The Global Language of Business

Scan4Transport – Transforming supply chain operations

Building Resilient, Contact-Less logistic operations and Link the Parcel to its Digital Twin in real-time

Jaco Voorspuij, Senior Manager Transport & Logistics

2nd December 2020; Global Industry & Standards Event

Welcome & Agenda

• Schedule for this workshop	Michiel Ruighaver
• Housekeeping	Michiel Ruighaver
• Poll	Thierry Grumiaux
• Presentations	
◦ What is this Scan4Transport?	Michiel Ruighaver
◦ How will Scan4Transport affect Supply Chains?	Jaco Voorspuij
◦ Next Steps / Roadmap	Michiel Ruighaver
• Poll	Thierry Grumiaux
• Questions, Answers and discussion	Thierry Grumiaux
• Closing	
• Lunch	

Anti-Trust Caution

- GS1 operates under the GS1 anti-trust caution. Strict compliance with anti-trust laws is and always has been the policy of GS1.
- The best way to avoid problems is to remember that the purpose of the group is to enhance the ability of all industry members to compete more efficiently.
- This means:
  - **There shall be no discussion of prices, allocation of customers, or products, boycotts, refusals to deal, or market share.**
  - If any participant believes the group is drifting toward impermissible discussion, the topic shall be tabled until the opinion of counsel can be obtained.
- The full anti-trust caution is available via the link below, if you would like to read it in its entirety: http://www.gs1.org/gs1-anti-trust-caution.

Meeting etiquette

Be present
Presenters turn on video
Avoid multitasking

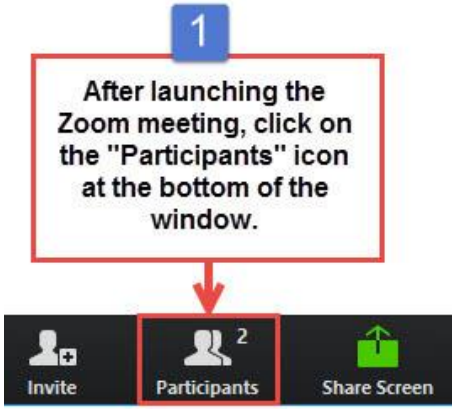
Be considerate
Mute microphone
Keep comments concise

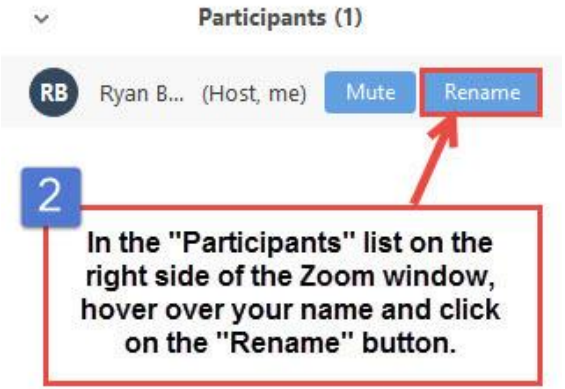
Be collaborative
Ask questions
Be open to other views

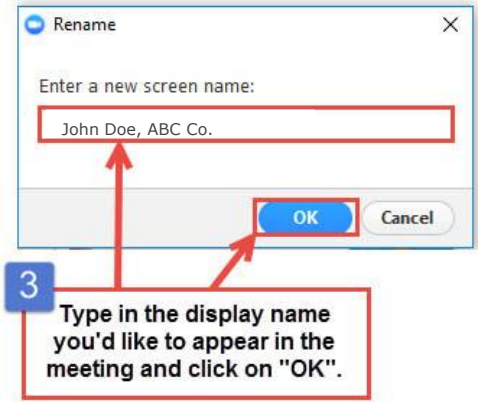
Be professional
Speak on company's behalf

Please clearly identify yourself in Zoom:
Full name and company name

How to change your screen name:

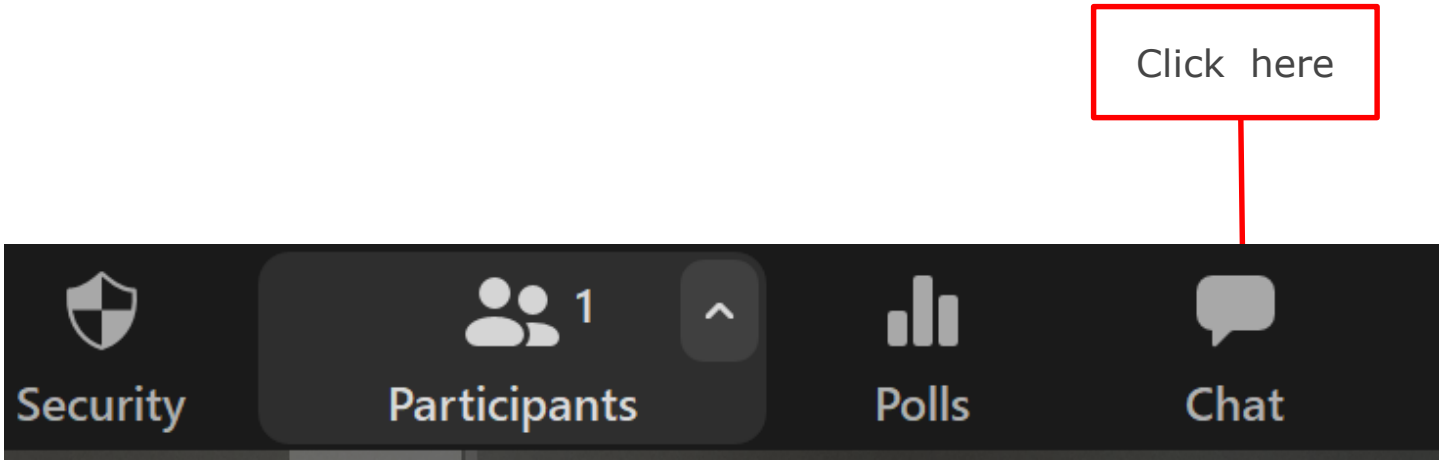




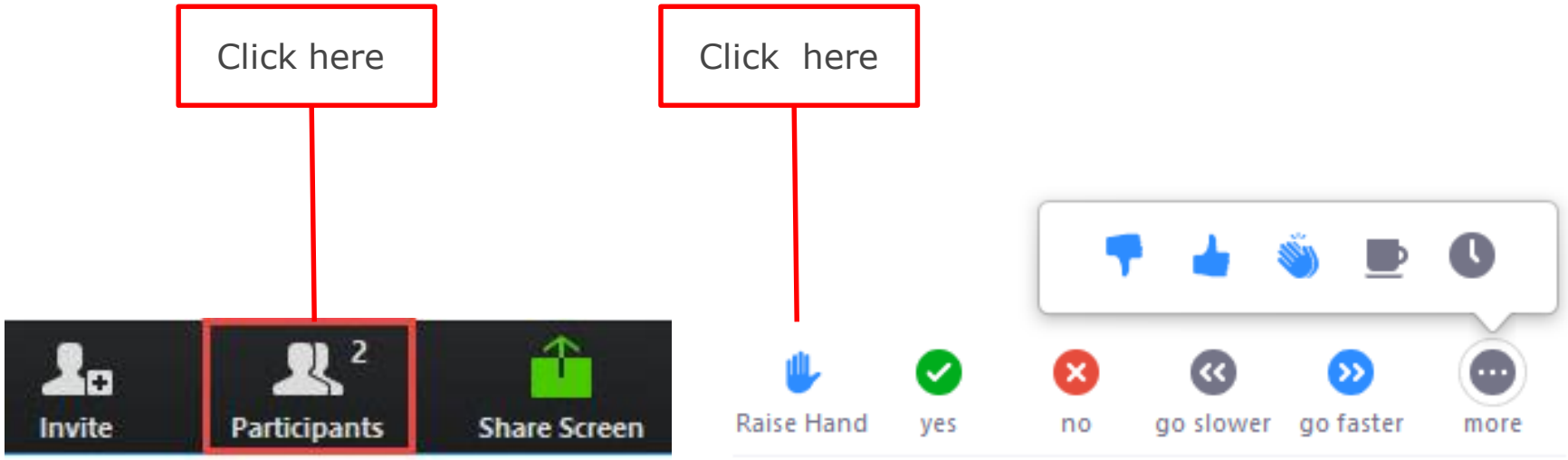


Use the chat to comment or ask a question

Click the bar at the bottom of your screen
the chat window will open



How to raise your hand to ask a question



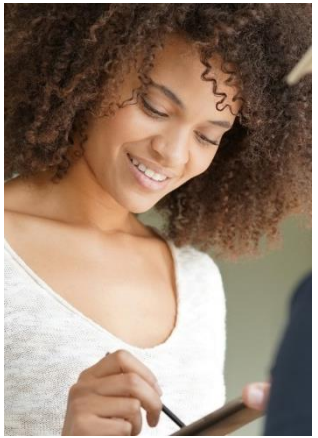
Poll Question

How much do you know about Scan4Transport

A. Heard of it but not sure what it is about
B. Aware of it but not sure of the benefits
C. Fully aware of the benefits, want to know about pilots/implementation
D. Not sure why I am here

Setting the scene
What is Scan4Transport?

Why did we do it?



Michiel Ruighaver; Centre of Excellence Manager Scan4Transport

2nd December 2020; Global Industry & Standards Event

Scan4Transport – Global Work Group

Overview:

Formed to develop global standards for encoding the minimum data required in the transport process into a 2D barcode on the logistics label

- Kicked-off 17-Jan-2019 (Monthly conference calls)
- Reviewed core data elements used in Transport Process globally
- Defining standard for encoding data in 2D symbol

Scan4Transport participants

Logistic Service Providers:

- Australia Post
- Brazil Post
- Bring Frigo AB (Nordique)
- Coloplast (Germany)
- DHL (Germany/Australia)
- Frode Laursen (Denmark)
- Kraftverkehr Nagel (Germany)
- La Poste (France)
- VicTas Freight (Australia)

Shippers:

- Chep (Global US)
- US DOD Logistics

Solution Providers:

- Axicon
- Inet-Logistics
- Leopard Systems
- MixMove
- SICK
- SmartFreight
- Viagenie

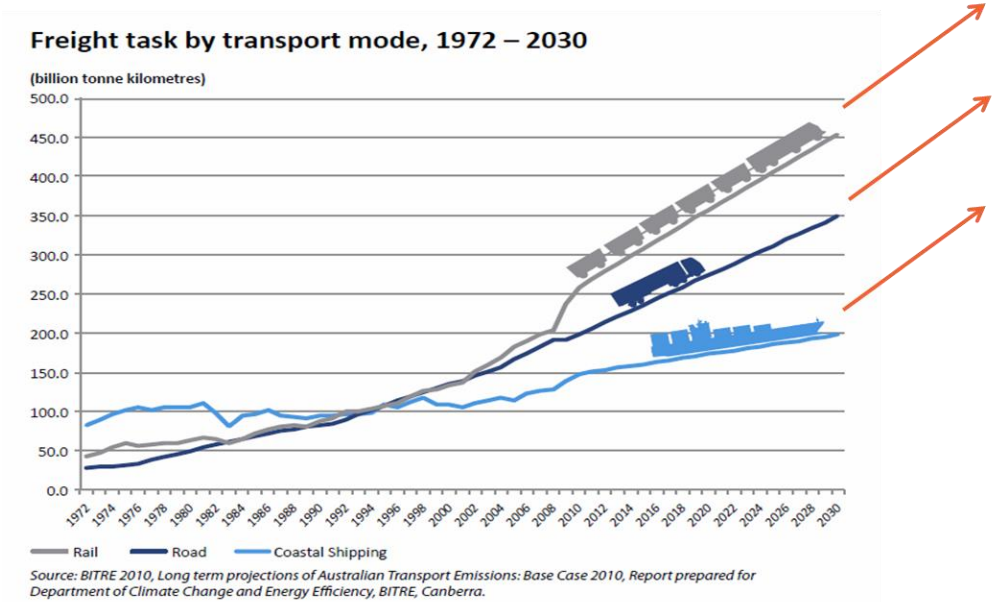
22 GS1 MOs:

- Australia
- Austria
- Brazil
- Denmark
- Finland
- Germany
- Hungary
- India
- Japan
- New Zealand
- US

Transport Challenges – Fragmented Industry

- Multiple Logistic Service Providers and transport modes often required to complete a journey
- Thousands of transport providers in each country:
  - 40,000 transport companies in Australia
  - 100,000 transport companies in Italy
  - **Millions of transport companies globally**
- Each company has a different system/label format/freight ID often leading to duplication and rework

Transport Challenges – Significant growth in demand



Massive growth in freight volumes:

- Omnichannel
- COVID-19

For example:

Australia's freight task is projected to increase by 80% between 2010 & 2030 – growth will triple by 2050

Transport Challenges – Manual processes

- Manual booking process
- Paper based manifests
- Manual entry of proof of delivery paperwork
- Duplication and rework

Challenges – Technology

- Low adoption of IT systems
- Legacy systems
- Low adoption of EDI across industry
- Connectivity gaps between systems due to fragmented industry

Challenges – Visibility of Freight

Freight visibility is impacted by:

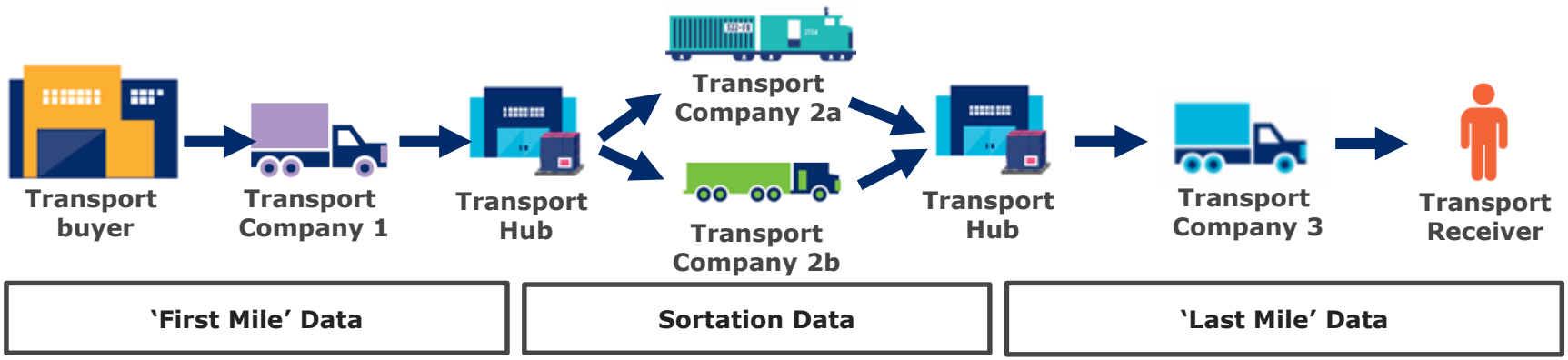
- Fragmented supply chain
- Not all parties in a supply chain are known to each other
- Manual processes
- Low adoption of technology
- Manual processes

Challenges – Increased customer expectations

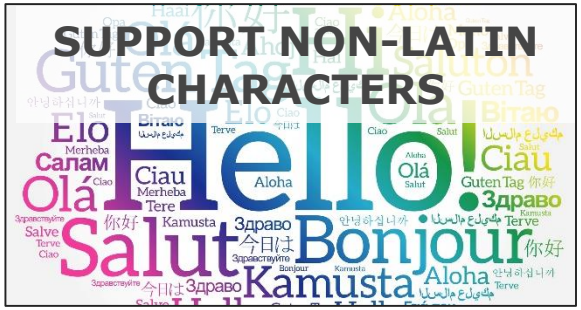
Customer pressure to provide:

- Reduced freight cost
- Faster/same day deliveries
- Realtime visibility of freight
- Flexibility/Inflight redirections

Focus Transport Processes



Solution Requirements



Scan4Transport framework

- Rely on EDI where possible
- Rely on GS1 keys to reference data where possible
  - **SSCC still mandatory** on the Transport Label and in the 2D barcode
- **Leverage the GS1 Digital Link standard** where possible
- Allow for all characters to be used in names and addresses
- Use standard QR/DM barcodes that mobile devices can read “natively”
- **Use existing AI’s where possible**
- Use structured data/code-lists where possible
- Leverage/re-use reputable established standards where possible (e.g. UPU)
- Include method to encode non-Latin characters and represent a space character
- Point to GS1 Digital Link as recommended tool to support forward looking applications

Existing Application Identifiers used in Transport

Application Identifier	Data Content	Format
00	Serial Shipping Container Code (SSCC)	N2+N18
330n	Logistic weight, kilograms	N4+N6
331n	Length of first dimension, metres	N4+N6
332n	Width, diameter, or second dimension, metres	N4+N6
333n	Depth, thickness height, or third dimension, metres	N4+N6
336n	Logistic volume, cubic metres	N4+N6
401	Global Identification Number for Consignment (GINC)	N3+X..30
402	Global Shipment Identification Number (GSIN)	N3+N17
403	Routing Code	N3+X..30
410	Ship to – Deliver to Global Location Number	N3+N13
413	Ship for - Deliver for - Forward to Global Location Number	N3+N13
420	Ship to – Deliver to postal code within a single postal authority	N3+X..20

New Application Identifiers useful for Transport

Application Identifier	Data Content	Description	Example
4300	Ship-to / Deliver-to Company Name	Name of the company receiving the freight unit	Transport LAMBOLLEY
4301	Ship-to / Deliver-to Contact	Name of the person receiving the freight unit	Jeanne d'Arc
4302	Ship-to / Deliver-to Address line 1	Receiving company / residential street address (Line 1)	Zone Industrielle des feuilles, Zone A
4303	Ship-to / Deliver-to Address line 2	Receiving company / residential street address (Line 2)	21 Rue des entrepôts
4304	Ship-to / Deliver-to Suburb	Receiving company / residential Suburb	SEYSSUEL
4305	Ship-to / Deliver-to Locality	Receiving company / residential Locality (town, city)	Isère
4306	Ship-to / Deliver-to Region	Receiving company Region (state)	Auvergne-Rhône-Alpes
4307	Ship-to / Deliver-to Country Code	Receiving company / residential Country	FR
4308	Ship-to / Deliver-to telephone number	Contact phone number for the receiver of the freight unit. Used to populate the system when no EDI has been received	611300227263

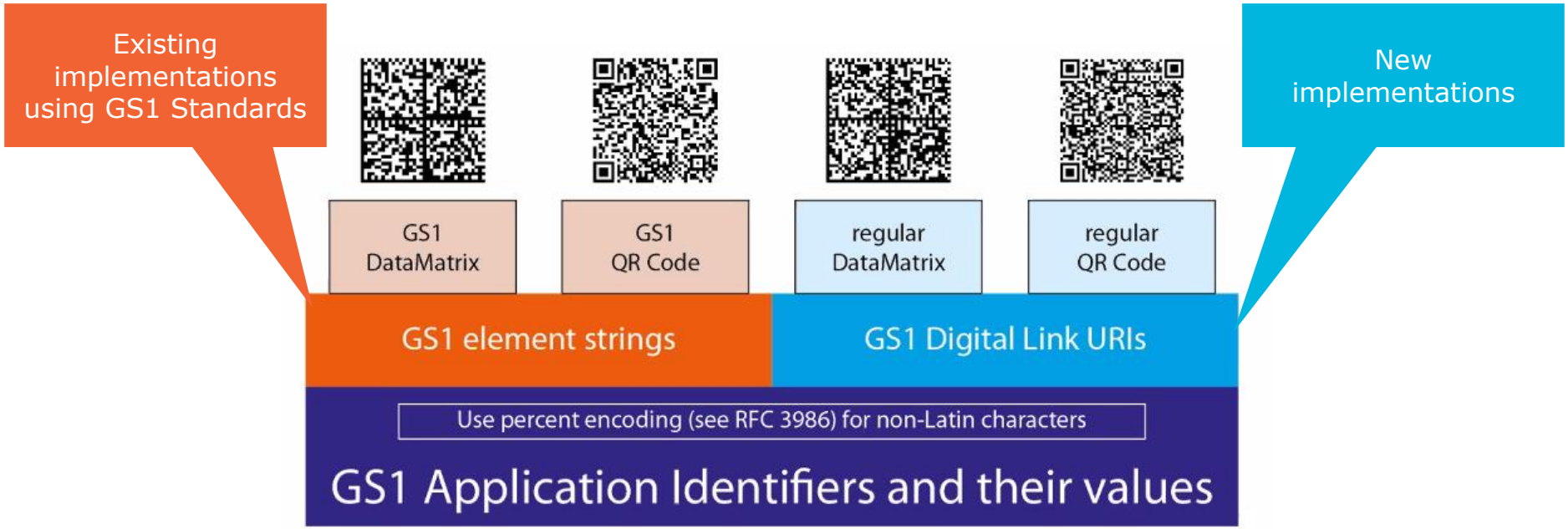
New Application Identifiers useful for Transport

Application Identifier	Data Content	Description	Example
4310	Return-to Company Name	Company name for the return to address	GS1 Sydney
4311	Return-to Contact	Name of the contact freight unit is to be returned to	John Smith
4312	Return-to Address line 1	Return to company / residential street address (Line 1)	Lakes Business Park
4313	Return-to Address line 2	Return to company / residential street address (Line 2)	2-4 Lord St
4314	Return-to Suburb	Return to company / residential Suburb/Town/City	Botany
4315	Return-to Locality	Return to company / residential Locality (town, city)	Sydney
4316	Return-to Region	Return to company / residential Region (state)	NSW
4317	Return-to Country Code	Return to company / residential Country	AU
4318	Return-to Postal Code	Return to company / residential Postcode	2019
4319	Return-to telephone number	Contact phone number for the Return to company for the freight unit.	611300227263

New Application Identifiers useful for Transport

Application Identifier	Data Content	Data type	Description	Example
4320	Service code description	Transport Task Information	Freight service code specifies if it is a standard, express, overnight, same day service, etc. This will be unique text from the shipper.	Express
4321	Dangerous Goods Flag	Freight unit information	A flag to indicate if the freight unit contains Dangerous Goods	N
4322	Authority to leave	May leave (Y/N)	This indicates to the operator that he/she may leave the transport unit at the destination location. Implies the operator does not need to hand the transport unit over to a person. Also implies no signature from recipient is required.	Y
4323	Signature Required Flag	Requires signature (Y/N)	This indicates to the operator that the operator must get a signature from the recipient for having delivered the transport unit to the intended destination. This implies that delivery must be made to a person.	N
4324	Not before Delivery Date Time	Delivery Instructions	In transportation, it is a common business requirement to not deliver before a set date.	YYMMDDHHMM
4325	Not after Delivery Date Time	Delivery Instructions	In transportation, it is a common business requirement to deliver before a set date.	YYMMDDHHMM
4326	Release date	Delivery Instructions	Transport service providers may be required to “hold” transport units for a while before they are allowed to be sent out to recipients.	YYMMDD

2 key approaches



Linking the Parcel to its Digital Twin

GS1 Digital Link URI

https://example.com/**00**/195212342345678908?**4300**=Caf%C3%A9+Ni%C3%A7oise&**4302**=Avenue+Louise+326&**4305**=Bruxelles&**4307**=BE&**420**=1050&**4323**=1

encoded in regular QR code

Data field	GS1 AI Key	Encoded Value	Decoded Value
SSCC	00	195212342345678908	195212342345678908
Ship-to Company Name	4300	Caf%C3%A9+Ni%C3%A7oise	Café Niçoise
Street Address Line 1	4302	Avenue+Louise+326	Avenue Louise 326
Ship-To Locality	4305	Bruxelles	Bruxelles
Ship-To Country Code	4307	BE	BE
Ship-To Postal Code	420	1050	1050
Signature Required	4323	1	Yes

GS1 element string

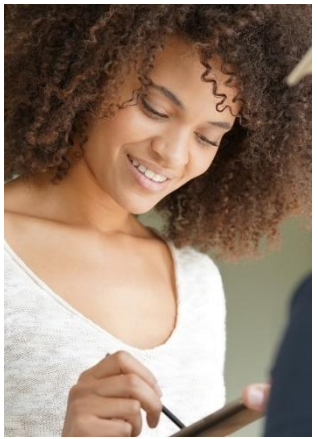
(00)195212342345678908**(4300)**Caf%C3%A9+Ni%C3%A7oise**(4302)**Avenue+Louise+326**(4305)**Bruxelles**(4307)**BE**(420)**1050**(4323)**1

encoded in GS1 DataMatrix

or GS1 QR code

Scan4Transport impacts on supply chains
Linking the Transport Unit to its Digital Twin

Enable all stakeholders to connect directly with the original source of information



Jaco Voorspuij; Senior Manager Transport & Logistics

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What will I talk about

Use Case – Marketplace Low Value Consignment to EU Consumer

- Provide logistic service providers latest information for Transport Unit
  E.g. Updated delivery location
- Provide additional checking/risk analysis to Customs Authorities
  E.g. Checking sales order ID (GSIN) is valid and linked with the marketplace customs ID (IOSS number)
- Enable LSP to confirm delivery to Consumer
- Enable Consumer to provide feedback on delivery

Why do we bother?

https://www.youtube.com/watch?v=Qnv7TcmgrYY&feature=youtu.be

Our Vision: Common ID and label end-to-end - used by ALL to access the information they need

Seller

Created & attached by SHIPPER at origin

Buyer

MANUFACTURER

WHOLESALER

DISTRIBUTOR

AUTHORITIES CUSTOMS

ONLINE STORE

RETAILER

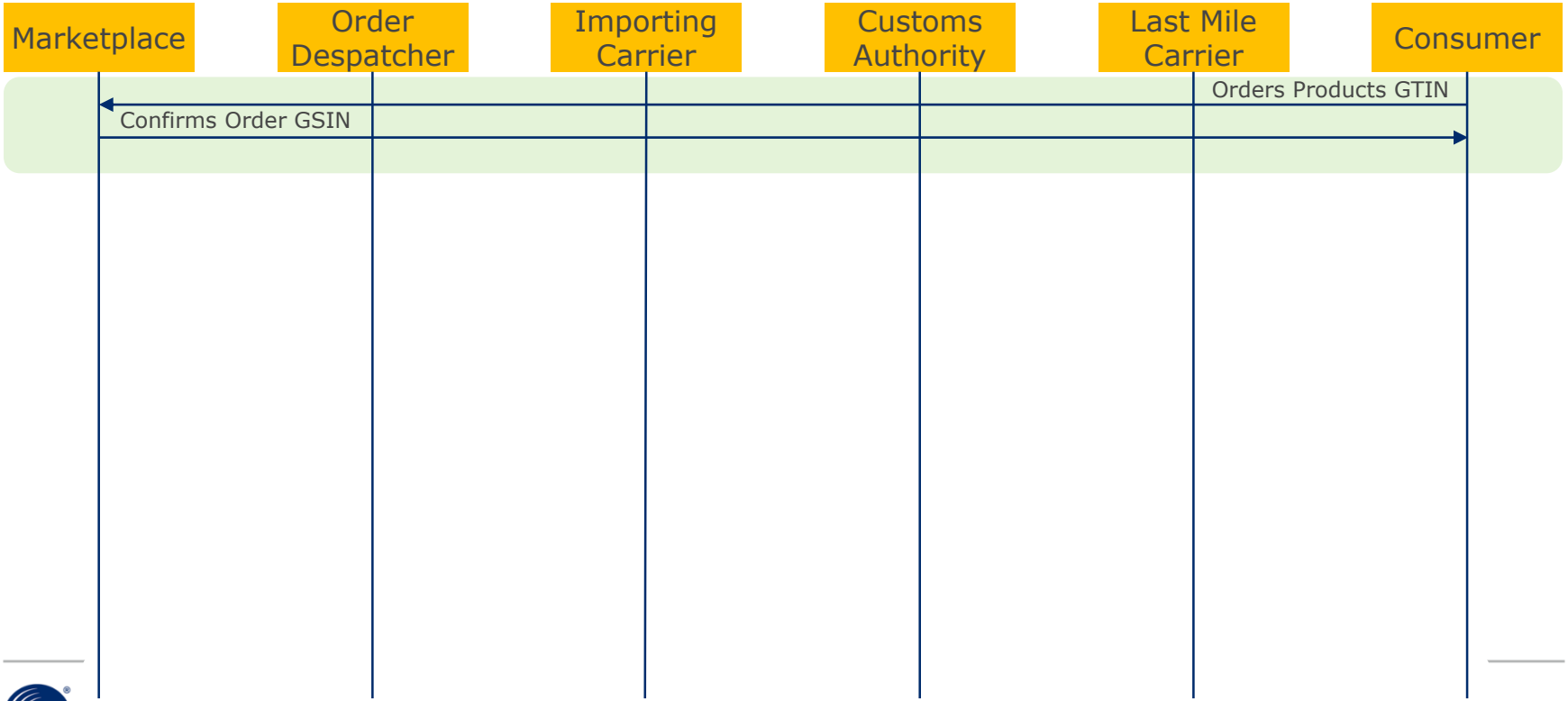
E-FULFILLMENT CENTRE

HOMES

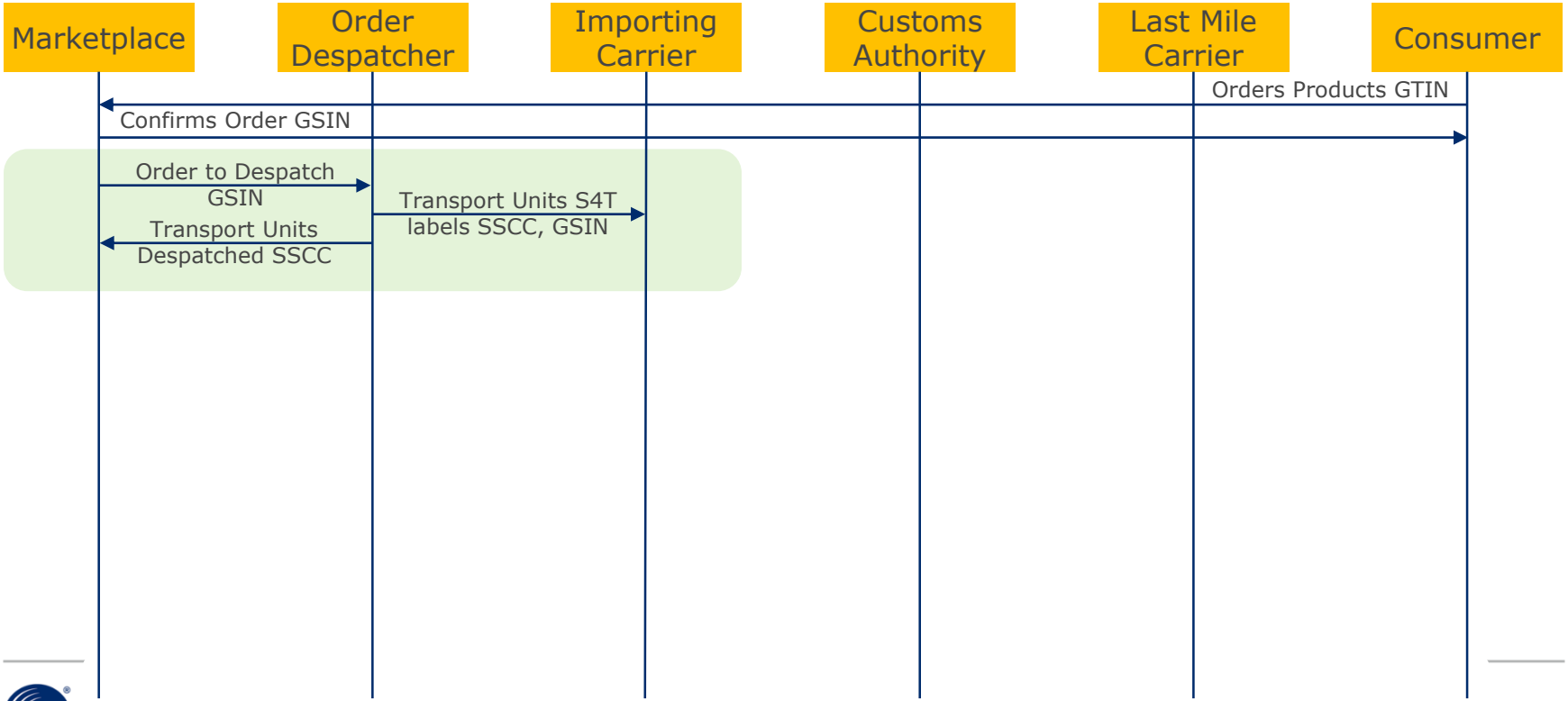
PICK-UP POINT

LOGISTIC SERVICE PROVIDER DISTRIBUTION CENTRE

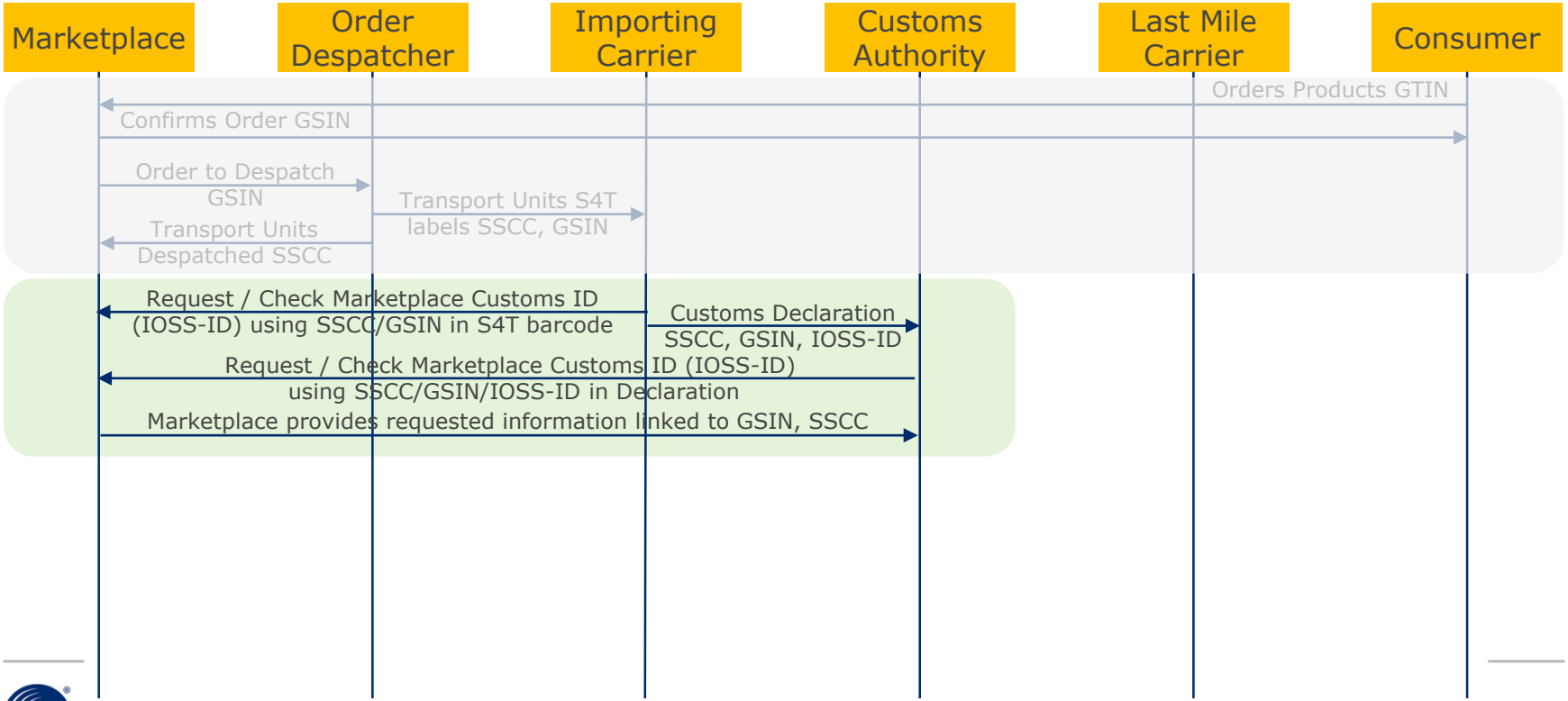
The overall Use Case – Create Order



The overall Use Case – Despatch Order



The overall Use Case – Import Order

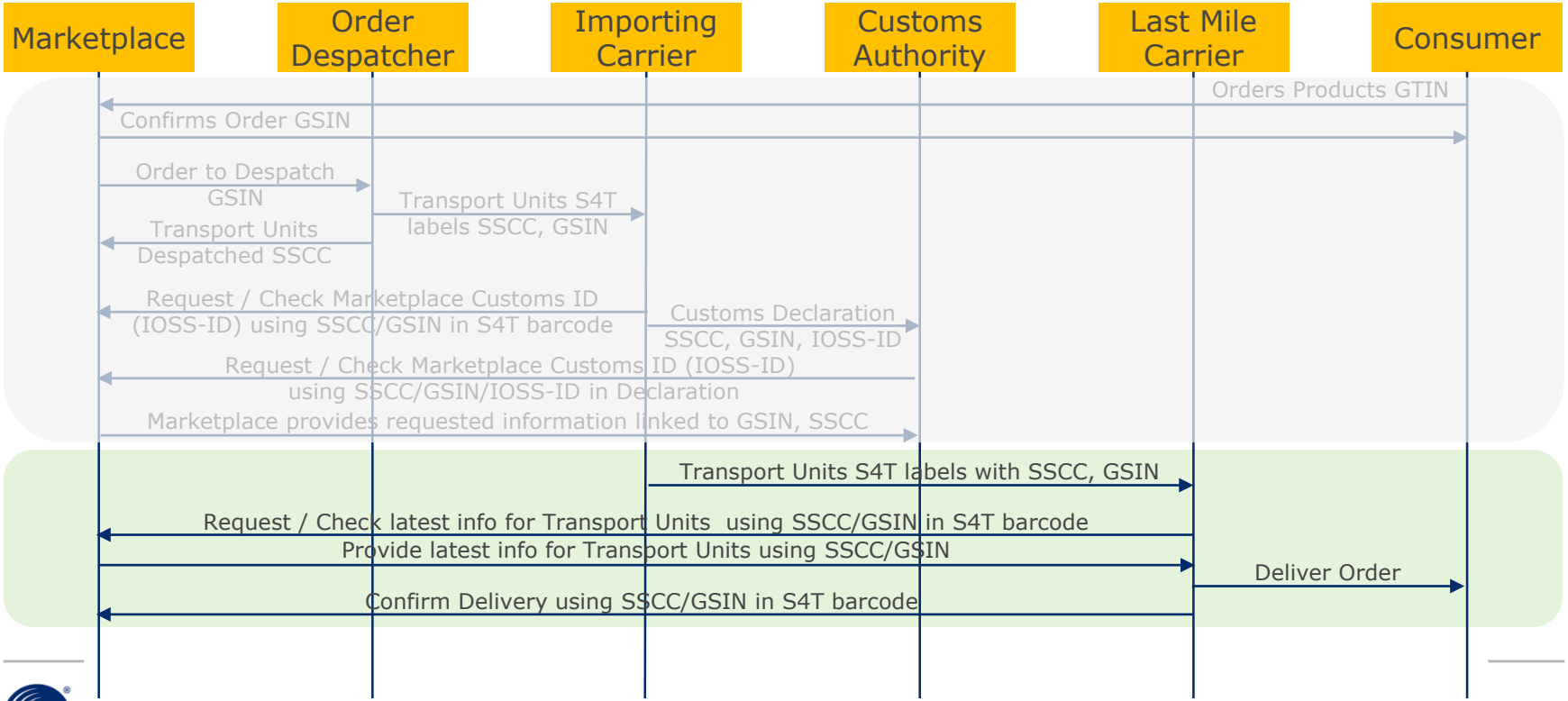


Consumer changes Delivery details

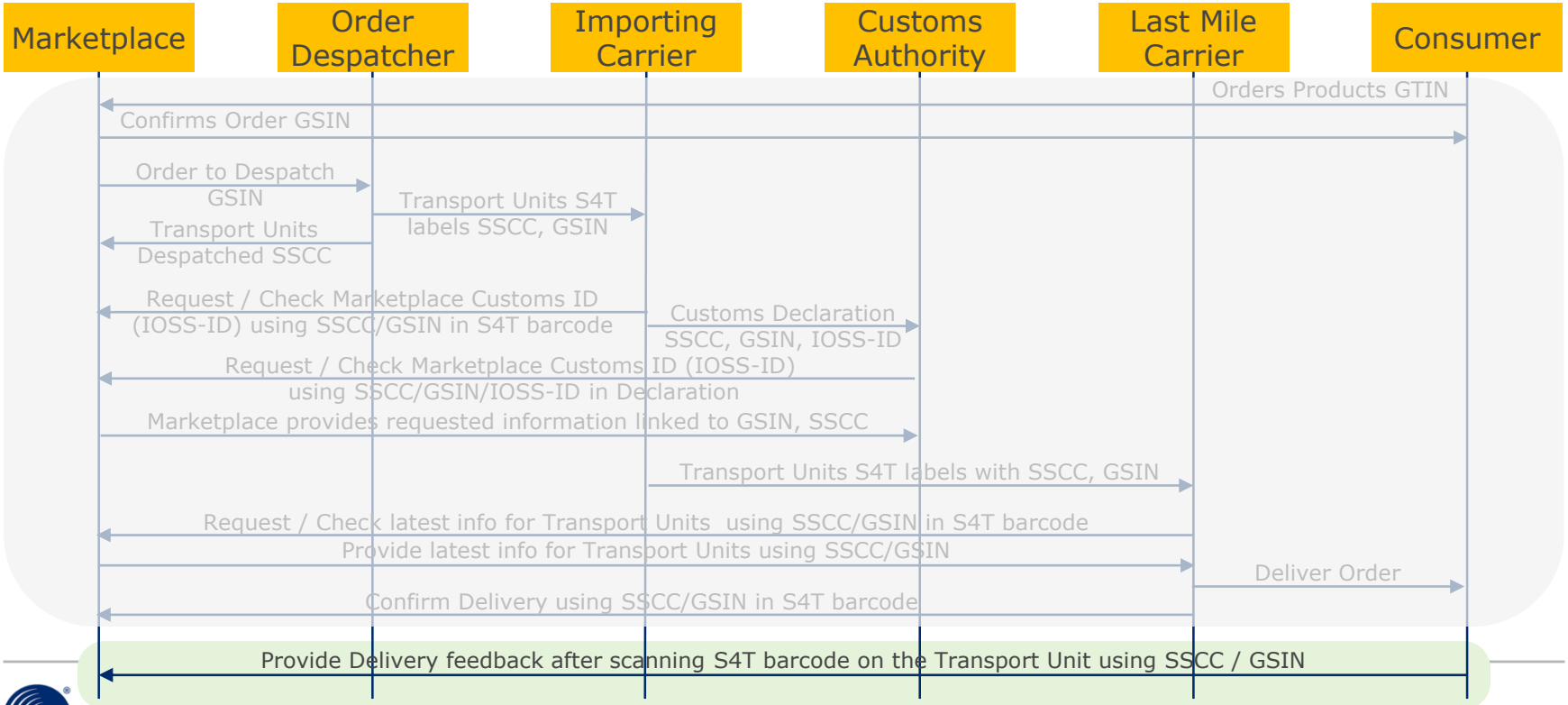
Now let's assume the Consumer needs to change the Place and Time for the Delivery of the Order.
The Consumer will go to the Marketplace Website to change the relevant Delivery Details.

But how would the Delivery Carrier know about this last-minute change?

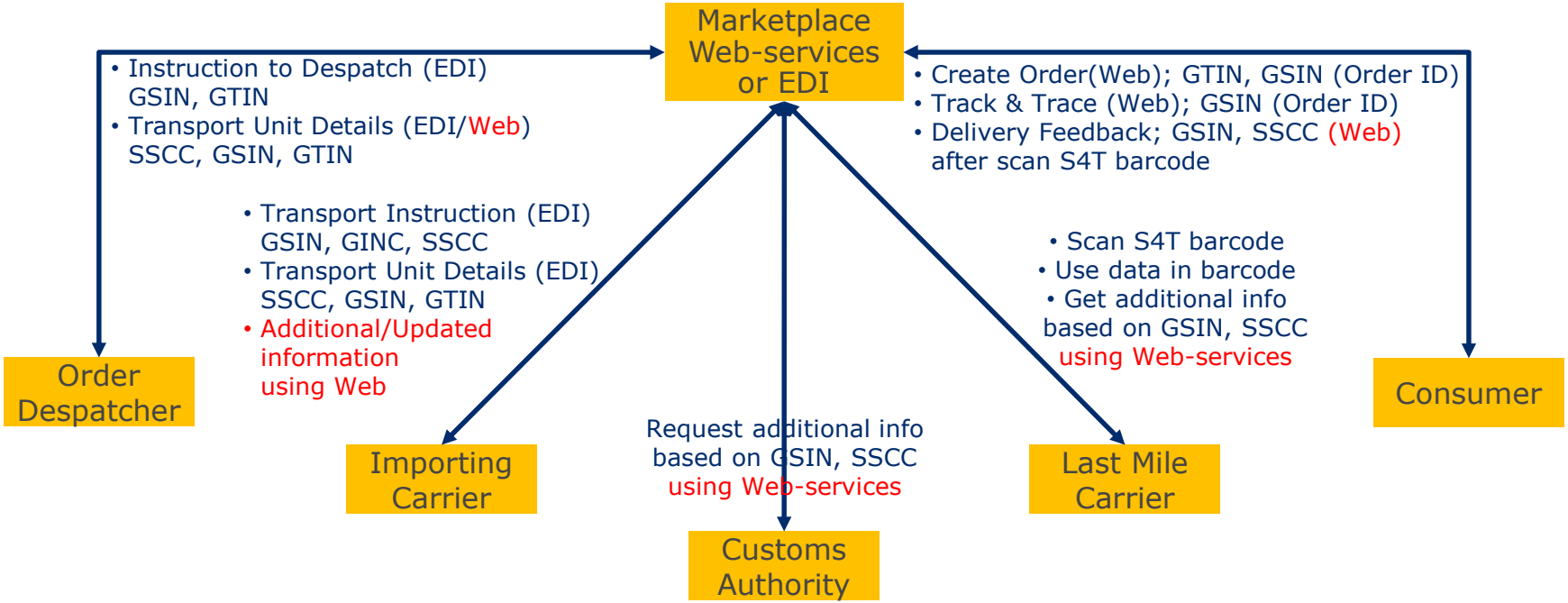
The overall Use Case – Deliver Order



The overall Use Case – Consumer Feedback



All stakeholders link to Marketplace – the **original** source of information



Our Vision: Common ID and label end-to-end - used by ALL to access the information they need

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AUTHORITIES CUSTOMS

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E-FULFILLMENT CENTRE

HOMES

PICK-UP POINT

LOGISTIC SERVICE PROVIDER DISTRIBUTION CENTRE

How does GS1 Scan4Transport help?

Scan4Transport leverages the GS1 Digital Link standard and tools

- Can connect any mobile device that can read a 2D barcode directly to the Marketplace systems
- Can provide “Yellow pages” to find the Marketplace systems
- Can validate the web-request to the Marketplace system before submitting it to the Marketplace system
- Can jump to the right function/feature of the Marketplace system relevant for the task the User (LSP, Customs, Consumer) wants to execute
- And more

Scan4Transport is **much more** than a standard for encoding data-elements in a 2D barcode

The GS1 Digital Link layer cake (draft)

Linked Data

Express facts about things at any granularity of identification

Resolvers

More complex use cases

Link types

Expand with context

GS1 Digital Link URIs

URL plus ID Key plus query-string

Value

Machine-interpretable data for automated system-to-system communications. Carrier App may add Delivery Event to Order in Marketplace system; Customs may check/retrieve Marketplace Customs-ID etcetera

Marketplaces may register their GSIN/SSCC with GS1 Resolver. When an App calls the Resolver, the resolver will **check the URI**, **find** the GSIN/SSCC and the **link to the Marketplace system**, then redirect the App to the Marketplace system. The redirection will **include ALL of the below**.

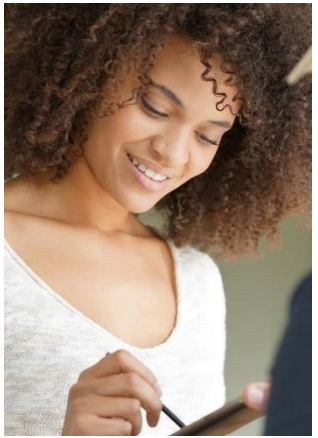
Links to relevant function/feature
linkType=deliveryInfo; linkType=orderInfo;
linkType=Customs; linkType=reportEvent

https://Scan4Transport.marketplace.com/00/195212342345678908?4300=GS1+AISBL&4301=Jaco+Voorspuij&4302=Avenue+Louise+326&4305=Bruxelles&4307=BE&420=1050&4321=0&402=95212340000000012&s4t

Challenges related to Linked Data

- The URI we use to **connect** to the Marketplace system is **totally standardised**
- However, we have **not defined a standard for the response**
  e.g. Updated Delivery Information, Response to Customs Enquiry
- **We may consider using the URI-approach formatted according to Scan4Transport Implementation Guidelines also for the responses**
- For the simple interactions we foresee in the Scan4Transport context we already have nearly all of the AI to cover required data-elements
- We would need to think about standardised linkTypes
- Is the approach extensible to more complex interactions? Should it be?
- (How) does it link with the current work on JSON-based information exchanges?

Scan4Transport
Next Steps / Roadmap



Michiel Ruighaver; Centre of Excellence Manager Scan4Transport

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Planning pilots for Q1 CY2021

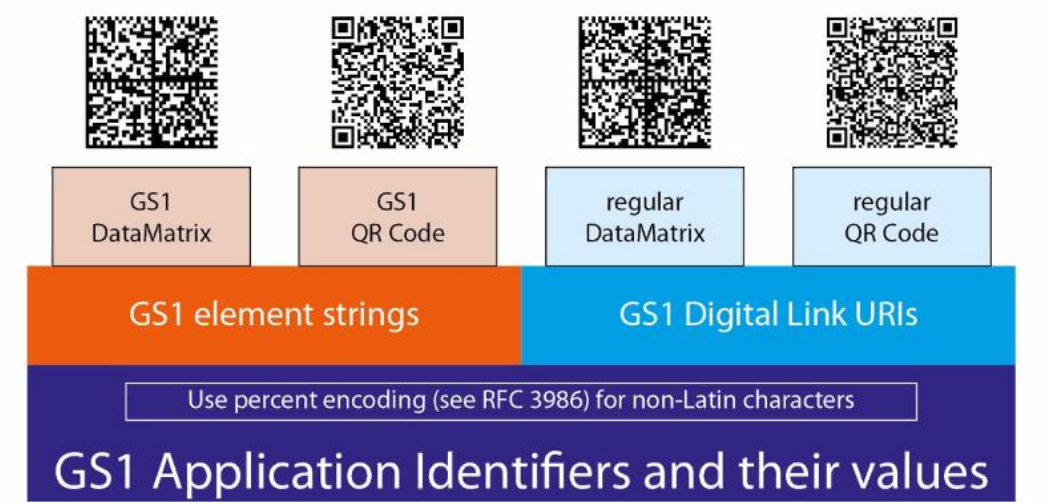
Recruiting pilots

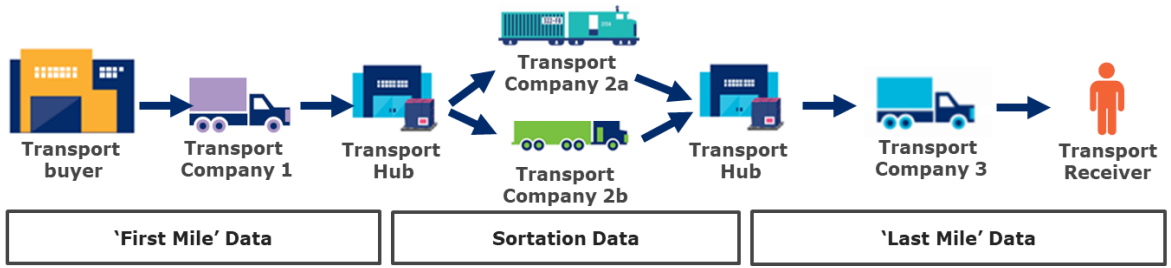
Defining flight paths of the pilots

Objectives of Prototype Testing

- Test new 4300 Application Identifiers created are used by industry as intended
- Confirm the GS1 standards (including the new 4300 AIs) meet the minimum data requirements for Logistic Service Providers to perform their transport processes
- Test the encoding/decoding of transport data using both the element string and the digital link approach
- Test the encoding of non-latin characters
- Estimate the effort/cost for industry participants to implement the new scan4transport standards
- Gauge industry's readiness for the new Scan4Transport standards
- Develop insight into industry's use of/readiness to use non-GS1 2D barcodes

Pilot Scope


GS1 DataMatrix
GS1 QR Code
regular DataMatrix
regular QR Code
GS1 element strings
GS1 Digital Link URIs
Use percent encoding (see RFC 3986) for non-Latin characters
GS1 Application Identifiers and their values


Transport buyer
Transport Company 1
Transport Hub
Transport Company 2a
Transport Company 2b
Transport Hub
Transport Company 3
Transport Receiver
'First Mile' Data
Sortation Data
'Last Mile' Data

Pilot streams to consider

Desktop pilot

A Desktop Pilot would involve:

- Analysing and documenting the impact to your business if a freight unit using the Scan4Transport standard were to enter your day to day operations
- Investigating and documenting the benefits of the new Scan4Transport standards for your business/supply chain
- Identifying and documenting any challenges/barriers to implement the Scan4Transport standards
- Estimate effort & cost to implement

Lab/Small pilot

A Lab/Small Pilot would involve:

- Physically testing the new Scan4Transport standards in-house/lab
- Possibly selecting a shipper, a supply chain, a contract logistic service Provider (e.g. if a sub-contractor is used in this supply chain) and testing the new Scan4Transport standard on a **small number of shipments / freight units**.
- Communicating the freight units involved in the pilot with all relevant parties in the supply chain and monitor if their existing systems are able to use the label as it moves through the supply chain (if not, there are S4T solution providers that can provide tools to support the pilot).
- Capture the benefits, challenges, effort and cost to implement

Physical/Full pilot

A physical/full pilot would involve:

- Selecting a shipper, a supply chain, a contract logistic service Provider (e.g. if a sub-contractor is used in this supply chain) and testing the new Scan4Transport standard on **all freight units shipped over a period of time**
- Communicating the pilot with all relevant parties in the supply chain and monitor if their existing systems are able to use the label as it moves through the supply chain (if not, there are S4T solution providers that can provide tools to support the pilot).
- Capture the benefits, challenges, effort and cost to implement

Pilot Participants

Desktop pilot

border express
committed to deliver 100%

CHEP
A Brambles Company

DHL
TENTATIVE

Australia Post
TENTATIVE

Lab/Small pilot

SICK
Sensor Intelligence.

Physical/Full pilot

[redacted]

VT FREIGHT EXPRESS
"Proudly Australian"

AVERY DENNISON

SF SmartFreight
Brighter Shipping Software
WISETECH GLOBAL GROUP

LEOPARD Systems

SICK Lab Pilot

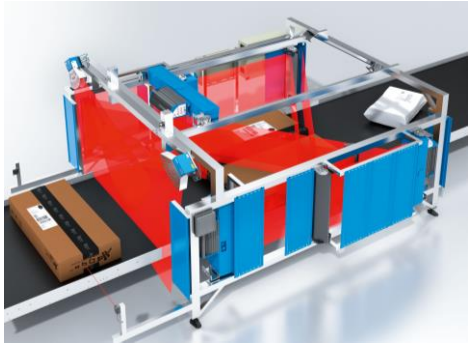
Technology & Innovation Centre

- Application and solution development
- Testing and proving customer applications
- Vision Lab
- OCR Lab

Matrix image cameras & High speed Line cameras

Matrix Cameras

Line Cameras



How you can help

- Promote new S4T standards in your organization
- Promote new S4T standards in your industry/country
- Participate in the S4T Work Group
- Participate in a pilot/identify pilot opportunities

Poll Question

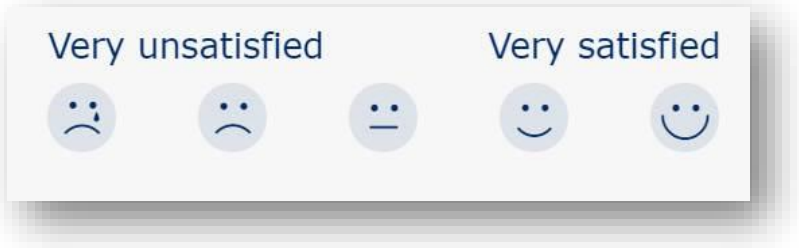
Are you able to support Scan4Transport pilots/roll-out?

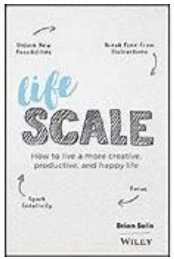
A. I am interested in finding out more about piloting/how to implement
B. I may have some companies in my region that would be interested in piloting/implementing
C. My company is interested in piloting/implementing
D. I am not interested in piloting/implementing

Questions & Discussions

Did you enjoy the session?

Please take a moment to complete a session survey





Complete an event survey to receive Brian Solis's new eBook Lifescale: How to live a more creative, productive & happy life

Close

Thank you all for being here

- Thursday morning 07:30 – 08:30 we will have a session titled
  "**Last Mile – EU VAT; Driving GS1 standards forward**"
- Thursday afternoon 14:15 – 15:15 we will have a session titled
  "**GS1 in Maritime – Full steam ahead**"

- Hope to welcome you there again
- But for now enjoy your break