RAIN Alliance Meeting: GS1 US Industry Update

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February 5, 2020

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GS1 is committed to complying fully with antitrust laws.

We ask and expect everyone to refrain from discussing prices, margins, discounts, suppliers, the timing of price changes, marketing or product plans, or other competitively sensitive topics.

If anyone has concerns about the propriety of a discussion, please inform a GS1® representative as soon as possible.

Please remember to make your own business decisions and that all GS1 Standards are voluntary and not mandatory.

Please review the complete GS1 antitrust policy at:
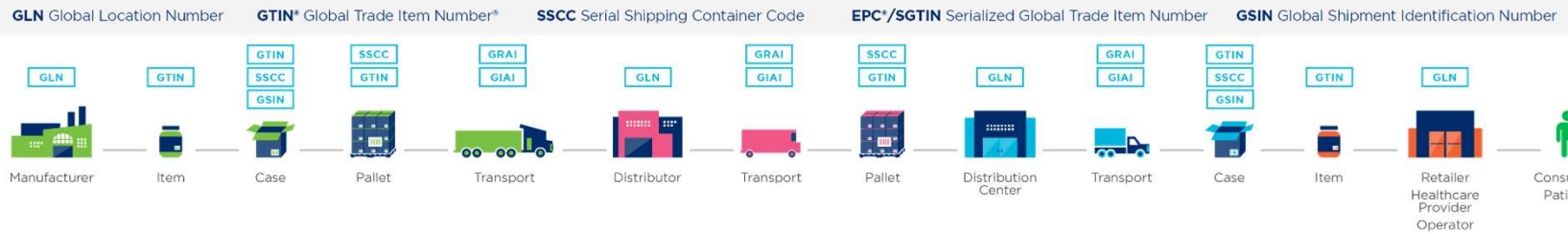www.gs1us.org/gs1-us-antitrust-compliance-policy

Agenda

- Extending the Value Chain
    - Raw Material Guideline
    - GS1 Digital Link
- RAIN and GS1 Teamwork!
    - Global Office update
- What's new and what's next
- LLRP Standard Revision
    - LLRP and RCI
- Questions / Discussion

GS1 Standards

Extending the Supply Chain

- Emergence of post-sale product identifiers

- Continued maturity of IoT solutions

- Growth of secondary market for personal luxury goods & fashion

- Material reclamation opportunity

Raw Material ID

Material Sourcing

Material Reclamation

Serialized Identifier
urn:epc:id:sgtin:
0614141.099999
.1732050807

Factory Information

Secondary Markets

Product Tracking

Authenticity

How do you specify raw materials?

Leather

- Dyeing Characteristics
- Finish Basic
- Grain Surface Characteristics
- Hand Feel
- Hide Configuration
- Leather Type
- Oil Content (%)
- …

How is this described?

Raw Materials Workgroup

- Defines Raw Materials that are components of finished products

- Key Output:
  - Standard vocabulary for defining material attributes
  - Standard means of capturing transactional information
  - Attribute fingerprint: identification of specific materials enables apples-to-apples material comparisons

Leather Attributes (partial)

Dyeing Characteristics	Dyed Through	Grain Dyed Only	Grain-Flesh Dyed			
Finish Basic	Brush Off	Casein	Combo Oil-Wax	Full Aniline	Hand Stained	Machine Stained
Grain Surface Characteristics	Buffed Grain	Corrected Grain	Flesh Out	Flesh Out Buffed	Flesh Out Split	Full Grain
Hide Configuration	Bellies	Culatte	Full Hides	Full Quill	Shoulders	Sides
Hand Feel	Draggy	Dry	Oily	Other	Rough	Silky
Leather Type	Action	Box	Chamois	Crazy Horse	Hair On	Napa
Oil Content (%)	0-5	3-7	6-8	7-11	9-12	11-14

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- Build a characteristic identifier based on attributes

- Enables "like-for-like" comparisons, digital communication, analytics, AI…

Knit Fabric Identifier Example

Required Field	Example Values	Reference Section	Code Value
Header	R01KN	3.3	R01KN
Construction Type	Fleece Knit (AH) Herringbone (AK) Mesh (AU)	4.1.3.1	AHAKAU~
Fiber Content	Alpaca (BD) 20% Azlon (BK) 40% Cotton (BQ) 35% Elastane (BV) 5%	4.1.3.2	BD20BK40BQ35BV05~
Ply	3	4.1.3.3	03
Denier Count	4	4.1.3.4	04.00
Weight UOM	Grams per Square Meter	4.1.3.5	G/M
Weight	32.1	4.1.3.6	32.10~
Yarn Type	Filament - Flat	4.1.3.7	FF

Resulting Code Value: R01KNAHAKAU~BD20BK40BQ35BV05~0304.00G/M32.10~FF

Who Cares???
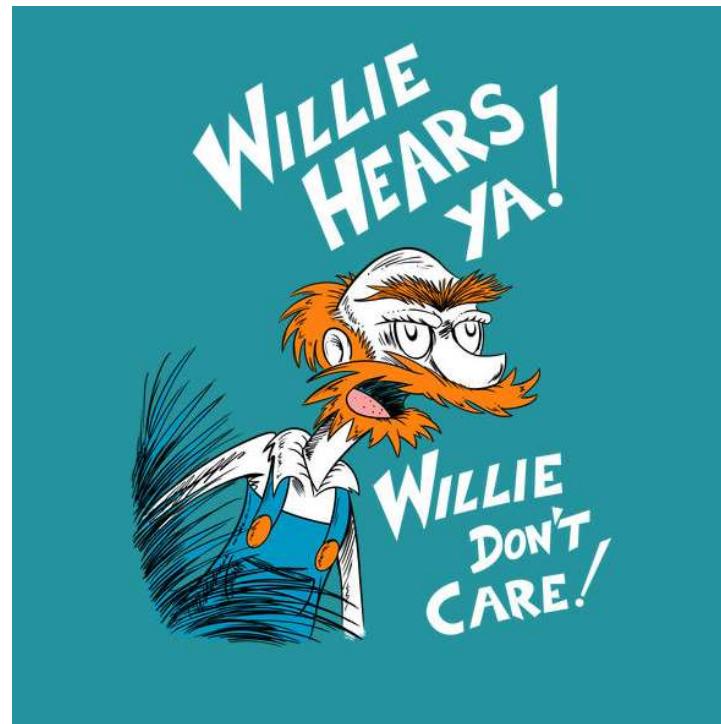
WIIFM (What's In It For Me)?

- Digitizing raw materials enables new efficiencies in product development
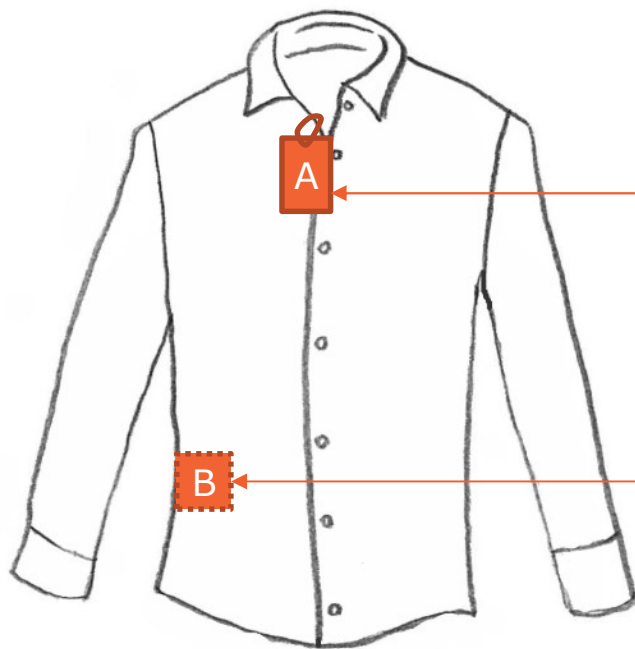- Move from manual to automated/systemic processes
  - From: Master Product List, Tech Pack, PLM Design File, Spreadsheets
  - To: Consolidated Manufacturing BoM, Structured Order Connection
- RAIN RFID tags are component materials → process integration opportunity
- Call to Action

GS1 Digital Link

Pre-Sale and Post-Sale Identifiers

A — RAIN RFID tag with Digital Link-enabled Barcode Printed on the Face (UPC on back face). Gateway for customer pre-sales digital interaction.

B — Serialized Woven Label or embedded wireless identifier. Gateway for customer post-sales digital interaction.

What is GS1 Digital Link

What is GS1 Digital Link?

In simple terms, Digital Link is a web address with a GS1 key in it, e.g: **https://example.com/gtin/614141999996/ser/173205** that can enable connections to all types of business-to-business (B2B) and business-to-consumer (B2C) information.

Digital Link is for more than just POS...

Digital Link serves as connective tissue between a physical product and rich set of data sources about that product that can be served up based on use case/context.
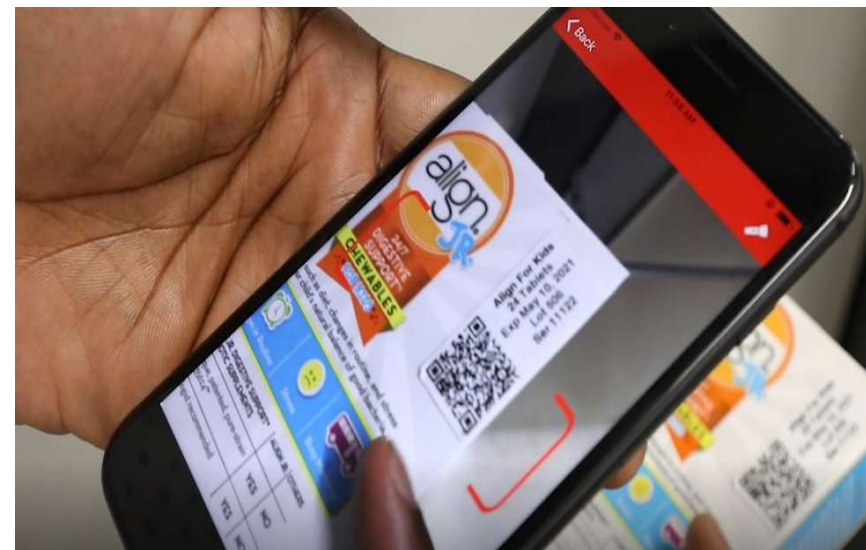
GS1 US Digital Link POC

POC and Standards Update

▶ GS1 US, GS1 GO, P&G, Avery Dennison, and Walmart
▶ Goals:
  • Show value of more granular identity across the retail ecosystem.
  • Show relevance and a value proposition for each stakeholder including Suppliers, Retailers, Consumers, and Technical Providers
  • Demonstrate the value of standards.
▶ Apps scanned QR with embedded Digital Link providing different experiences from one URI. GS1-128 and RFID data carriers were also used in some use cases.
▶ Next steps: share learnings and business recommendations and plan a phase 2 pilot.

A Few Key Learnings

▶ ROI is important to determine priority use cases for implementation, for example recall and expiry date management have high ROI potential, customer engagement equally important.
▶ Alignment may be needed between batch/lot and serial numbers if resolvers are shared.
▶ Implementation better with B2B data aligned on a regular cadence to ensure POS response maintained as well as in other areas.
▶ This stuff works!

One Barcode, Multiple Experiences at Multiple Touchpoints

USA	CPG Focused	☐ Research ✓ POC ☐ Implementation	✓ QR Code ✓ RAIN RFID ✓ GS1-128	☐ Open ecosystem ✓ Closed ecosystem	# Products
					1 10 100 1k 10k+

Tag Placement Guide

Revise the Tag Placement Guide: H2 2020

APPAREL AND GENERAL MERCHANDISE

Format & Symbol Placement for the
Electronic Product Code (EPC)

ADDENDUM TO GS1 APPAREL GUIDELINES

R1.1 — AUG 01 2014

THE GLOBAL LANGUAGE
OF BUSINESS

Tag Placement: Tops, Long Sleeve - Hanging

This category includes items such as woven and knit long sleeve shirts, sweaters, turtlenecks, and blouses that are intended to be merchandised hanging.

GS1 US Guidelines suggest U.P.C. is affixed (preferred) inside the collar through the manufacturer label or care label or (alternate) to the left cuff seam.

EPC Placement Options
Preferred: Incorporate EPC into/onto U.P.C. tag
Alternate: Incorporate EPC into/onto current media
Alternate: Incorporate EPC into/onto current trim
Alternate: Affix separate EPC Tag close to the U.P.C.
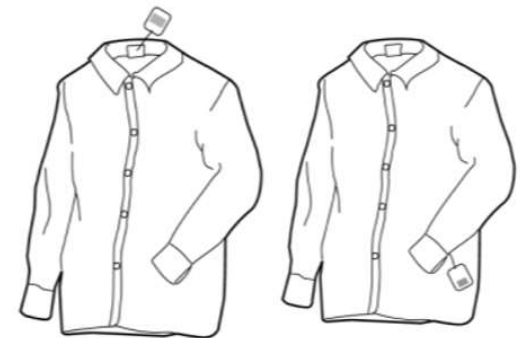
Tag Placement Guideline (section 4.11): www.gs1us.org/documents?Command=Core_Download&EntryId=429

RAIN and GS1 Collaborations

RAIN & GS1: stronger together

- RAIN Board Meeting in Frankfurt
  - GS1 current work items & pipeline
  - RAIN/GS1 collaboration
  - Discussion of next steps

- RAIN & GS1 collaboration on update to GS1 helpdesk FAQ re RAIN RFID

- RAIN & GS1 joint call-to-action for workgroup launched to update LLRP

- RAIN community participation in GS1's LLRP, DL and ID SMG workgroups

- GS1 active contributions to all RAIN workgroups and ongoing work RAIN work items (e.g., *Enabling Universal Visibility in Baggage Tracking* white paper)

- Collaborative presentations at GS1 Global Forum, RAIN f2f, RFID Journal Live

Certified Partner Identification Program

About the Certified Identification Partner Program

A Certified Identification Partner is a GS1 US Solution Partner that has acquired expert knowledge in the creation and management of GS1 Identification numbers per the GS1 System of Standards

- Provides industry with additional trusted sources to acquire GS1 Company Prefixes

- Meets the client where they start their product introduction journey – at the Partner's site

- Extends the use of authentic GS1 identifiers in the marketplace so brands can be successful in physical and online commerce

- Allows Partners to provide a more integrated solution, while reducing friction and frustration for their clients

CIP Program Requirements

- **Certified Identification Partner (Company)**
  - Be a member in good-standing of GS1 US Solution Partner Program
  - Sign GS1 US Certified Identification Partner agreement
  - Have at least one individual achieve GS1 US Standards Professional status
  - Have at least one individual achieve GS1 US Certified Identification Professional status

- **Certified Identification Professional (Individual)**
  - Attend training and pass certification exams:
    - GS1 Standards Professional *
    - GS1 US Certified Identification Professional **

*Training on-site at GS1 US or a mutually agreed upon location

**Training and exam offered online

What's new and what's next for GS1 & RAIN RFID

New Webbinar Series and Web Experiences

- **Updated RFID Resources**
  - Video series for supplier ramp-up of source tagging
  - Updated Serialization Guidance
  - Updated Encoding Worksheet
- **Later This Year**
  - Template for Vendor Technical Guide
  - Permalock point of view
  - Tag Placement Guide

3 Steps to RFID Success

You've Been Asked to Tag Your Products with EPC-Enabled RFID Tags - Now What?

Resources to help you get started!

- FAQs
- Checklists
- Guidelines
- Case Studies
- *NEW* Video Series

How Do I Get Started With RFID Tagging?

http://www.gs1us.org/3-steps-to-rfid

Southern Fried Cotton Case Study

Successful EPC/RFID solution deployment achieves high levels of order accuracy and operational efficiency

SFC deployed an in-house EPC-enabled item level RFID tagging solution that delivered a measurable return-on investment and future-proofed its business.

https://www.gs1us.org/sfc

After RAIN RFID deployment, chargebacks were reduced by 98.8%—improving accuracy, delivering a solid ROI and payback in less than eight months.

EPC resources online at www.gs1.org

- ## GS1 Company Prefix Length Table
  https://www.gs1.org/standards/bc-epc-interop
  - enables determination of GCP length in EPC encodings
  - XML & JSON formats

- ## UHF Regulatory overview
  https://www.gs1.org/docs/epc/uhf_regulations.pdf

- ## Mask Designer ID (MDID) assignments
  https://www.gs1.org/epcglobal/standards/mdid
  - 9-bit Mask Designer Identifiers issued by GS1/EPCglobal
  - now including **machine-readable JSON file**
  - extensible for optional inclusion of **Tag Model Numbers**

EPC online tools *soon moving* to www.gs1.org

- ## EPC Encoder / Decoder
  http://www.kentraub.net/tools/tagxlate/EPCEncoderDecoder.html
  - interactive application translates between different EPC forms
  - includes EPC MB01 (from address 20h), MB10 (TID), MB11 (User Memory)

- ## EPCIS Workbench
  http://www.vizworkbench.com/ui/home
  - decode and validate contents of an EPCIS data file
  - create new EPCIS events or edit an existing file
  - capture & Query EPCIS events to/from an EPCIS repository

- ## FREEPCIS
  http://www.freepcis.com/ui/home
  - free EPCIS server for development and testing

GS1 AIDC libraries

- The licensed version of the free EPC Encoder / Decoder tools
- Different levels of license agreement
  - End-user (encode/decode your own tags)
  - OEM (embed the library into a more complete software)

- Memory banks
  - One memory bank (either EPC or User)
  - Both memory banks (+TID decoding)

- Software language
  - .NET
  - Java
  - C (EPC memory only)

Input Data		
AI 01 - GTIN	12345678901234	Remove
AI 11 - PROD DATE	010101	Remove
AI 3920 - PRICE	100	Remove
Add a data element		
▶ Advanced Options		

Time to encode: 0.418 milliseconds

Encoded data (hexadecimal)
893E817288121674E79C5FE404EEA32400

LLRP Revision

LLRP revision: Business Case - Why

- LLRP last release (2010)
  - aligned with Gen2 Air interface 1.2.0 released in 2008!

Gen2 Air Interface

| 2005 | 2008 | 2013 | 2018 |

1.1.0 → 1.2.0 → 2.0.0 → 2.1 →

LLRP

| 2007 | 2010 |

1.0.1 → 1.1 →
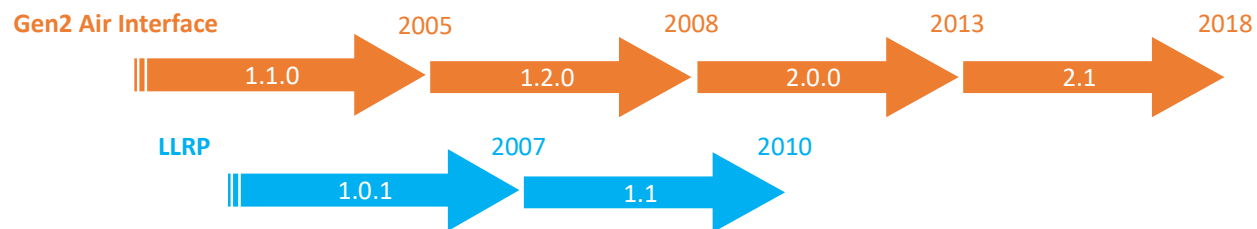
  - Revision of LLRP is not a matter of principle (just because is 10 years old)
  - Some Gen2V2 features are missing and some grey areas need to be clarified/corrected

Enhanced User Memory

Untraceable   ~~Tag recommissioning~~

"non-removable" flag

Cryptographic authentication
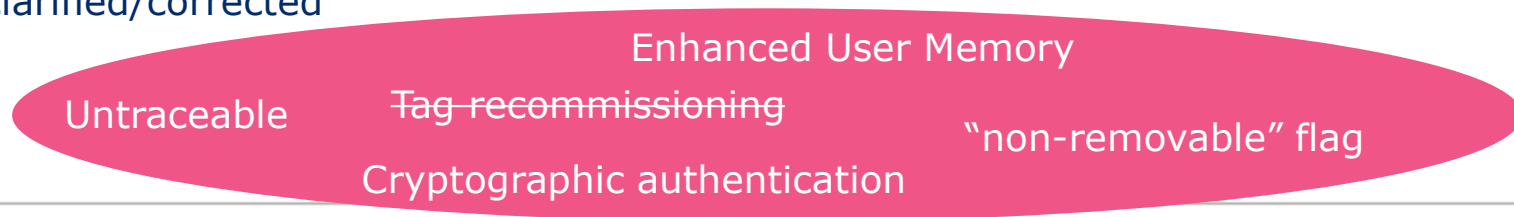
LLRP: Business Problem

- Custom extensions proliferate
  - LLRP supports vendor extensions for defining commands and parameters within certain commands (clause 8)
  - No requirements are made as to the content or parameters contained within the Data portion of these messages.

Lack of interoperability

- RFID vendors implement new features in different ways
- End-users cannot mix HW/SW components from different vendors

LLRP: Business Problem

- LLRP new release will allow:

    - software developers to reduce the development cost of specific RFID applications by enabling easier code reuse

    - to facilitate collaboration between RFID vendors

    - end-users to leverage from Gen2V2 features in a standardized way
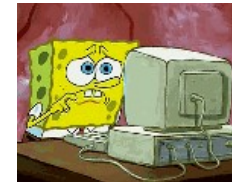
untraceable authenticate

RFID vendor#1   RFID vendor#2

LLRP v2 will be **backward compatible** with older versions. This will avoid any unnecessary new development/update of existing middleware deployed in different sectors

GS1 Global Forum, Brussels Feb 17-21 2020

- **RFID back in vogue session, Tuesday, February 18, 13:30-15:30**

  - **Outstanding speakers and presentations from:**

  - **You will learn how RFID is used in**

    - **Tyre industry**

    - **Retail**

    - **Medical devices**

    - **Rail industry**

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June 16-18, 2020

The Cosmopolitan
Las Vegas, NV

At GS1 Connect 2020, supply chain partners will come together to learn how GS1 Standards can help meet today's business challenges and unlock tomorrow's opportunities.

GS1 Connect is the leading trading partner event – your chance to discuss industry best practices, collaborate to improve business processes, and strengthen your professional network to drive innovation and growth.

Visit www.gs1connect.org for details.

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