



# An Introduction to the Global Returnable Asset Identifier (GRAI)

**BarCodes and eCom™**

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<i>Executive Summary</i> .....	1
<i>Key Benefits of the GRAI</i> .....	1
<i>Definition</i> .....	2
<i>GRAI Construction</i> .....	2
<i>Business Use</i> .....	3
<i>How the GRAI Works</i> .....	3
<i>Example Application of the GRAI</i> .....	4
<i>Frequently Asked Questions</i> .....	5
<i>Resources</i> .....	6

## ***Executive Summary***

Trading partners realize certain assets can be used, returned and reused by members of the supply chain. Besides delivering operational and financial benefits, there are also potential environmental advantages. The concept of collaborative relationships is growing across industries; trading partners are sharing core assets, resources, and information in order to be competitive and efficient.

The GS1 System (formerly the EAN.UCC System) provides tools to unambiguously identify trade items, logistics units, returnable assets, individual assets, location numbers, and service relations, and to provide business critical information about them. The purpose of this guide is to provide instruction on applying the GS1 System to manage returnable assets.

The object of asset identification is to identify a physical entity as an inventory item. Each company or organization holding a GS1 Company Prefix may assign asset identifiers to the assets of their organization. The Global Returnable Asset Identifier (GRAI) is the globally unique GS1 System Identification Number used to identify returnable assets and it is used to access returnable asset information stored in a computer file and/or to record movements of returnable assets.

## ***Key Benefits of the GRAI***

- Offers a low cost solution to the challenge of tracking assets
- Employs the globally accepted GS1 System whose language is standardized, understood, and used by multiple industries
- Uses existing printing, scanning, and database storage methods, making this approach a low cost option for those organizations searching for a solution to marking and tracking assets that are either rented or loaned

- Provides a standard format of organizing, displaying and communicating data, allowing all members of the industry or process to benefit from improved control, information, and efficiencies
- “Open” approach promotes innovation and the development of systems and applications to identify track and manage these assets
- Helps to produce improved accuracy and completeness of a firm’s information
- Eliminates redundant activities and reduces or eliminates paperwork

**Definition**

A returnable asset is a reusable package or transport equipment of a certain value. The GRAI provides for the unique identification of an asset; it utilizes a GS1 Company Prefix enabling a user to develop, assign and maintain a unique asset number for its equipment, resources, and supplies in order to track locations and/or users. The GRAI is defined as a physical item with no reference to the contents and it enables tracking as well as recording of all relevant data.

Returnable assets such as pallets, barrels, gas cylinders, beer kegs, rail cars and trailers for further usage in transport and trade processes are becoming increasingly important. The main drive is to manage returnable assets within efficient and harmonized business processes.

**GRAI Construction**

	GS1 Company Prefix —————→	Asset Type ←————	Check digit	Serial Number (optional)
0	N <sub>1</sub> N <sub>2</sub> N <sub>3</sub> N <sub>4</sub> N <sub>5</sub> N <sub>6</sub> N <sub>7</sub> N <sub>8</sub> N <sub>9</sub> N <sub>10</sub> N <sub>11</sub> N <sub>12</sub>		N <sub>13</sub>	X <sub>1</sub> – variable → X <sub>16</sub>

**GS1 Company Prefix** - The globally unique number assigned to a company by GS1 US™ or another GS1 Member Organization. GS1 Company Prefixes are assigned to companies in varying lengths. Some GS1 US BarCodes and eCom™ members may have a membership certificate that shows only a U.P.C. Company Prefix (formerly a UCC Company Prefix). A U.P.C. Company Prefix must be converted to a GS1 Company Prefix for use in the GRAI. This is accomplished by adding a zero to the front of the U.P.C. Company Prefix. The following table illustrates the conversion of a U.P.C. Company Prefix to a GS1 Company Prefix for use with GRAIs.

U.P.C. Company Prefix	Converted to GS1 Company Prefix
801234	0801234
8412340	08412340
81123400	081123400

**Asset Type** – The number assigned by the holder of the GS1 Company Prefix to uniquely identify the returnable asset. The Asset Type varies in length as a function of the GS1 Company Prefix length. Note: The combined length of the GS1 Company Prefix and Asset Type is always 12 digits.

**Check Digit** – A calculated one-digit number used to ensure data integrity. To understand how this digit is calculated, refer to [www.gs1us.org/checkdig](http://www.gs1us.org/checkdig).

**Serial Number** – An optional serial number may be assigned to each instance of the Asset Type. The Serial Number is a numeric or alphanumeric number with a maximum length of 16 digits.

### **Example of a GRAI in a GS1-128 bar code**



The GRAI can use existing bar code symbologies, there is also the potential to use Radio Frequency Identification (RFID) technology; especially with larger, more expensive assets.

### **Business Use**

The GRAI can be used as an enabler of a system or as an internet-based asset-tracking solution. Assets can be read as they are released or delivered to the user and then read as they are returned to update financial and inventory data.

While a company's Parts Department or Operations Department may be the primary user of this application, it is recommended that the firm's financial managers, especially Controllers who are charged with asset control and management, understand the benefits of using the GRAI.

### **How the GRAI Works**

A returnable asset is one that is delivered by its owner to the custody of another business entity, usually for a fee. Examples of returnable assets are:

- Ocean freight containers and chassis
- Returnable food and beverage containers such as beer kegs

- Rental equipment: cars, trucks, construction equipment, and boats
- Pallets

A GRAI should never be used in place of a Global Trade Item Number® (GTIN®) for trading purposes, or in place of a Serial Shipping Container Code (SSCC), which is used to support logistics and receiving operations.

While many uses for global returnable asset tracking can be defined within a corporation, this application targets those departments which impact the financial area and are chartered with asset control and management.

### ***Example Application of the GRAI***

The following example illustrates the use of the GRAI. The *Where We Are Electronics* firm produces portable (hand held) Global Positioning Units (GPU). *Big Country* purchases GPUs for rental to customers.

- *Big Country* typically issues a purchase order to *Where We Are Electronics* that includes GRAI instructions.
- *Big Country* has stored the GRAI in its information system as GRAIs issued, awaiting delivery.
- *Where We Are Electronics* issues its own purchase order to a vendor (fabricator) in Taiwan along with the GTIN, Serial Number, and GRAI requirements.
- The vendor applies the GTIN and Serial Number to all items produced and GRAI labels to some of the production run as specified.
- Local cartage firms transport the finished goods from the vendor to the consolidator.
- The consolidator conducts quality checking and packs the product in cartons that are labeled with an SSCC. The SSCC links to the GTIN and Serial Number of every GPU contained in the carton.
- The consolidator loads ocean containers with SSCC labeled cartons and records the ocean container identification number, which is a GRAI.
- The consolidator transmits an Advance Ship Notice (ASN) to the manufacturer, reflecting: The ocean container GRAI, the SSCCs, GTINs and Serial Numbers packed therein, as well as ocean carrier information.
- The international carrier delivers the goods to the *Where We Are Electronics* distribution center.
- The distribution center generally cross-docks for delivery to *Big Country* and transmits an ASN.
- The *Big Country* warehouse conducts pick and pack for shipment to stores and to mail-order/internet customers. The SSCC numbers of the cartons are linked to warehouse Global Location Numbers (GLNs) to facilitate pick and pack.

- Each store is accountable for the management of GPU equipment that is for rent. The GRAI file is used to identify custody of each GPU unit.

## ***Frequently Asked Questions***

### **1. What is the difference between inventory, consumables and assets?**

- **Inventory** – Items that exist in raw material format, in the “pipeline”, or storage. Ultimately intended for sale to consumers and to produce operating income.
- **Consumables** – Items that are used by an organization in the course of conducting operations. These items generally have a comparatively short life or are of relatively low cost and are charged to the cost of doing business in a particular fiscal year.
- **Assets** - Items used by the organization in the course of conducting operations. These are long-lived items and are charged to the cost of doing business over many fiscal periods.

### **2. What is the difference between fixed assets and returnable assets?**

Fixed assets do not leave the immediate control of the asset owner. Returnable assets are delivered by the owner to the custody of another entity, usually for a fee.

### **3. What is a Global Trade Item Number (GTIN)?**

The GTIN is the foundation of the GS1 System. It is used for uniquely identifying trade items, which includes both products and services that are sold, delivered, and invoiced at any point in the supply chain.

### **4. Can the GRAI be used in place of a GTIN?**

No, GTINs and GRAIs serve two distinctly different purposes. The GTIN is used to uniquely identify trade items during the data align, order, deliver, and receiving processes (e.g., a brewer purchasing beer kegs from the keg manufacturer). The GRAI is used to identify different types of assets during their use (e.g., tracking beer kegs between the brewer, beer distributors, and bars/pubs).

### **5. What can be identified using the GS1 Identification Numbers?**

- **Trade items:** Products and services upon which there is a need to retrieve pre-defined information at any point in the supply chain (Global Trade Item Number<sup>®</sup>/**GTIN**<sup>®</sup>).
- **Logistic units:** Physical units established for transport and storage of products of any kind that need to be tracked and traced individually in a supply chain (Serial Shipping Container Code/**SSCC**).
- **Assets:** Fixed or returnable assets (Global Individual Asset Identifier/**GIAI**, Global Returnable Asset Identifier/**GRAI**).

- **Locations:** Physical, functional or legal entities requiring a permanent identification, such as a company, department, or warehouse (Global Location Number/**GLN**).
- **Service Relations:** Public or private service provider to track any entity's service requirements and needs over a continuing relationship (Global Service Relation Number/**GSRN**).

Note: All GS1 identifiers use the same GS1 Company Prefix assigned to the company or organization.

## **Resources**

### **Solutions Center**

The Solutions Center is your one-stop source for GS1 System solutions to help you improve supply chain management and conduct business more productively. You will find the essential education and implementation resources you need to:

- Integrate and utilize the standards of the GS1 System in your business
- Guide you through the bar coding process
- Improve the efficiency of your electronic commerce activities
- Uniquely identify your company's products, assets, locations, and logistics units throughout the global supply chain

Specifically, *Bar Codes for Different Uses* will guide you through the implementation process, giving you specific solutions and guidelines to properly mark assets, products, and logistics units for use within the GS1 System. This easy-to-follow system will guide you through the essentials of the bar coding process to help you:

- Assess where you will use the bar code
- Determine the specific information to include in the bar code
- Prepare bar code specifications for those responsible for printing your bar codes

A preview of the Solutions Center can be seen at [www.gs1us.org/solutionscenter](http://www.gs1us.org/solutionscenter).

### **GS1 US Glossary**

[www.gs1us.org/glossary](http://www.gs1us.org/glossary)

### **GS1 US Product Catalog**

[www.gs1us.org/productcatalog](http://www.gs1us.org/productcatalog)

### **Further Help**

email: [info@gs1us.org](mailto:info@gs1us.org)

Phone: +1 937.435.3870

Web site: [www.gs1us.org/barcodes](http://www.gs1us.org/barcodes)



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