



Global Standards Management Process: Call for Participation

MSWG sub-team: UHF RFID and NFC for Extended Packaging (Consumer/Customer Engagement)

GS1 Circularity – Digital Product Passport MSWG (WR 24-305)

Business drivers

As a result of Ecodesign for Sustainable Products Regulation (ESPR) regulation and sustainability objectives, there is a demand to identify textile, apparel and other small “soft good” items during their entire life cycle. Because Ultra High Frequency Radio Frequency Identification (UHF RFID) and Near Field Communications (NFC) technologies do not require line-of-sight, tags can be embedded in the product or its packaging. UHF RFID already facilitates supply chain event visibility and NFC already supports contactless web connection with smartphones. Since the ESPR legislation is asking to provide a link to the DPP for users like consumers or customs, there is an opportunity to enable non-line of sight technology within mobile device in addition to 2D barcodes:

- to enable the readability of UHF RFID tags with consumer mobile device (e.g., smartphones) (see also WR-24-305)
- to consider the use of NFC Forum compliant devices with GS1 identifiers and Digital Link URI syntax

Background

Retail supply chain automation of GS1 product identification continues to expand into new applications and evolve with new technologies today. This Call for Participation goes beyond the 2027 ambition to enable 2D barcodes at retail Point-of-Sale (underway since 2020) to consider the initiatives of the RAIN Alliance (UHF RFID in GS1 standards) and NFC Forum. These three initiatives, have different hurdles to overcome, but require a common, coordinated approach within industry implementation of GS1 standards. Here is a summary of where each stands as of today:

- The 2D program focuses on encoding today’s retail supply chain product identifier GTIN, Serialised GTIN, Lot-based GTIN, GTIN with a Product Variant and in some cases additional AIDC data (e.g., date, measure) in 2D barcodes that return Web results via consumer mobile device.
Note: The use of 2D barcodes and GS1 Digital Link URI is not approved to replace linear barcodes (e.g., EAN/UPC) on pack until conformance with GS1’s [Policy B11 Principles and Process for the Adoption of a New AIDC Data Carrier or Data Carrier Syntax](#) occurs with a current implementation program push aspiring for end of 2027.
- The UHF RFID initiative will focus on how information encoded on UHF RFID tags, already used by B2B stakeholders in the retail supply chain, can be captured and resolved by consumer mobile device.
Note: The use of UHF RFID in consumer mobile device is not supported currently but RFID stakeholders are working on this outside of GS1 GSMP. The sub-team will focus on a) what decoding should be used so that a web enabled structured path identification can be implemented at the Operating System (OS) level given we cannot rely on software apps being added by consumers, b) where UHF RFID shall be permitted instead of, or in addition to barcodes, and c) if instead of barcodes, adding UHF RFID to the extended packaging application standard per [Policy B11](#) assessment and approval by the GS1 Management Board (MB) and GS1 General Assembly (GA).
- The NFC initiative, like the 2D program, will focus on encoding today’s retail supply chain product identifier (GTIN, Serialised GTIN, Lot-based GTIN, GTIN with a Product Variant) within a technology already deployed today in consumer mobile device (e.g., contactless payment) without the intention to use the technology for supply chain event visibility already supported by UHF RFID.
Note: NFC will not be used as an alternative to barcodes, but its approval as a new AIDC carrier in the extended packaging application standard will be contingent per [Policy B11](#) assessment and approval by the GS1 MB and GS1 GA as NFC is not an approved GS1 AIDC Carrier today.

These innovation initiatives follow the same two steps:

1. GS1 standards users request the new technology for use in a specific application standard.
 - a. For 2D barcodes, this meant updating supply chain standards to use what was already supported by mobile device and documented within the GS1 Extended Packaging Application Standard. This resulted in industry agreements for several Application Standard Profiles that specify what is required for conformance by 2027.
 - b. For UHF RFID, this means updating the GS1 Extended Packaging Application Standard to support what is already supported in the apparel and textile supply chain after determining the correct syntax for encoding support for the supply chain as well as consumer mobile device (i.e. smartphones and tablets) and [Policy B11](#) approval by the GS1 MB and GS1 GA is obtained.
 - c. For NFC, this means adding NFC as an additional (not alternative) AIDC carrier to the GS1 Extended Packaging Application Standard (using GS1 identifiers in the GS1 Digital Link URI syntax) if users agree it should be and [Policy B11](#) approval by the GS1 MB and GS1 GA is obtained.
2. A [Policy B11](#) assessment is approved by the GS1 MB and GS1 GA. This assessment, already completed in 2022 for both QR Code and Data Matrix encoding GS1 Digital Link URI, will be required for UHF RFID and NFC to join 2D in the GS1 Extended Packaging Application Standard.



In-Scope	<ul style="list-style-type: none"> • Assess the relevance of UHF RFID and NFC technologies in GS1 Extended Packaging Application Standard according to Policy B11 • Determine the encoding solutions for UHF RFID for GS1 identifiers that is backward compatible with existing supply chain applications and that can be resolved at the mobile device OS level without the addition of software by consumers on mobile devices. • If there is sufficient GS1 members support to add NFC as a GS1 AIDC carrier, conduct the Policy B11 assessment to determine if we can seek approval from the GS1 MB and GS1 GA • Consider recommendation to ID/AIDC SMG for deprecation of HF Gen 2 for GS1 identifier IF we find no implementation
Out of scope	<ul style="list-style-type: none"> • Definition of new, or revision of existing air interface protocols (either UHF RFID or NFC) • Use of any non-GS1 identification key • Any standard that requires the consumer to add additional software to their mobile device • Any deviation from Policy B11 without GS1 MB and GS1 GA approval
Who should participate?	<ul style="list-style-type: none"> • UHF RFID user and solution provider communities • NFC user and solution provider communities • GS1 user and solution provider communities • GS1 Member Organisations <p>Note: <i>The GS1 Intellectual Property Policy and Work Group Opt-in Agreement of GS1 Circularity – DPP MSWG are required to participate.</i></p>
Questions?	Steven Keddie, steven.keddie@gs1.org (subject matter lead for the sub-team)
Interested? Sign-up	https://xchange.gs1.org/cr/qsmp/mswg/qsmpgs1cdppmswg/uhfrfidnfcep
Kick-off	Nov 21 (0830-1000 ET New York City / 1430-1600 CET Brussels)