



Document Summary

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1. Introduction

A Request for Finding (RFF) was submitted to the GS1 Architecture Group on 12 October 2016. The AG agreed to process this RFF on 19 October 2016. The RFF (see appendix A) requests a position statement on GTIN reuse.

The GS1 General Specifications has the following to say about GTIN reuse:

4.3.1.4 Lead Time in re-using a GTIN

A GTIN allocated to a trade item that has become obsolete must not be re-used for another trade item until at least 48 months have elapsed after:

- the expiration date of the last original trade items produced with that number

-or-

- the last original trade items produced with that number have been supplied to the customer.

In the case of clothing the minimum retention period is reduced to 30 months.

Companies must ensure that GTINs allocated to regulated healthcare trade items SHALL never be reused.

2. Scope

The scope of the RFF is specifically limited to the reuse of GTINs. This response to the request for finding focuses on the GTIN. Some considerations are however provided with regards to the reuse of the other GS1 identification keys.

3. Architectural position on Reuse

3.1 Position on GTIN Reuse

In this digital world where an increasing number of databases store information about things, the lifetime of an identifier is tied to the lifetime of data as much as it is to the lifetime of the real-world object, and so it is virtually impossible to determine that a given identifier is not in use any longer and is therefore available to be reused for another purpose. And even if one could, it significantly complicates software if it has to allow for the possibility of an identifier being reused. The only viable position on architecture grounds is thus to not allow reuse of identifiers, with exceptions only made rarely in the event of overwhelming pragmatic circumstances.

The architectural position is that GTINs should not be reused.

3.2 Architectural considerations

The definition of a key included in the architecture document: *An attribute (...) of an entity that serves to uniquely identify that entity, within some specified domain of entities. In order to be usable as a key, an attribute must have certain properties: Uniqueness, Completeness and Persistence.* As reuse is at odds with at least two of these properties, specifically uniqueness and persistence, there is no architectural benefit in the intended reuse of keys.

3.3 Other GS1 identification keys than GTIN

GS1 identification keys can be broadly classified into two categories: they provide linkage to long-lived data (such as product master data linked to the GTIN) or they provide a link to short-lived data (such as shipping and receiving transactional data linked to the Serial Shipping Container Code or SSCC).

For the latter group of keys, the need for reuse may be driven by their short lifecycle and by the sheer volume of allocation of these GS1 identification keys. A key that appears to only link to short-lived data

may however become linked to long-lived data, e.g. history of events stored in EPCIS repository with SSCC used as key common to multiple events in the repository.

For keys other than the GTIN, e.g. Global Returnable Asset Identifier (GRAI) or Global Individual Asset Identifier (GIAI), the architectural position is that they should never be reused. This is particularly important for items like assets that undergo MRO (Maintenance, Repair, and Overhaul) operations used in the rail sector for example where the lifetime of the assets can exceed 50 years. More generally, this is important for assets in all sectors.

For keys where it is believed they are only used to link to short-term data, further research on business needs, capacity and impact is required.

4. GTIN non-reuse impact

4.1 Impact on GCP reuse

The implicit consequence of GTIN non-reuse is that GS1 Company Prefixes (GCPs) used to create GTINs shall not be reused.

4.2 Impact on Class 2 keys

A class 2 key incorporates a key administered by an external organisation. The Class 2 keys allocation rules are defined by the external organisation. In line with the architectural position that GTINs should not be reused, external organisations managing GTIN class 2 keys shall be contractually bound to disallow reuse.

4.3 Impact on Restricted Circulation Numbers (RCNs)

The non-reuse principle of GTINs does not apply to RCNs because RCNs are not GTINs. It might however be appropriate to include guidance on non-reuse of RCNs when they are used as long-lived data keys in restricted use environments.

4.4 Impact on Users

GS1 user companies shall ensure that their internal policies are in line with the non-reuse principle. Special consideration should be given to the transition period before the GTIN non-reuse might become the rule.

The case of mergers, acquisitions or split will require special attention. The difference between a prefix and key licensee is subtle but important. A prefix licensee is the company that holds the prefix on which the key is based. This is usually the same as the key licensee, but there are a couple of circumstances under which the key licensee is different.

One-off keys are keys issued one by one by a GS1 MO. In that case, the prefix licensee is the GS1 MO itself and the key licensee is the company to whom the key has been allocated. If the brand changes ownership, the GTIN can be considered as an asset transferred to another company. The GTIN non-reuse rule will not have any specific impact as long as GS1 is properly notified of the transfer and can update its records accordingly.

If all product ranges owned by a company change ownership, both prefix licensee and key licensee are transferred. Again, the GTIN non-reuse rule will not have any specific impact in these circumstances as long as GS1 is properly notified of the transfer and can update its records accordingly.

The case of partial merger, acquisition or company split is different. If company A sells one of its product lines to company B, company B becomes responsible for all the keys (GTINs, GLNs, etc.) that are part of that product line. In such a case, the prefix licensee is company A and the key licensee is company B. The non-reuse rule will apply to GTINs allocated by company A including those concerned by the transfer of the product line. Because of liability considerations (e.g. recall of a medical device years after its removal from the marketplace), company B becomes responsible not just for the current GTINs and other keys but also for all previous GTINs and other keys that have been used within that product line. Note too that this should not change the requirement that company B apply GTINs and other keys from its own prefix within one year of the transfer.

The historical changes of parties that are key licensee may require a process to record responsibilities over time.

4.5 Impact on GS1 MO & GO policies

The non-reuse of GCP and individually assigned GTINs will have an impact on the GS1 MOs and GOs licensing agreements. Special attention must be given to the ability of GS1 MOs to track and monitor the transfer of individual GTINs related to company splits as described in section 4.4 of this document.

4.6 Impact on GS1 standards

The GS1 relevant standards will need to be adapted to reflect the GTIN non-reuse principles. If a general rule of not reusing GTINs was adopted, there would be less sectorial exceptions in the GS1 standards.

4.7 Impact on numbering capacity

Recent research conducted by GS1 Global Office indicate that GTIN capacity is adequate in the foreseeable future. It would be useful to make additional research on the impact of GTIN non-reuse on the capacity, and to explore how GS1 could increase GTIN capacity significantly in ways to minimize impact to industry.

Capacity might be an issue for zero-suppressed numbers represented in UPC-E barcodes and for GTIN-8. It should however be noted that the possible move towards 2D barcodes will reduce the need for shorter numbers encoded into smaller linear barcodes.

4.8 Privacy considerations

While the non-reuse of the GTIN has no privacy implications that the Architecture Group can discern, other keys are known to have an impact on individual privacy and such concerns should be addressed should GS1 elect to apply non-reuse to them as well. Specifically, the GSRN identifies service relationships and therefore individuals within those relationships and the GDTI identifies documents, some of which may be identity documents (e.g. the North American Enhanced Driver's License).

5. Recommendations

The GS1 Architecture Group supports the non-reuse principle as it reinforces the consistency and the value of the GS1 System but considers that the adoption of this principle is dependent upon the outcome of the following actions:

- 1.** Research impact on GTIN capacity with special attention to zero-suppressed numbers and GTIN-8.
- 2.** Research capacity and other impact of non-reuse for other GS1 identification keys, i.e. SSCC, GLN, GRAI, GIAI, GDTI, GSRN, GINC, GSIN, GCN and CPID.
- 3.** Assess the potential implication of privacy regulations on GS1 Keys non-reuse, especially for GDTI and GSRN.
- 4.** Take action with external organisations managing class 2 keys that might not make provision for GTIN non-reuse.
- 5.** Review and align relevant GS1 policies dealing with GCP and GS1 identification keys allocation management.
- 6.** Review the impact of GS1 identification keys non-reuse on the GS1 architecture principles.



Appendix A: The Request for Finding

Request for Finding – Brief Summary (one phrase or sentence)

GTIN Reuse – position statement requested.

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Statement of Question or Concern (please be specific as to what you want answered)

In consideration of the fact that the persistence of product data in supply chain data systems has reached the point where it can reasonably be considered to be infinite (at least in some cases), and in consideration of the fact that this persistence of data can cause disparate datasets to reasonably exist for individual legally-reused GTINs over the course of a number of years (in accordance with the current rule within the GS1 General Specification), it is requested that the Architecture Group develop (or simply express) a technical position on the practise of reuse of GTIN as it is currently defined in the GS1 General Specification. Specifically, it is requested that the Architecture Group respond to the following questions:

- Is reuse of GTIN supported as a best practise by the Architecture Group? Is it better to avoid the reuse of GTIN? In either case where the answer to the prior questions is yes, please provide some context on the through process that led to the expressed position.
- Does the Architecture Group recommend a specific reuse term for GTIN (example: those terms which are expressed within the GS1 General Specification)? If not, what is the recommended reuse term and is it specific or different for any certain industries?
- If an industry has established practices of GTIN reuse and believes that a cessation of GTIN reuse could cause significant impacts to their operations, are there any best practices that could be leveraged as part of a transition plan from a state of common reuse to a future state in which there is no reuse? Any considerations that should be evaluated?

Relevant GS1 Standards or other GS1 System Components (omit if unsure)

General Specifications

To be filled in by Architecture Group

Request #	Date Submitted	Date Accepted for Consideration	Date Completed
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Link to Architecture Finding		<u>www.gs1.org/architecture</u>	