that can already help them to significantly reduce the loss/waste in the fresh foods category

- By using GS1 DataBar **they can derive significant benefits and ROI** whilst at the same time preparing their systems –POS and Back-office to handle variable data (expiry, batch/lot)

- In supply chain functions the use of **pallet identification labels (SSCC)** including expiry, batch/lot ensures better planning

- Main product categories in focus should be those with limited shelf life, meat, fish, poultry, fruit and vegetables, bread and chilled foods

- An initial move to 1D scanning of expiry dates of these foods should be seen as an important step in automating key supply processes in retail and in supply chains

Thank you

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