



The Global Language of Business

# Analysis and Recommendations – GS1 Company Prefix Sub-Team

GS1 Architecture Group Finding

*Release 1.1, Final, 16 Sept 2015*

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## 1 Document Summary

Document Item	Current Value
Document Name	Analysis and Recommendations – GS1 Company Prefix Sub-Team
Document Date	16 Sept 2015
Document Version	1.1
Document Issue	
Document Status	Final
Document Description	GS1 Architecture Group Finding

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## 3 Log of Changes

Release	Date of Change	Changed By	Summary of Change
1.0	28 March 2014	GS1 Architecture Group	Approved.
1.1	16 September 2015	GS1 Architecture Group	Approved.

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121 **1 Executive Summary**

122 The GS1 Company Prefix (GCP) is a fundamental building block of the GS1 Identification System; it  
 123 is a required component of every GS1 Identification Key. The issuance, allocation, transfer, and  
 124 general management of the GCP are fundamental to delivering the services upon which GS1  
 125 member companies depend.

126 This purpose of this paper is to create a consistent definition of the GS1 Company Prefix, evaluate  
 127 the impacts of such a definition, and identify the steps required to realize the definition across all  
 128 standards. Additional deliverables may include actions and recommendations for other governance  
 129 groups.

130 The term “GS1 Company Prefix” is defined in the GS1 General Specifications (GS1, n.d.)  
 131 Section 1.4.4 as follows:

132 The GS1 Company Prefix is a part of GS1 data structures. It consists of a GS1 Prefix, which is  
 133 administered by GS1, and a Company Number, which is assigned by a GS1 Member  
 134 Organisation.

135 There is, however, no formal specification (character set, minimum and maximum lengths,  
 136 construction, restrictions, etc.) for the GS1 Company Prefix.

137 The GS1 Prefix is only slightly better specified: a number with two or more digits. It does not define  
 138 a maximum length or any treatment of leading zeroes. The table in Section 1.4.2 of the same  
 139 document, reproduced below, has GS1 Prefixes of lengths 2 and 3 only and implies significance of  
 140 leading zeroes:

Synopsis of GS1 Prefixes	
GS1 Prefixes	Significance
000 – 019	GS1 Prefix <sup>1</sup> (used to create U.P.C. Company Prefixes)
02	GS1 Variable Measure Trade Item identification for restricted distribution
030 – 039	GS1 Prefix
04	GS1 restricted circulation number within a company
05	GS1 US coupon identification
060 – 099	GS1 Prefix (used to create U.P.C. Company Prefixes)
100 – 199	GS1 Prefix
20 – 29	GS1 restricted circulation number within a geographic region
300 – 976	GS1 Prefix
977	ISSN standard numbering (serial publications)
978 – 979	ISBN standard numbering (books)
980	GS1 identification of Refund Receipts
981 – 984	GS1 coupon identification for common currency areas
985 – 989	Reserved for further GS1 coupon identification
99	GS1 coupon identification

141 It is equally necessary to define the structure and length of the GS1 Prefix as it is an underlying  
 142 component of the GS1 Company Prefix.

143 The current table makes no mention of ISMN. The contract between GS1 and ISBN allows ISBN to  
 144 sub-allocate a portion of the 979 GS1 Prefix range to ISMN.

<sup>1</sup> Starting from GS1 Company Prefix 00 00100 to avoid collision with GTIN-8 Identification Numbers.

145 While the length of a GCP is not defined in the GS1 General Specifications (GS1, n.d.), it is defined  
 146 in a number of other documents:

- 147 1. The GEPIR (GS1, n.d.) data model allows a GCP to be from 4-12 digits in length.
- 148 2. The GS1 EPC Tag Data Standard (GS1, n.d.) allows a GCP (mapped to an EPC Manager Number)  
 149 to be from 6-12 digits in length.
- 150 3. The GS1 Operational Manual (GS1, n.d.) Section B-02 – “Allocation of GS1 Company Prefixes”  
 151 requires that every MO allocate 9-digit GS1 Company Prefixes but does not specify minimum or  
 152 maximum lengths.

153 While the GS1 EPC Tag Data Standard (GS1, n.d.) and the GEPIR specification (GS1, n.d.) both  
 154 permit 12-digit GCPs, such GCPs would allow only one each of GTIN-13 (nine of GTIN-14 if the  
 155 indicator digit is included), GLN, GRAI (non-serialized), GDTI (non-serialized), and GCN (non-  
 156 serialized). This may cause some confusion among users as the object or class reference for these  
 157 keys would be null.

158 Further complicating the definition of a GCP are three things:

- 159 1. The GS1 System Architecture (GS1, n.d.) defines four classes of identification keys. Class 1 Keys  
 160 are the traditional GS1 identification keys, but Class 2 Keys are those that start with a GS1 Prefix  
 161 and incorporate keys administered by external organisations.
  - 162 a. What is the equivalent to a GCP for a Class 2 Key?
  - 163 b. How are such equivalents to be handled, especially in light of GCP-based services like GEPIR  
 164 and ONS?
- 165 2. There are no defined management rules for GCPs, in particular for whether or not transfers to  
 166 other MOs are permitted and under what circumstances. For example, for historical reasons, GS1  
 167 Ireland manages a number of GCPs originally allocated by GS1 UK; similarly, GS1 Canada  
 168 manages a number of GCPs originally allocated by GS1 US.
  - 169 a. Should similar but more limited transfers of responsibility be permitted, such as when a  
 170 company in country A moves to or is acquired by another company in country B?
  - 171 b. How are such transfers of responsibility to be handled, especially in light of GCP-based services  
 172 like GEPIR and ONS?

173 Finally, there is a similar table in Section 1.4.3 of the same document, reproduced below, for GS1-8  
 174 Prefixes:

Synopsis of GS1-8 Prefixes	
GS1-8 Prefixes	Significance
0	Velocity Codes
100 – 139	GS1 Prefix
140 – 199	Reserve
2	GS1 restricted circulation number within a company
300 – 969	GS1 Prefix
97 – 99	Reserve

175 This table, while intended to overlap the GS1 Prefix table, contradicts it as follows:

- 176 • the GS1 Prefix range 100 – 199 is broken into two GS1-8 Prefix ranges, 100 – 139 (aligned  
 177 with GS1 Prefixes) and 140 – 199 (reserved); and
- 178 • the GS1 Prefix Range 970 – 976 is marked as reserved.

### 179 1.1 Audience

180 This document is intended primarily as a reference for standards development groups; it is not  
 181 intended for public consumption. Initially, the document is to be given to the teams responsible for

182 the GS1 General Specifications (GS1, n.d.) and the GS1 Global Data Dictionary (GS1, n.d.) so that  
183 their respective materials may be updated in accordance with the recommendations herein.

184 Because the recommendations in this document may affect MO operations, the GS1 Management  
185 Board and other governance groups are also part of the audience and formal approval of this  
186 document by one or more such groups may be required for the recommendations to proceed.

## 187 **1.2 Assumptions**

188 The reader is assumed to be generally familiar with GS1 identification standards. In particular, GS1  
189 Identification Keys such as GTIN, GLN, GIAI, etc. will be used throughout this document without any  
190 expansion and with limited if any explanation of their use cases except where such explanation  
191 materially substantiates other text in this document.

## 192 **1.3 Scope of work**

193 The scope of work for this document is to answer the following questions:

- 194 **1.** What is a GS1 Company Prefix? The purpose of this question is to review the definitions of the  
195 GCP in various normative and policy documents and to derive a single, consistent definition.
- 196 **2.** When dealing with a GS1-8 Prefix, what is the equivalent to a GS1 Company Prefix? This should  
197 provide guidance to standards groups (e.g. Tag Data Standard) for whom the GS1 Company Prefix  
198 is relevant.
- 199 **3.** When dealing with Class 2 Keys, what is the equivalent to a GS1 Company Prefix? This should  
200 provide guidance to GS1 Global Office and to GS1 Member Organisations that approve the  
201 generation of Class 2 Keys within their numbering spaces.
- 202 **4.** What are the structure and the valid lengths of a GS1 Company Prefix?
- 203 **5.** If a GS1 Company Prefix is shorter than the minimum length in the GS1 EPC Tag Data Standard  
204 (GS1, n.d.), how is it to be treated? Is the proposed treatment (e.g. the expansion of a single 5-  
205 digit GCP to 10 6-digit GCPs) to be extended to all standards?
- 206 **6.** Is a 12-digit GCP permissible? Under what circumstances?
- 207 **7.** What is the significance of the GCP within the GS1 Identification Key?
- 208 **8.** How is a GCP to be managed by the MO that allocates it?
- 209 **9.** Is cross-MO transfer of a GCP permissible? Under what circumstances?
- 210 **10.** Is there a better alternative to the term “GS1 Company Prefix”?

211 These questions are expanded in Section 4 – “Problem Statements”.

## 212 **1.4 Issuance and allocation**

213 Issuance and allocation are processes that apply to GS1 Prefixes, GS1 Company Prefixes, and GS1  
214 Identification Keys. Although issuance and allocation often occur at the same time, they are in fact  
215 separate processes.

216 Issuance is the generation of a new artefact (GS1 Prefix, GS1 Company Prefix, or GS1 Identification  
217 Key) in accordance with the GS1 rules and the issuing organisation’s policies. Allocation is the  
218 association of the issued artefact with an entity or object in accordance with the GS1 rules and the  
219 issuing organisation’s policies.

220 Examples:

- 221 ■ A GS1 Prefix is issued by GS1 Global Office and allocated to a GS1 Member Organisation.
  - 222 ■ A GS1 Company Prefix is issued by a GS1 Member Organisation and allocated to a GS1 Member.
- 223 A GTIN is issued by a GS1 Member and allocated to a trade item (product or service)

224

## 225 **2 Background Material**

### 226 **2.1 GS1 General Specifications**

227 The term “GS1 Company Prefix” (GCP) is mentioned in numerous locations in the GS1 General  
228 Specifications (GS1, n.d.). The references below are to Version 13.1, July 2013.

229 As the GCP is the foundation of all GS1 Identification Keys, the number of places in which the term  
230 appears is significant. The references below pertain only to the definition and management of the  
231 GCP, not its use within the construction of a GS1 Identification Key.

- 232 ■ 1.3.3 GS1 Company Prefix
- 233 ■ 1.4.2 GS1 Prefixes
- 234 ■ 1.4.3 GS1-8 Prefixes
- 235 ■ 1.4.4 GS1 Company Prefix
- 236 ■ 1.5 GS1 Company Prefix Allocation
- 237 ■ 1.6.1 Acquisitions and Mergers

### 238 **2.2 GS1 Global Data Dictionary**

239 The GS1 Global Data Dictionary (GS1, n.d.) defines a number of terms related to the GS1 Company  
240 Prefix.

#### 241 **2.2.1 GS1 Company Prefix**

242 Part of the GS1 System identification number consisting of a GS1 Prefix and a Company Number,  
243 both of which are allocated by GS1 Member Organisations. See also U.P.C. Company Prefix. GS1  
244 Member Organisations assign GS1 Company Prefixes to entities that administer the allocation of  
245 GS1 System identification numbers. These entities may be, for example, commercial companies, not  
246 for profit organisations, governmental agencies, and business units within organisations. Criteria to  
247 qualify for the assignment of a GS1 Company Prefix are set by the GS1 Member Organisations.

#### 248 **2.2.2 GS1 System**

249 The specifications, standards, and guidelines administered by GS1.

#### 250 **2.2.3 GS1 Prefix**

251 A number with two or more digits, administered by GS1 that is allocated to GS1 Member  
252 Organisations or for Restricted Circulation Numbers.

#### 253 **2.2.4 GS1-8 Prefix**

254 The GS1-8 Prefix is a one-, two-, or three-digit index number, administered by GS1, that is  
255 allocated to GS1 Member Organisations for the creation of GTIN-8s or for Restricted Circulation  
256 Numbers. GS1-8 Prefixes are only ever used to create GTIN-8s or RCN-8s.

#### 257 **2.2.5 Company Number**

258 A component of the GS1 Company Prefix.

#### 259 **2.2.6 U.P.C. Company Prefix**

260 A special representation of a GS1 Company Prefix constructed from a U.P.C. Prefix and a Company  
261 Number. The U.P.C. Company Prefix is only used to create GTIN-12, Coupon-12, RCN-12, and VMN-  
262 12, which are encoded in a UPC-A Bar Code.

### 263 **2.2.7 U.P.C. Prefix**

264 A special representation of the GS1 Prefixes '00 – 09' with the leading zero removed. Used when  
265 representing the GTIN-12, Coupon-12, RCN-12, and VMN-12 in a UPC-A Bar Code.

## 266 **2.3 GS1 Operational Manual**

267 Numerous documents in Section B – “Policies” of the GS1 Operational Manual (GS1, n.d.) cover the  
268 management of GS1 Company Prefixes:

- 269 ■ Section B-02 – “Allocation of GS1 Company Prefixes” (amended 23 May 2012) defines the GS1  
270 Company Prefix and its recommended structure.
- 271 ■ Section B-03 – “Allocation of GTIN-8 Numbers” (amended September 2009) defines the process  
272 for managing the GTIN-8 number bank and the conditions under which a GTIN-8 may be issued  
273 to a member company. It also defines the process for transferring unused capacity between GS1  
274 Member Organisations.
- 275 ■ Section B-04 – “Allocation of Global Location Numbers” (first published May 2005, latest  
276 amendment unknown) defines the process for allocating blocks of GCPs to professional or trade  
277 associations in order to identify its members and specifically states that such GCPs may be used  
278 only for the generation of GLNs.
- 279 ■ Section B-05 – “Allocation of additional Prefixes to GS1 Member Organisations” (amended 17 May  
280 2005) defines the process for allocating additional GS1 Prefixes to GS1 Member Organisations  
281 that exceed the capacity of their existing GS1 Prefixes.
- 282 ■ Section B-07 – “General Principles for the Direct Assignment of GS1 Company Prefixes to  
283 Manufacturers in Non-Member Countries” (approved 26 September 1987) defines the process for  
284 allocating GCPs to companies in countries in which there is no GS1 Member Organisation and the  
285 transition of those GCPs to new GCPs allocated when a GS1 Member Organisation is formed.
- 286 ■ Section B-12 – “GS1 Policy towards non-GS1 Identification Systems” (approved 18 May 2011)  
287 defines the obligations of GS1 Member Organisations when incorporating existing numbering  
288 schemes into the GS1 System as either Class 2 Keys (incorporated into the GS1 Identification  
289 System) or Class 3 Keys (supported in some standards but not incorporated into the GS1  
290 Identification System).

## 291 **2.4 GS1 System Landscape**

292 Section 1.1 – “GS1 Identification Keys” defines the management of the GS1 Company Prefix.

## 293 **2.5 GS1 System Architecture**

294 While the term “GS1 Company Prefix” is used in various locations in the GS1 System Architecture  
295 (GS1, n.d.), the document does not define its structure or management in any way.

## 296 **2.6 GS1 System Architecture – Classes of GS1 Identification Keys**

297 The GS1 Identification Keys are the foundation of the GS1 System. However, some GS1 Standards  
298 make provision for the use of other systems of identification for which some organisation other than  
299 GS1 is the issuing authority. For this reason a classification of keys, drawn from a GS1 perspective,  
300 is helpful in understanding the relationship between a key and the rest of the GS1 System.

301 The following classification of keys is used:

- 302 ■ Class 1: Keys administered by GS1 and fully under its control.
- 303 ■ Class 2: Keys whose framework is controlled by GS1 by means of portion of the GS1 numbering  
304 capacity that is allocated for an identification scheme administered by an external organisation.
- 305 ■ Class 3: Keys fully administered and controlled outside GS1 but which are supported in some  
306 part or parts of the GS1 System.

- 307                   ■ Class 4: Keys that are entirely outside the GS1 System i.e. all identifiers that meet the technical  
308 definition of “key” in Section 4.1.3 [of the GS1 System Architecture], but are not in the first three  
309 classes.

310 This classification is described in more detail below.

### 311 2.6.1 Class 1 Keys

312 A Class 1 key has its structure and its allocation and lifecycle rules defined by GS1. Class 1 keys  
313 always start with a GS1 Prefix<sup>2</sup>. They usually start with a GS1 Company Prefix licensed by a GS1  
314 Member Organisation (MO) or by the GS1 Global Office to a user company. In some cases, they are  
315 licensed one by one by MOs to user companies. They are subject to allocation rules defined in GS1  
316 Standards, and their association with attributes is governed by validation rules also defined in GS1  
317 Standards.

318 The allocation and lifecycle rules and the standardised structure guarantee full interoperability  
319 between users of all layers of the GS1 System. This means that when a company uses Class 1 keys  
320 for its intended purpose it can be confident that its GS1 compliant trading partners will be able to  
321 accept and process them per GS1 Standards.

322 Currently the Class 1 keys are GTIN, SSCC, GLN, GRAI, GIAI, GSRN, GDTI, GSIN, GINC, CPID, and  
323 GCN.

### 324 2.6.2 Class 2 Keys

325 A Class 2 key starts with a GS1 Prefix, incorporates a key administered by an external organisation,  
326 and where its corresponding Class 1 key format has a check digit it must be used and calculated in  
327 the same way as for Class 1 keys. Class 2 keys are unique with respect to Class 1 keys of the same  
328 type, and their values are a subset of all possible values of the corresponding GS1 key. Their  
329 allocation and lifecycle rules, however, are defined by an organisation external to GS1. The degree  
330 to which these rules are compatible with those of the corresponding Class 1 keys is specific to each  
331 Class 2 key. In some cases they can easily be used alongside Class 1 keys, but sometimes legal  
332 restrictions or dominant business practices lead to acceptance of Class 2 keys whose rules vary  
333 significantly from their Class 1 equivalents.

334 It is important to understand that technical compatibility is not the same in practice as  
335 interoperability. Technical compatibility is achieved by having uniqueness of values within the  
336 namespace and a similar basic structure for the identifier (e.g., GS1 Prefix and check digit). It is still  
337 possible for business or legal restrictions to be imposed requiring use of a certain format or range of  
338 values, even if such restrictions are not technically justified. It might be argued that Class 2 keys  
339 are more susceptible to these geopolitical constraints than keys in Class 1.

340 Interoperability is the ability to use the key within the context of business processes supported by  
341 GS1 standards. However, the degree of interoperability with GS1 System depends on the extent to  
342 which a Class 2 key conforms to Class 1 key functionality and rules.

343 Class 2 keys are always based on a GS1 Prefix issued by GS1 and might be based on a GS1  
344 Company Prefix allocated by a GS1 Member Organisation or the GS1 Global Office. Examples  
345 include:

- 346                   ■ ISBNs may be used with GS1 prefixes 978 and 979 to form GTIN-13s.
- 347                   ■ GS1 prefix 34 is used with Club Inter Pharmaceutique (CIP) codes for pharmaceuticals in France  
348 to accommodate national numbers inside the GTIN number range
- 349                   ■ The Produce Electronic Identification Board uses the GS1 Company Prefix 033383 combined with  
350 a commodity code issued by the Produce Marketing Association to create “PEIB UPCs” inside the  
351 GTIN number range.

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<sup>2</sup> This is not quite literally true, because the syntax of the GTIN-14 and SSCC keys include an extra digit that precedes the GS1 Prefix. However, from the standpoint of the allocation process, the GS1 Prefix are the first digits to be chosen during the construction of a key, so in this sense the GTIN and SSCC also “start with” a GS1 Prefix. Note that in the EPC syntax, the first digits *are* always the GS1 Prefix.

352 There must be a contractual agreement between the GS1 Global Office or a GS1 Member  
 353 Organisation and the agency that administers the embedded key. This agreement specifies at  
 354 minimum the following:

- 355 ■ GS1 System components that can be used with the key, e.g. data carriers in which the key may  
 356 be used
- 357 ■ Restrictions that may apply, e.g. ISBN can only be used for books
- 358 ■ Financial considerations
- 359 ■ GS1 keys allocation and lifecycle rules
- 360 ■ Validation rules
- 361 ■ Compatibility with class 1 key function and syntax for example:
  - 362 □ Will this class 2 key work with physical data carriers and GDSN validation rules
  - 363 □ Will this class 2 key support ONS
  - 364 □ Etc...
- 365 ■ Restrictions on reciprocity (e.g. national or currency zones)

366 **2.6.3 Class 3 Keys**

367 A Class 3 key has its structure and its rules for use defined, administered and managed by an  
 368 agency external to GS1. However this agency enters into an agreement with GS1 that enables its  
 369 keys to be used in selected GS1 Standards; for example, within an EPC header.

370 It is intended that Class 3 keys are used in selected GS1 standards without disrupting users of  
 371 Class 1 and Class 2 keys, but:

- 372 ■ GS1 gives no assurance that Class 3 keys will be recognised by users of Class 1 and Class 2 keys
- 373 ■ GS1 has no expectation that systems relying upon Class 3 keys should recognise keys from Class 1  
 374 or Class 2
- 375 ■ Has no expectation that systems relying upon one type of Class 3 key should recognise other  
 376 types of Class 3 key.

377 Companies can take advantage of GS1 technology, network and communications standards for  
 378 Class 1, 2 and 3 keys, but should not expect full interoperability between keys in Classes 1 and 2  
 379 and keys in Class 3.

380 Keys in Class 3 at the present time are the Auto-ID Center General Identifier (ID), and keys  
 381 compliant with US Department of Defence (USDOD) and Airline Transport Association (ATA)  
 382 standards that are based on CAGE and DoDAAC company identification. Such keys are supported in  
 383 the GS1 EPC Tag Data Standard and consequently have an EPC URI that can be used in EPCIS.

384 **2.6.4 Class 4 Keys**

385 A Class 4 key is administered and managed externally to GS1 and is not accommodated by any GS1  
 386 standard. Examples include DUNS, VIN, HIBC, BIC, DOI and many others.

387 **2.6.5 Summary**

388 The following table summarises the key classification discussed above.

Class	Managed	Contract	GS1 Prefix	Interoperability*
1	By GS1	N/A	Yes	Full
2	Externally	Required	Yes	Variable
3	Externally	Required	No**	Limited
4	Externally	No	No	None

389 \* Interoperability is the ability to use the key within the context of business processes supported by  
390 GS1 standards.

391 \*\* One exception is GID GS1 Prefix 951. While the key itself does not contain a GS1 Prefix, the  
392 portion of the key that semantically corresponds to the GS1 Prefix is 951, and this GS1 Prefix is  
393 reserved for that use to avoid confusion with Class 1 and 2 keys.

## 394 **2.7 EPCglobal Architecture Framework**

395 The EPC Global Architecture Framework (GS1, n.d.) focuses primarily on the term “EPC Manager  
396 Number”; though in most cases this is the same as the GCP that is not always the case. The term  
397 “GS1 Company Prefix” (GCP) is therefore seldom in the document. The references below are to  
398 Version 1.5, 23 March 2013.

399 ■ 5.4 Correspondence to Existing Codes

400 ■ 7.3 ONS Interactions

## 401 **2.8 GS1 EPC Tag Data Standard**

402 As the GCP is the foundation of all GS1 Identification Keys and therefore the foundation of most  
403 EPCs, the number of places in which the term appears in the GS1 EPC Tag Data Standard (GS1,  
404 n.d.) is significant. The references below are to Version 1.8, 2 February 2014, and pertain only to  
405 the definition and management of the GCP, not its use within the construction of a GS1  
406 Identification Key or EPC.

407 ■ 6.2 Assignment of EPCs to Physical Objects

408 ■ 7 Correspondence Between EPCs and GS1 Keys

409

## 410 3 Roles and Responsibilities

### 411 3.1 GS1 Global Office

412 GS1 Global Office is responsible for the allocation of the GS1 Prefix to the various GS1 Member  
413 Organisations as a way of partitioning the number space. GS1 Global Office is also responsible for  
414 assignment of GCPs to companies under certain circumstances and Class 2 Key GS1 Prefixes to  
415 international organisations such as ISBN.

### 416 3.2 GS1 Member Organisation

417 A GS1 Member Organisation is responsible for managing the lifecycle of the GS1 Company Prefix  
418 and, in the case of the licensing of a one-off GS1 Identification Key, working with the GS1 Member  
419 to manage the lifecycle of the GS1 Identification Key.

420 Managing the lifecycle of a GS1 Company Prefix requires:

- 421 ■ issuance of the GS1 Company Prefix within the GS1 Prefix space allocated by GS1 Global Office;
- 422 ■ allocation of the GS1 Company Prefix to the GS1 Member;
- 423 ■ transfer of the GS1 Company Prefix to another GS1 Member in the event of a company merger or  
424 the acquisition of the first member's product portfolio identified using the GS1 Company Prefix;
- 425 ■ retirement of the GS1 Company Prefix when the GS1 Member surrenders the license;
- 426 ■ management of the GS1 Company Prefix during its non-reuse period (typically four years); and
- 427 ■ release of the GS1 Company Prefix back to the available pool for reallocation to another GS1  
428 Member at the end of its non-reuse period.

429 Managing the lifecycle of a GS1 Identification Key requires:

- 430 ■ management of a GS1 Company Prefix for the purpose of one-off GS1 Identification Key issuance;
- 431 ■ issuance of the GS1 Identification Key within the space defined by the GS1 Company Prefix
- 432 ■ licensing of the GS1 Identification Key to the GS1 Member;
- 433 ■ informing the GS1 Member of the EPC URI corresponding to the GS1 Identification Key if so  
434 required;
- 435 ■ transfer of the GS1 Identification Key to another GS1 Member in the event of a company merger  
436 or the acquisition of the first member's product identified using the GS1 Identification Key;
- 437 ■ retirement of the GS1 Identification Key when the GS1 Member surrenders the license;
- 438 ■ management of the GS1 Identification Key during its non-reuse period (typically four years or  
439 never reused for regulated healthcare trade items); and
- 440 ■ release of the GS1 Identification Key back to the available pool for reallocation to another GS1  
441 Member at the end of its non-reuse period.

442 For a country that does not have a GS1 Member Organisation, the above functions may be  
443 performed by a GS1 Member Organisation outside the country or by GS1 Global Office.

444 A GS1 Member Organisation may also be responsible for allocating space within its GS1 Prefix range  
445 to local organisations that issue Class 2 Keys.

### 446 3.3 GS1 Member

447 The term used to identify a company to which a GS1 Company Prefix or a one-off GS1 Identification  
448 Key is licensed varies from one MO to another, depending on local regulations and the charter under  
449 which the MO is incorporated. While the most general term for such a company is "GS1 (country)  
450 Member" (e.g. "GS1 UK Member"), that is not always the case. Despite that, the term "GS1  
451 Member" is the most common and is used throughout this document to refer to members,  
452 subscribers, or customers as defined by each local GS1 Member Organisation.

- 453 A GS1 Member is responsible for managing the lifecycle of the GS1 Identification Keys, those within  
454 the GS1 Company Prefix allocated to it or the one-off GS1 Identification Keys allocated to it.
- 455 Managing the lifecycle of a GS1 Identification Key within a GS1 Company Prefix requires:
- 456 ■ issuance of the GS1 Identification Key within the space defined by the GS1 Company Prefix;
  - 457 ■ allocation of the GS1 Identification Key to an appropriate object in accordance with the allocation  
458 rules;
  - 459 ■ retirement of the GS1 Identification Key when required by the allocation rules;
  - 460 ■ management of the GS1 Identification Key during its non-reuse period (typically four years); and
  - 461 ■ release of the GS1 Identification Key back to the available pool for reallocation to another  
462 appropriate object at the end of its non-reuse period.
- 463 Managing the lifecycle of a one-off GS1 Identification Key requires:
- 464 ■ allocation of the GS1 Identification Key to an appropriate object in accordance with the allocation  
465 rules;
  - 466 ■ retirement of the GS1 Identification Key when required by the allocation rules;
  - 467 ■ management of the GS1 Identification Key during its non-reuse period (typically four years); and
  - 468 ■ release of the GS1 Identification Key at the end of its non-reuse period back to the available pool  
469 for reallocation to another appropriate object or back to the GS1 Member Organisation if required  
470 by the licensing terms.
- 471

## 472 4 Problem Statements

### 473 4.1 Definition of GS1 Company Prefix

474 There is no formal, consistent definition of a GS1 Company Prefix that would satisfy the Architecture  
475 Group were it proposed as a standard under today's Global Standard Management Process.

476 The GCP is said to be composed of a GS1 Prefix and a Company Number. While the GS1 Prefix is  
477 relatively well-defined, the Company Number is defined as a component of the GCP, which creates a  
478 circular reference.

479 The lack of a clear definition causes issues in the development of systems that manage GCPs for  
480 Member Organisations. This also affects the development of services such as GEPIR (for GCP  
481 lookup) and ONS (for service discovery) that have the GCP at the core of their designs.

### 482 4.2 Equivalent of GS1 Company Prefix for GS1-8 Prefix

483 The GTIN-8 is available for items whose packaging does not include enough available space to  
484 permit the use of an EAN-13 or UPC-A symbol. GTIN-8s are issued individually by GS1 Member  
485 Organisations on request and are based on their GS1-8 Prefixes. Given the utility of the GCP within  
486 the GS1 Identification System, in particular for GEPIR, TDS, and ONS, is it necessary for there to be  
487 the equivalent of the GCP for the GS1-8 Prefix used to construct a GTIN-8? If no equivalent is  
488 possible, what standards and services are affected and what are the alternatives?

### 489 4.3 Equivalent of GS1 Company Prefix for Class 2 Identification Keys

490 Class 2 Keys are those that start with a GS1 Prefix and incorporate keys administered by external  
491 organisations. Given the utility of the GCP within the GS1 Identification System, in particular for  
492 GEPIR, TDS, and ONS, is it necessary for there to be the equivalent of the GCP for a Class 2 Key? If  
493 no equivalent is possible, what standards and services are affected and what are the alternatives?

### 494 4.4 Structure and Valid Lengths of GS1 Company Prefix

495 While the structure of the GCP is generally accepted to be numeric, this is not explicitly stated in  
496 any document although a non-numeric GCP would break a number of standards (e.g. for the  
497 construction of a numeric GS1 Identification Key). The GS1 Prefix is stated to be "a number with  
498 two or more digits" but the Company Number is not explicitly numeric; the implication cannot be  
499 accepted as standard as there are numerous GS1 data elements that use the term "number" and  
500 yet support alphanumeric characters (e.g. serial number, batch number, lot number).

501 The valid lengths of a GS1 Company Prefix are not stated in any normative way. Within GEPIR, the  
502 length of the GCP may be 4-12 digits; within the GS1 EPC Tag Data Standard, it is 6-12 digits. The  
503 GS1 Operational Manual states only that a GS1 Member Organisation must support 9-digit prefixes  
504 but is silent on all other lengths.

### 505 4.5 Treatment of GS1 Company Prefix in GS1 EPC Tag Data Standard

506 Within the GS1 EPC Tag Data Standard, the GCP may be 6-12 digits long. However, some prefixes  
507 are shorter than 6 digits; GS1 UK, for example, licensed 5-digit prefixes to CD manufacturers to  
508 support their volume. At this time there is no formal instruction on how to treat GCPs shorter than 6  
509 digits. There are no known instances of GCPs longer than 12 digits.

### 510 4.6 Support for 12-digit GS1 Company Prefix

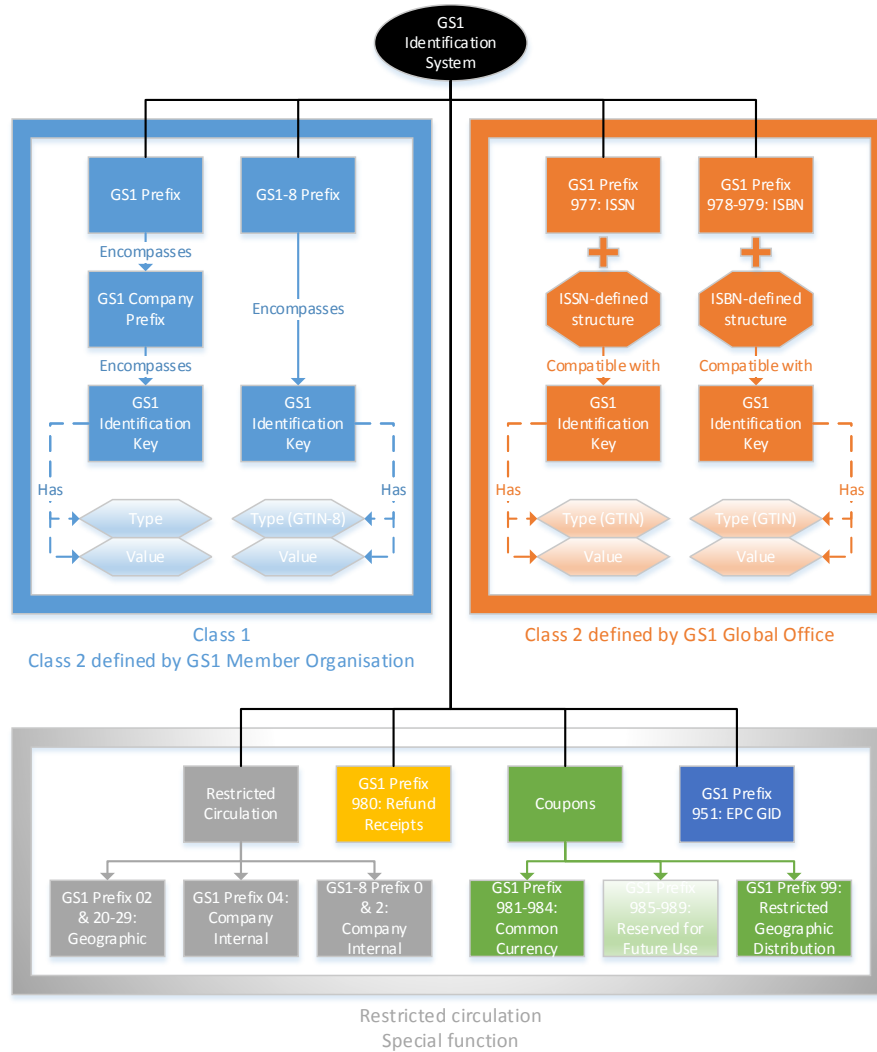
511 Mathematically, a 12-digit GCP poses no problem for the assignment of a GS1 Identification Key.  
512 The capacity of a GCP for a given numeric key is  $10^{(\text{significant key length} - \text{GCP length})}$ ; where the significant  
513 key length is the length of the key excluding any leader (e.g. indicator digit) and the check digit if  
514 applicable. When the significant key length and the GCP length are the same, the result is  $10^0$ ,  
515 which is 1. In short, a 12-digit GCP allows for a single GTIN-13, a single GLN, a single GRAI, a single  
516 GDTI, a single GCN, and multiples of all other keys.

- 517 While this is mathematically correct, should it be permissible? Within GEPIR, it's considered valid to  
518 return a 12-digit GCP for one-off identification keys, but that may not be the actual length of the  
519 GCP from which the key was issued.
- 520 **4.7 Significance of GS1 Company Prefix within GS1 Identification Key**
- 521 While one of the goals of the GS1 Identification System is to treat the entirety of the key as non-  
522 significant, the fact that the GCP is strongly (not perfectly) correlated with the licensee has led some  
523 to use the GCP as a form of identification for the member. The GCP also has an implied significance  
524 (e.g. thanks to its use in GEPIR and TDS).
- 525 **4.8 Management of GS1 Company Prefix by Issuing GS1 Member**  
526 **Organisation**
- 527 Except for limited text within Section B – “Policies” of the GS1 Operational Manual (GS1, n.d.), the  
528 procedures for the management of the lifecycle of GS1 Company Prefixes are not well defined.
- 529 **4.9 Cross-MO transfer of GS1 Company Prefix**
- 530 While some MOs sublicense prefixes from their ranges to other MOs (e.g. US to Canada and others,  
531 UK to Ireland), this is not common practice. In today's globalized world with companies moving  
532 from one locale to another, it's entirely possible for a member company ask the MO in its new  
533 country to take over management of the GCP issued by the MO in its old country. Should this be  
534 permissible and under what circumstances?
- 535 **4.10 Alternative to term “GS1 Company Prefix”**
- 536 The use of the word “Company” in the term “GS1 Company Prefix” implies significance, that the  
537 number has some formal association with the company to which is licensed. While this may be true  
538 from a general view of the GS1 Identification System, it is not true in all cases and can lead to the  
539 misunderstanding that the system carries significance within the keys.
- 540

541 **5 The GS1 Identification System (Proposed)**

542 **Note:** Previous sections of this document referred the GS1 General Specifications (GS1, n.d.)  
 543 Version 13.1, July 2013, the version that was in place at the time that this document was  
 544 originally developed. From this point forward, the references are to Version 15 (issue 2),  
 545 January 2015.

546 The GS1 Identification System is a distributed, federated system for issuing unique GS1  
 547 Identification Keys. The space represented by the GS1 Identification System appears below:



- 548
- 549 Each part of the GS1 Identification System is administered in a different way:
- 550 ■ Class 1 GS1 Identification Keys are administered at three levels: GS1 Global Office, GS1 Member  
 551 Organisations, and GS1 Members. Each level of the hierarchy is responsible for partitioning the  
 552 range of permissible GS1 Identification Keys for allocation to the next level or for issuing individual  
 553 GS1 Identification Keys for allocation to identifiable objects.
  - 554 ■ Class 2 GS1 Identification Keys are administered at levels dependent on the GS1 entity (GS1  
 555 Global Office or GS1 Member Organisation) that defines them.
    - 556 □ Class 2 GS1 Identification Keys defined by GS1 Global Office (international identification keys)  
 557 are administered at two or three levels: GS1 Global Office, an external organisation, and  
 558 optionally members of the external organisation.
    - 559 □ Class 2 GS1 Identification Keys defined by a GS1 Member Organisation (national identification  
 560 keys, e.g. US National Drug Code or French Club Inter Pharmaceutique) are administered at

- 561 three or four levels: GS1 Global Office, GS1 Member Organisation, an external organisation,  
562 and optionally members of the external organisation.
- 563 ■ The restricted circulation and special function spaces are administered according to their types.
- 564 □ Restricted Circulation Numbers (Geographic) are administered according to procedures  
565 defined by the local GS1 Member Organisation, have no applicability outside of the country  
566 served, and are not globally unique. They are available to identify trade items, coupons, and  
567 other objects in a geographic region. They are often but not exclusively used for Variable  
568 Measure Trade Items, items that are sold in random quantities at a fixed price per unit.
- 569 □ Restricted Circulation Numbers (Company Internal) are administered according to procedures  
570 defined by the company using them, have no applicability outside of the company, and are  
571 not globally unique. They are available to identify trade items, coupons and other objects in  
572 an internal company environment.
- 573 □ Refund Receipts are administered according to procedures defined by the local GS1 Member  
574 Organisation and have no applicability outside of the country served.
- 575 □ Coupons are administered according to procedures defined by the local GS1 Member  
576 Organisation and have no applicability outside of the country served. For Common Currency  
577 Coupons, multiple GS1 Member Organisations in partnership are responsible for joint  
578 development of administration procedures and the coupons apply in all countries served.
- 579 □ The EPCglobal space is administered by GS1 Global Office for special use cases in EPCglobal  
580 standards (e.g. for assignment of EPC Manager Numbers not associated with a GS1 Company  
581 Prefix).

582 Unless otherwise indicated, subsequent discussion in this chapter applies only to Class 1 and Class 2  
583 GS1 Identification Keys.

## 584 5.1 Character set

585 Every identifier in the GS1 Identification System is a string composed of characters from the  
586 ISO/IEC 646 Table 1 – Unique graphic character allocations<sup>3</sup>. The characters available may be  
587 further restricted to a subset of that table as follows:

- 588 ■ some identifiers use only the digit characters ('0' to '9');
- 589 □ GTIN;
- 590 □ GLN;
- 591 □ SSCC;
- 592 □ GRAI (without serial component);
- 593 □ GSRN;
- 594 □ GDTI (without serial component);
- 595 □ GSIN;
- 596 □ GCN (with or without serial component);
- 597 ■ CPID uses only the digit characters ('0' to '9'), upper case alphabetic characters ('A' to 'Z'), and  
598 three special characters ('#', '-', and '/'); and
- 599 ■ the GS1 Prefix and (if applicable) the GS1 Company Prefix within any identifier use only the digit  
600 characters ('0' to '9').

601 As every identifier in the GS1 Identification System is a string, even when it is composed only of  
602 digit characters, all characters including leading zeroes are significant.

---

<sup>3</sup> While the ISO/IEC 646: 1991 specification is not publicly available, the 6<sup>th</sup> edition of ECMA-6 corresponds to it and is available at <http://www.ecma-international.org/publications/files/ECMA-ST/Ecma-006.pdf>.

603 **5.2 Components**

604 **5.2.1 GS1 Prefix**

605 A GS1 Prefix is a unique string of two or more digits issued by GS1 Global Office and allocated to a  
 606 GS1 Member Organisation, allocated to GS1 Global Office itself, reserved for Restricted Circulation  
 607 Numbers, reserved for special functions (e.g. coupons, receipts, EPC General Identifier), or allocated  
 608 to external organisations for the management of Class 2 GS1 Identification Keys.

609 As the GS1 Prefix varies in length, the issuance of a GS1 Prefix excludes all longer strings that start  
 610 with the same digits from being issued as GS1 Prefixes.

611 The space for GS1 Prefixes is partitioned as shown in the following table. The table does not imply  
 612 that every GS1 Prefix in each range has been issued or that every issued GS1 Prefix has been  
 613 allocated.

Synopsis of GS1 Prefixes	
GS1 Prefixes	Significance
00000	Reserved for GS1 Company Prefix equivalent of GS1-8 Prefix
00001 – 00009 0001 – 0009 001 – 019	GS1 Prefix (used to create U.P.C. Company Prefixes)
02	GS1 restricted circulation within a geographic region
03	GS1 Prefix
04	GS1 restricted circulation within a company
05	GS1 US reserved for future use
06 – 09	GS1 Prefix (used to create U.P.C. Company Prefixes)
10 – 19	GS1 Prefix
20 – 29	GS1 restricted circulation within a geographic region
300 – 950	GS1 Prefix
951	Reserved for EPC General Identifier (GID) scheme
952 – 976	GS1 Prefix
977	Allocated to ISSN International Centre for serial publications
978 – 979	Allocated to International ISBN Agency for books, portion of 979 sub-allocated to International ISMN Agency for sheet music
980	GS1 identification of refund receipts
981 – 984	GS1 coupon identification for common currency areas
985 – 989	GS1 reserved for further coupon identification
99	GS1 coupon identification

614 **5.2.2 GS1-8 Prefix**

615 A GS1-8 Prefix is a unique string of three digits issued by GS1 Global Office and allocated to a GS1  
 616 Member Organisation, allocated to GS1 Global Office itself, or reserved for Restricted Circulation  
 617 Numbers (RCN-8). The GS1-8 Prefix may be used only for the issuance of GTIN-8 or RCN-8  
 618 identification keys.

619 By convention and with one exception, every two-digit GS1 Prefix allocated to a GS1 Member  
 620 Organisation has a matching set of ten GS1-8 Prefixes and every three-digit GS1 Prefix allocated to  
 621 a GS1 Member Organisation has a matching single GS1-8 Prefix allocated to the same GS1 Member

622 Organisation. The one exception is any GS1 Prefix starting with '0' (allocated to GS1 US); such GS1  
 623 Prefixes have no matching GTIN-8 Prefix as they are reserved for RCN-8.

624 GS1 Global Office may also allocate GS1-8 Prefixes that do not correspond to any issued GS1  
 625 Prefixes to GS1 Member Organisations that need extra capacity.

626 The space for GS1-8 Prefixes is partitioned as shown in the following table. The table does not imply  
 627 that every GS1-8 Prefix in each range has been issued or that every issued GS1-8 Prefix has been  
 628 allocated.

Synopsis of GS1-8 Prefixes	
GS1-8 Prefixes	Significance
000 – 099	GS1 Restricted Circulation Number within a company
100 – 199	GS1-8 Prefix
200 – 299	GS1 Restricted Circulation Number within a company
300 – 976	GS1-8 Prefix
977 – 999	GS1 reserved for future use

### 629 5.2.3 GS1 Company Prefix

630 A GS1 Company Prefix is a unique string of four to twelve digits used to issue GS1 Identification  
 631 Keys. The first digits are a valid GS1 Prefix and the length must be at least one longer than the  
 632 length of the GS1 Prefix. The GS1 Company Prefix is issued by a GS1 Member Organisation or by  
 633 GS1 Global Office, is based on a GS1 Prefix allocated to the issuer, and is allocated either to a GS1  
 634 Member or to the issuer itself (e.g. for issuing one-off identification keys).

635 As the GS1 Company Prefix varies in length, the issuance of a GS1 Company Prefix excludes all  
 636 longer strings that start with the same digits from being issued as GS1 Company Prefixes.

637 Support for four- and five-digit GS1 Company Prefixes should be limited to those already issued by  
 638 GS1 Member Organisations. As the GS1 EPC Tag Data Standard (GS1, n.d.) supports only GS1  
 639 Company Prefixes between six and twelve digits in length (inclusive), a four- or five-digit GS1  
 640 Company Prefix shall be treated as a block of consecutive six-digit values for the purposes of RFID  
 641 tag encoding and EPC URI generation.

### 642 5.2.4 GS1 Identification Key

643 A GS1 Identification Key is a unique identifier for a class of objects (e.g. trade items) or an instance  
 644 of an object (e.g. shipping container) and is composed of both a type and a value.

645 The GS1 Identification Key type is declared explicitly by the context in which the key is used:

- 646 ■ in a bar code, the type is declared by the preceding application identifier;
  - 647 □ in the case of EAN/UPC and ITF-14 symbologies the application identifier 01 is implied;
- 648 ■ in an EPC RFID tag:
  - 649 □ within the EPC memory bank, the type is declared by the EPC header value;
  - 650 □ within the user memory bank, the type is declared by extra bits that map to an application  
 651 identifier;
- 652 ■ in an EPC URI, the type is declared by the scheme component; and
- 653 ■ in electronic systems (eCom messages, XML, databases, etc.), the type may be declared:
  - 654 □ directly by the underlying schema or specification;
  - 655 □ indirectly by associated data within the document or record;

656 The GS1 Identification Key type defines the syntax (character set and structure) of the value. At  
 657 minimum, the GS1 Identification Key value contains one of the following:

- 658 ■ a GS1 Company Prefix (all Class 1 except GTIN-8, some Class 2);

- 659 ■ a GS1-8 Prefix (GTIN-8); or
- 660 ■ a GS1 Prefix (all other Class 2).

661 Whether a Class 2 GS1 Identification Key contains a GS1 Company Prefix or a GS1 Prefix alone is  
 662 determined by the GS1 party to the contractual agreement. A Class 2 GS1 Identification Key that  
 663 contains a GS1 Prefix alone may also contain an equivalent to the GS1 Company Prefix (see  
 664 Section 6.3) but that is not the same as containing a true GS1 Company Prefix.

665 **5.2.5 U.P.C. Prefix**

666 A GS1 Prefix starting with a zero ('0') becomes a U.P.C. Prefix by removing the leading zero. A  
 667 U.P.C. Prefix is used to issue U.P.C. Company Prefixes, reserved for Restricted Circulation Numbers,  
 668 or reserved for special functions.

669 The space for U.P.C. Prefixes is partitioned as shown in the following table.

Synopsis of U.P.C. Prefixes		
GS1 Prefixes	U.P.C. Prefixes	Significance
00000	N/A	Reserved for GS1 Company Prefix equivalent of GS1-8 Prefix
00001 – 00009 0001 – 0009 001 – 019	0001 – 0009 001 – 009 01 – 19	U.P.C. Prefix
02	2	GS1 Variable Measure Trade Item identification for restricted distribution
03	3	U.P.C. Prefix, reserved for alignment with FDA Labeler Code
04	4	GS1 Restricted Circulation Number within a company
05	5	Reserved for future use
060 – 099	60 – 99	U.P.C. Prefix

670 **5.2.6 U.P.C. Company Prefix**

671 A GS1 Company Prefix starting with a zero ('0') becomes a U.P.C. Company Prefix by removing the  
 672 leading zero. A U.P.C. Company Prefix is used to issue GTIN-12 identification keys.

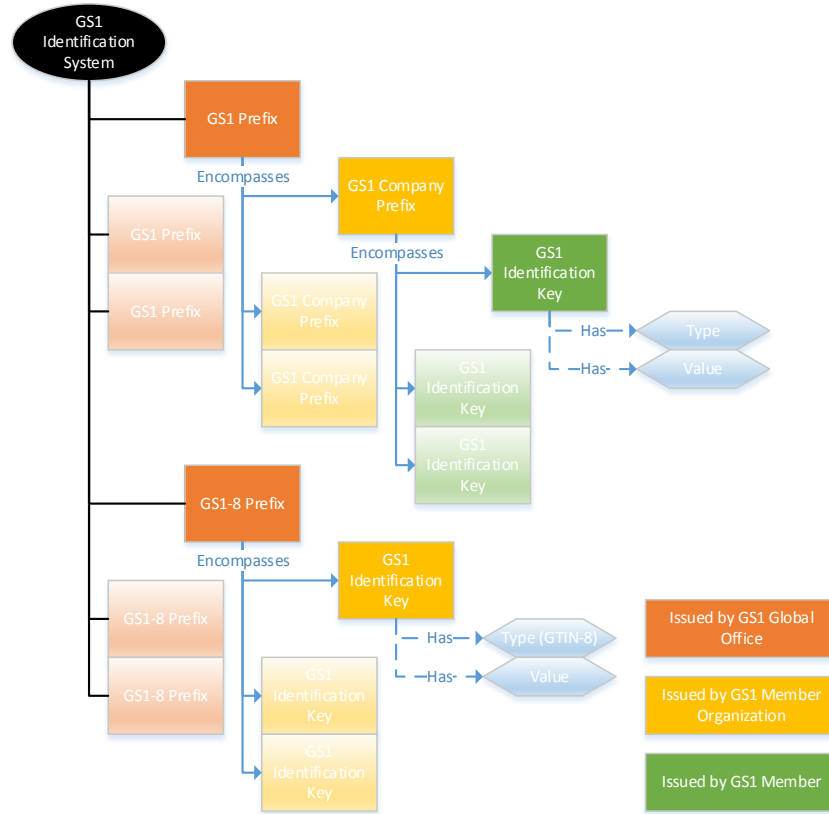
673 **5.3 Alternate Views**

674 The views below are alternatives to the one at the start of this section, expanding on the Class 1  
 675 Identification Key section. Similar views may be possible for some Class 2 Identification Keys but  
 676 that is determined on a case by case basis.

677 The views are colour-coded according to the entities generally responsible for the components.  
 678 Exceptions as documented above are possible but are not relevant to the diagrams.

679 **5.3.1 Hierarchical View**

680 This view shows the GS1 Identification System as a top-down, hierarchical space with each  
 681 component encompassing one or more components to its right, down to the GS1 Identification Key  
 682 which has a type and a value.

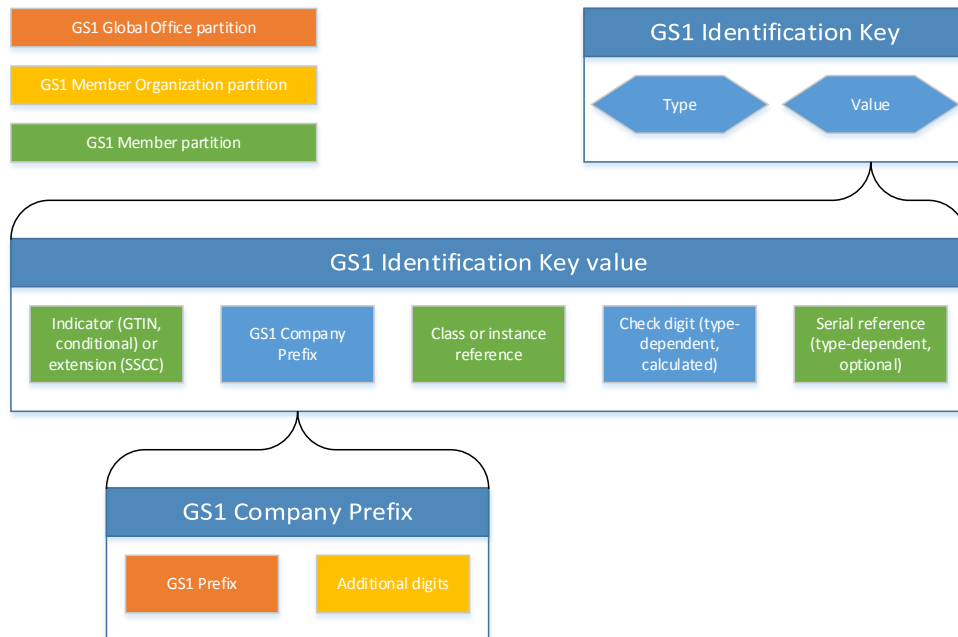


683  
684

685 **5.3.2 Partitioned View**

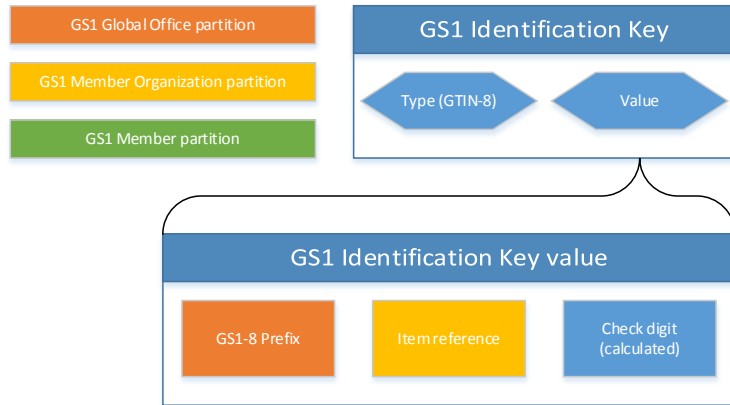
686 This view shows the GS1 Identification System as a bottom-up, partitioned space with each  
687 component broken out into its sub-components.

688 The first diagram is for all GS1 Identification Keys except GTIN-8.



689  
690

The second diagram is for GTIN-8 only.



691  
692  
693

694 **6 Proposals**

695 This section aligns with Section 4 –“Problem Statements”.

696 **6.1 Definition of GS1 Company Prefix**

697 The definition of the GS1 Company Prefix is as written in Section 5.2.3 – “GS1 Company Prefix”.  
 698 Due to its relationships to other components, all of Section 5.2 – “Components” should be included  
 699 in any document that formally defines the GS1 Company Prefix or that uses the formal definition for  
 700 reference purposes.

701 **6.2 Equivalent of GS1 Company Prefix for GS1-8 Prefix**

702 The equivalent of a GS1 Company Prefix for a GS1-8 Prefix shall be the GS1-8 Prefix prepended with  
 703 a string consisting of five zeroes (“00000”).

704 **6.3 Equivalent of GS1 Company Prefix for Class 2 Identification Keys**

705 The equivalent of a GS1 Company Prefix for a Class 2 Identification Key depends on the type of key,  
 706 on the nature of the agreement between the GS1 party and the external organisation, and on the  
 707 structure of the external organisation’s key.

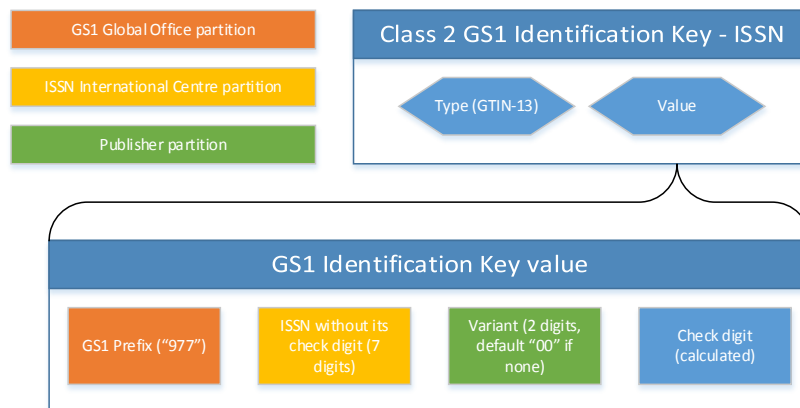
708 Every GS1 party that supports Class 2 Identification Keys is required to document the equivalent of  
 709 the GS1 Company Prefix for those keys. Some known examples are documented below.

710 **6.3.1 International Standard Serial Number (ISSN), GS1 Global Office**

711 The GS1 Prefix “977” has been allocated to the ISSN International Centre (<http://www.issn.org/>) for  
 712 the identification of serial publications. The ISSN is a string of eight characters; the first seven are  
 713 digits and the last is either a digit or the letter ‘X’. The last character is not significant as it is a  
 714 check sum of the previous seven. An ISSN is allocated to a specific publication.

715 ISSNs are issued individually. The publisher to whom an ISSN is issued may further issue a variant,  
 716 a string of two digits, to indicate pricing or publication variances (e.g. day of the week for a  
 717 newspaper). When encoded in GTIN-13 format, the variant defaults to “00” if not present.

718 The Class 2 GS1 Identification Key for ISSN is partitioned as follows:



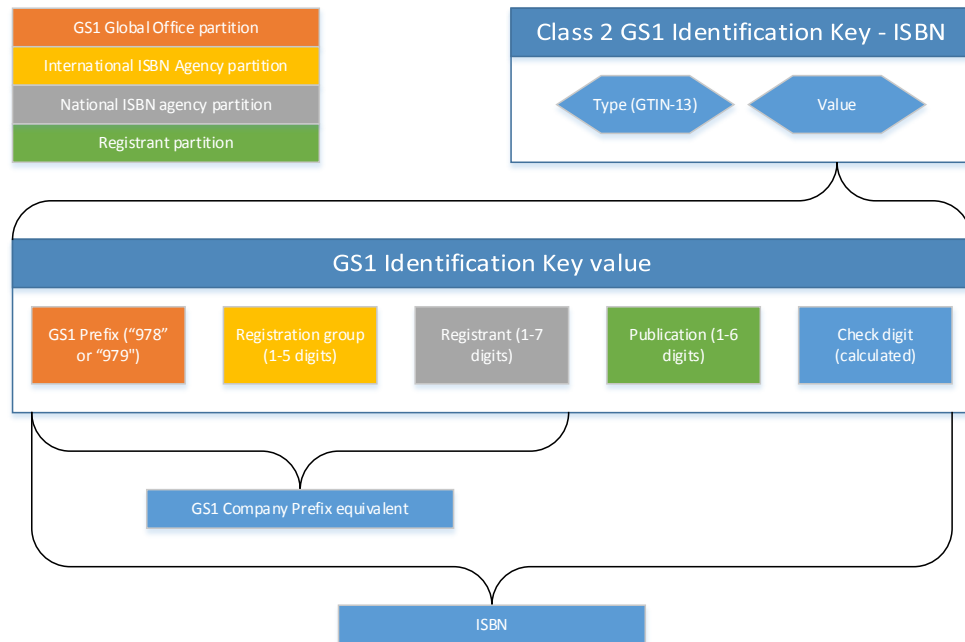
719  
 720 The ISSN without its check digit forms part of the key value. There is no equivalent to the GS1  
 721 Company Prefix for a Class 2 GS1 Identification Key for ISSN.

722 **6.3.2 International Standard Book Number (ISBN), GS1 Global Office**

723 The GS1 Prefixes “978” and “979” have been allocated to the International ISBN Agency  
 724 (<http://www.isbn-international.org/>) for the identification of books and, indirectly, of sheet music.  
 725 The ISBN is a string of 13 digits in a format compatible with GTIN-13 and is composed of the  
 726 following:

- 727 ■ the GS1 Prefix;
- 728 □ three digits, either “978” or “979”;
- 729 ■ the registration group (language-sharing country group, individual country or territory);
- 730 □ one to five digits;
- 731 □ if the GS1 Prefix is “979” and this value is “0”, the number is sub-allocated (by agreement
- 732 between GS1 and ISBN) to the International ISMN Agency and remaining components in this
- 733 list do not apply;
- 734 ■ the registrant;
- 735 □ one to seven digits;
- 736 ■ the publication;
- 737 □ one to six digits; and
- 738 ■ the check digit.

739 The Class 2 GS1 Identification Key for ISBN is partitioned as follows:



740  
 741 The ISBN is the entire key value. The equivalent to the GS1 Company Prefix for a Class 2 GS1  
 742 Identification Key for ISBN is the sequence of:

- 743 ■ the GS1 Prefix;
- 744 ■ the registration group; and
- 745 ■ the registrant.

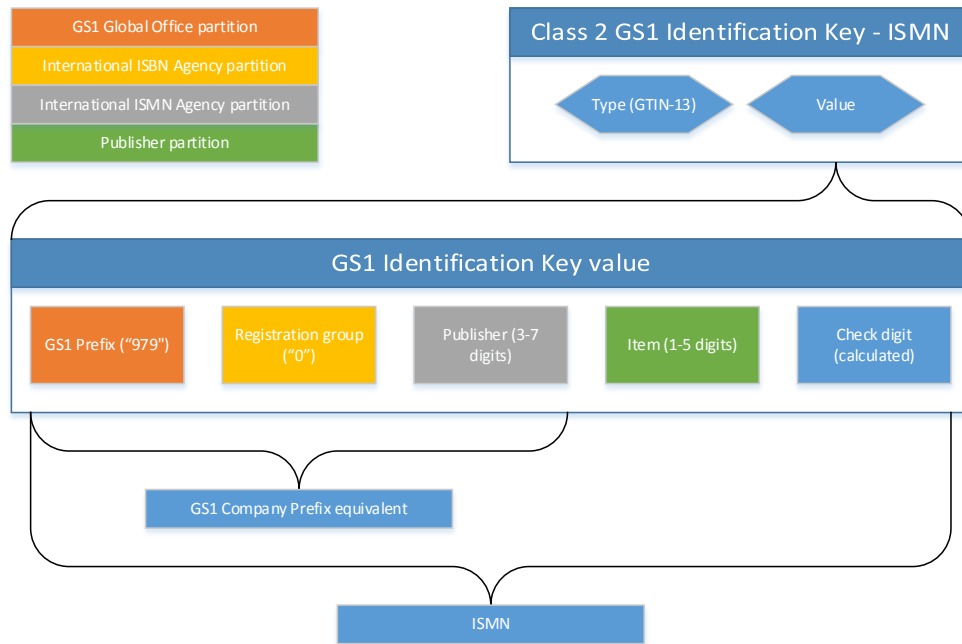
### 746 6.3.2.1 International Standard Music Number (ISMN)

747 The GS1 Prefix “979” registrant group “0” has been sub-allocated by the International ISBN Agency  
 748 to the International ISMN Agency (<http://www.ismn-international.org/>) for the identification of  
 749 sheet music. The ISMN is a string of 13 digits in a format compatible with GTIN-13 and is composed  
 750 of the following:

- 751 ■ the GS1 Prefix;
- 752 □ three digits, “979”;
- 753 ■ the registrant group;

- 754           □ one digit, “0”;
- 755           ■ the publisher;
- 756           □ three to seven digits;
- 757           ■ the item;
- 758           □ one to five digits; and
- 759           ■ the check digit.

760           The Class 2 GS1 Identification Key for ISMN is partitioned as follows:



761           The ISMN is the entire key value. The equivalent to the GS1 Company Prefix for a Class 2 GS1  
 762           Identification Key for ISMN is the sequence of:

- 764           ■ the GS1 Prefix;
- 765           ■ the registrant group; and
- 766           ■ the publisher.

767           **6.4 Structure and Valid Lengths of GS1 Company Prefix**

768           The structure and valid lengths of the GS1 Company Prefix are as written in Section 5.2.3 – “GS1  
 769           Company Prefix”. Due to its relationships to other components, all of Section 5.2 – “Components”  
 770           should be included in any document that formally defines the GS1 Company Prefix or that uses the  
 771           formal definition for reference purposes.

772           **6.5 Treatment of GS1 Company Prefix in GS1 EPC Tag Data Standard**

773           The GS1 Company Prefix or equivalent shall be used as issued in all places required within the GS1  
 774           EPC Tag Data Standard except as follows:

- 775           ■ where the GS1 Company Prefix is five characters long, it shall be treated as ten consecutive values  
 776           of length six where the first five characters are the issued GS1 Company Prefix and the remain  
 777           character is digits “0” to “9”; and
- 778           ■ where the GS1 Company Prefix is four characters long, it shall be treated as 100 consecutive  
 779           values of length six where the first four characters are the issued GS1 Company Prefix and the  
 780           remain characters are digits “00” to “99”.

781 This direction applies to both the construction of the EPC URI and the encoding of the tags so as to  
782 preserve the 1:1 relationship between the two.

783 As per Section 6.6, discussion of one-off GS1 Identification Keys shall be amended to require that  
784 the GS1 Company Prefix be used (though 12-digit GS1 Company Prefix is permitted).

## 785 **6.6 Support for 12-digit GS1 Company Prefix**

786 Some GS1 Member Organisations have issued and continue to issue 12-digit GS1 Company Prefixes;  
787 GS1 Sweden, for example, does so to companies whose primary identification use case is for  
788 shipping containers and therefore for SSCCs.

789 A 13-digit one-off identification key less its check digit shall not be treated as 12-digit GS1 Company  
790 Prefixes. Any standard or service dealing with the GS1 Company Prefix shall treat it as separate  
791 from the GS1 Identification Key in all circumstances.

792 As of this writing, the GEPIR 4.0 technical specification is going through the final stages of review.  
793 The current GEPIR 3.X specification does not support any distinction between a GS1 Company Prefix  
794 licensee and a GS1 Identification Key licensee; the GEPIR 4.0 specification does distinguish between  
795 the two and any MO implementing GEPIR 4.0 shall include support for that distinction at the earliest  
796 opportunity and cease returning one-off identification keys as 12-digit GS1 Company Prefixes.

## 797 **6.7 Significance of GS1 Company Prefix within GS1 Identification Key**

798 The GS1 Company Prefix indicates the party responsible for the partitioned space from which the  
799 GS1 Identification Key was issued. Similarly, the GS1 Prefix indicates the party responsible for the  
800 partitioned space from which the GS1 Company Prefix was issued.

801 Except for Class 2 Keys, restricted circulation, and special functions, the GS1 Company Prefix or  
802 GS1 Prefix has no significance beyond the association between the party and the partitioned space  
803 for which it is responsible. The GS1 Company Prefix in particular makes no statement about the  
804 nature of the party, including but not limited to:

- 805 ■ brand owner (GTIN);
- 806 ■ logistics provider (SSCC);
- 807 ■ parent company (GLN);
- 808 ■ asset owner (GRAI or GIAI);
- 809 ■ document publisher (GDTI);
- 810 ■ etc.

## 811 **6.8 Management of GS1 Company Prefix by Issuing GS1 Member 812 Organisation**

813 Protocols for the management of the GS1 Company Prefix by the issuing GS1 Member Organisation  
814 are not well-defined. Beyond requiring that every MO support the issuance of a nine-digit GS1  
815 Company Prefix, Section B – “Policies” of the GS1 Operational Manual (GS1, n.d.) imposes no  
816 restrictions and in fact explicitly states that “the policy on the allocation of GS1 Company Prefixes is  
817 left to the discretion of every GS1 Member Organisation”.

818 There are significant policy and system integrity implications associated with this question and the  
819 GS1 Architecture Group is not the appropriate group to address this issue directly. A team led by  
820 GS1 Global Office, with support from the GS1 Architecture Group, should revise the policies for  
821 submission to the GS1 Management Board and the GS1 General Assembly.

822 Issues for consideration in a revised policy include but are not limited to:

- 823 ■ guidance for GS1 Company Prefix length determination based on member requirements;
- 824 ■ guidance for four-, five-, and twelve-digit GS1 Company Prefixes;
- 825 ■ GS1 Company Prefix lifecycle management;
- 826 □ issuance;

- 827  allocation;
- 828  retirement;
- 829  reissuance;
- 830  GS1 Company Prefix delegation support;
- 831  GTIN resellers;
- 832  government or industry group for allocation to their members;
- 833  Class 2 Identification Key management;
- 834  guidance for one-off GS1 Identification Keys;
- 835  use of GS1 Company Prefix;
- 836  communication of GS1 Company Prefix to member;
- 837  one-off GS1 Identification Key lifecycle management;
- 838  issuance;
- 839  allocation;
- 840  retirement;
- 841  reissuance;
- 842  GEPIR integration; and
- 843  ONS integration.

## 844 **6.9 Cross-MO transfer of GS1 Company Prefix**

845 Cross-MO transfer is not as simple as just transferring the management of a GS1 Company Prefix  
846 from one MO to another; any such change affects GCP-based services. The most obvious ones are  
847 GEPIR and ONS: either the source MO must provide a mechanism for the receiving MO to populate  
848 the source MO's instances for affected GCPs or the source MO's instances must delegate queries for  
849 affected GCPs to the receiving MO's instances. Discovery Services may also be affected.

850 Even if full support for cross-MO transfer were available, regulatory requirements or Internet  
851 governance concerns may dictate that queries to such services be handled entirely in-country.

852 While GS1 Global Office may recognize some forms of cross-MO transfer, it does not support any of  
853 them directly, either in standards development or in its hosted services. Some support may be  
854 provided indirectly, e.g. in the GO-hosted instance of GEPIR if both MOs involved use it, but this is  
855 not by design and is not guaranteed to be maintained.

### 856 **6.9.1 GS1 US Alliance Numbers**

857 A GS1 US Alliance Number refers to a GS1 Company Prefix issued by GS1 US and allocated to a GS1  
858 Member via another GS1 Member Organisation. Although the GTIN-13 was expected to be fully  
859 adopted in 2005 (see <http://www.gtin.info/sunrise>), the reality is that many companies have legacy  
860 computer applications that can't handle GTIN-13 so they still insist, often in terms of trade, that  
861 products be marked with GTIN-12. Any company that wishes to allocate a GTIN-12 must therefore  
862 acquire a GS1 US GCP. To simplify the member management process, GS1 US delegates the  
863 allocation of the GS1 Company Prefix to the GS1 Member Organisation to which the GS1 Member  
864 belongs and has implemented the appropriate query routing in its GEPIR node.

### 865 **6.9.2 Country expansion**

866 The chartering of a new GS1 Member Organization requires that the source MO (or GS1 Global  
867 Office if it was managing that country) make some decision about the GS1 Company Prefixes  
868 already allocated to GS1 Members within that country. The two options available are to transfer the  
869 management of the GCPs to the new MO in a structure similar to that of the GS1 US Alliance  
870 Numbers or to retain the GCPs and therefore the management of the GS1 Members to whom they  
871 have been allocated.

872 Consider the situation of GS1 Ireland. From its formation in 1978 until 1992 the Article Numbering  
873 Association (ANA) of Ireland chose not to join EAN International (now GS1). Instead it had an  
874 agreement with ANA UK (now GS1 UK) under which blocks of company prefixes were made  
875 available to ANA of Ireland for allocation to its members. These blocks together with a number of  
876 GTIN-8s (also allocated from ANA UK's number bank) were formally transferred to the ANA of  
877 Ireland in 1992 when it joined EAN International and obtained its own prefixes. ANA UK considered  
878 this possible because the prefixes it had sub-licensed to ANA Ireland all came from well-defined  
879 subsets of its range.

880 Support for this form of cross-MO transfer is entirely at the discretion of the GS1 Member  
881 Organisations involved.

### 882 **6.9.3 Single transfer**

883 The transfer of a single GS1 Company Prefix may be requested when the GS1 Member to whom it  
884 has been allocated wishes to transfer to another GS1 Member Organisation (e.g. due to relocation of  
885 corporate headquarters or to acquisition).

886 Support for this form of cross-MO transfer is entirely at the discretion of the GS1 Member  
887 Organisations involved.

### 888 **6.9.4 Bulk transfer**

889 The transfer of a bulk of GS1 Company Prefixes may be requested by a GS1 Member Organisation  
890 that has exhausted its capacity of another GS1 Member Organisation that has extra capacity. This  
891 form of cross-MO transfer is not permitted under any circumstances; additional capacity must be  
892 requested of GS1 Global Office.

## 893 **6.10 Alternative to term "GS1 Company Prefix"**

894 The purpose of the GS1 Company Prefix is to subdivide the identification space. With the removal of  
895 the term "Company Number", the interpretation of the term "GS1 Company Prefix" is less tied to the  
896 concept of company identification so no change is proposed.

897

## 898 7 Affected Documents

899 This section identifies documents that may be affected by this document. A preliminary review of all  
900 listed documents has been done and some immediate suggestions are provided where that review  
901 found obvious need for changes.

### 902 7.1 GS1 General Specifications

903 The GS1 General Specifications is the normative reference for the GS1 Identification System. The  
904 number of places in which the GS1 Prefix, GS1-8 Prefix, and GS1 Company Prefix are defined is  
905 significant and a comprehensive review should be done by the document's maintenance team. Some  
906 immediate suggestions:

- 907 ■ 1.4.2 GS1 Prefixes
  - 908 □ Replace the definition and the table with those found in Section 5.2.1.
- 909 ■ 1.4.3 GS1-8 Prefixes
  - 910 □ Replace the definition and the table with those found in Section 5.2.2.
- 911 ■ 1.4.4 GS1 Company Prefix
  - 912 □ Replace the definition with that found in Section 5.2.3.
- 913 ■ Review and replace or remove all references to "Company Number".
- 914 ■ Add normative definition of "U.P.C. Prefix" as found in Section 5.2.5.
- 915 ■ Add normative definition of "U.P.C. Company Prefix" as found in Section 5.2.6.
- 916 ■ Add normative definition of "GS1 Identification Key" as found in Section 5.2.4.
- 917 ■ Add normative definition of "One-off GS1 Identification Key" based on the recommendations of  
918 this document.

### 919 7.2 GS1 Global Data Dictionary

#### 920 7.2.1 GS1 Prefix

921 Replace the definition with the first paragraph of Section 5.2.1.

#### 922 7.2.2 GS1-8 Prefix

923 Replace the definition with the first paragraph of Section 5.2.2.

#### 924 7.2.3 GS1 Company Prefix

925 Replace the definition with the first paragraph of Section 5.2.3.

#### 926 7.2.4 GS1 Identification Key.

927 Add the definition with the first paragraph of Section 5.2.4.

#### 928 7.2.5 U.P.C. Prefix

929 Replace the definition with the first paragraph of Section 5.2.5.

#### 930 7.2.6 U.P.C. Company Prefix

931 Replace the definition with the first paragraph of Section 5.2.6.

932 **7.2.7 Company Number**

933 Remove the definition; review and replace or remove all references to this term.

934 **7.3 GS1 Operational Manual**

935 The GS1 Operational Manual is a policies and procedures guide for operating a GS1 Member  
936 Organization. The number of places in which the GS1 Identification System is referenced is  
937 significant and a comprehensive review should be done by the document's maintenance team. Some  
938 immediate suggestions for some of the sub-documents appear below.

939 **7.3.1 Section B-02 – “Allocation of GS1 Company Prefixes”**

940 Review and replace or remove all references to “Company Number”.

941 **7.3.2 Section B-03 – “Allocation of GTIN-8 Numbers”**

942 From Section 2.4:

943 If a Member Organisation has spare GTIN-8 capacity and wants to transfer GTIN-8 number  
944 blocks to another Member Organisation, it may only do so via the GS1 Global Office and GS1  
945 Board.

946 This capability should be removed, for two reasons:

- 947 ■ a GS1 Member Organisation that requires additional capacity from GTIN-8 can request additional  
948 GS1-8 Prefixes from Global Office; and
- 949 ■ GS1 DataBar, which obviates the space restrictions addressed by GTIN-8, becomes an open  
950 symbology in 2014 and all scanning environments are expected to read it.

951 **7.3.3 Section B-05 – “Allocation of additional Prefixes to GS1 Member Organisations”**

952 Replace “3-digit GS1 prefix” with “GS1 Prefix”.

953 **7.3.4 Section B-07 – “General Principles for the Direct Assignment of GS1 Company  
954 Prefixes to Manufacturers in Non-Member Countries”**

955 Replace “3-digit prefix” with “GS1 Prefix”.

956 Replace “manufacturer” with “company”, as manufacturers are no longer the sole licensees of GS1  
957 Company Prefixes.

958 **7.4 GS1 System Landscape**

959 A comprehensive review should be done by the document's maintenance team.

960 **7.5 GS1 System Architecture**

961 A comprehensive review should be done by the document's maintenance team.

962 **7.6 GS1 EPC Tag Data Standard**

963 A comprehensive review should be done by the document's maintenance team.

964 **7.7 EPCglobal Architecture Framework**

965 A comprehensive review should be done by the document's maintenance team.

966 **8 Bibliography**

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