GETTING STARTED

1. How to Choose a Standardized Numbering System

Choosing the right numbering system for RAIN RFID tag data is one of the most important aspects of any deployment. Consistent with the decision tree below, the RAIN Alliance recommends this 3-step process for selecting a tag numbering system:
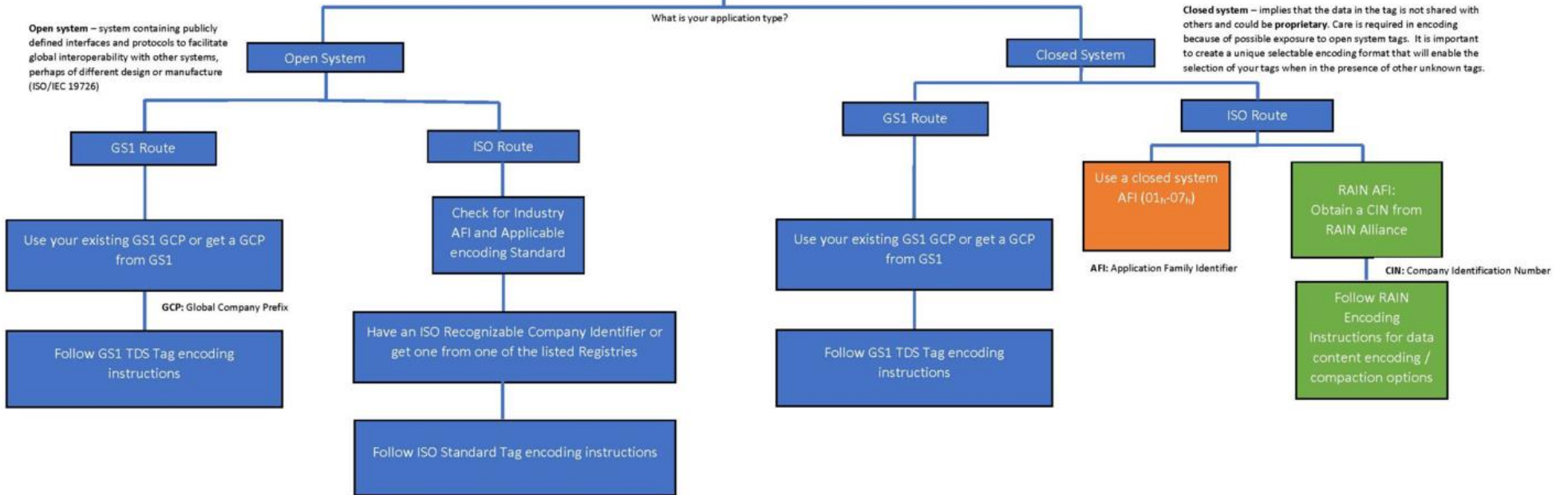
1. **If there's an applicable GS1 standard for your application space – follow it.**
    - GS1 is active in many industries adopting RAIN RFID—including retail, healthcare, logistics, and food.
    - See here for more on GS1 tag data standards: https://www.gs1.org/standards/tds

2. **If GS1 is not active in your application space, look for ISO-based industry specific organizations for tag data standards**
    - Examples of organizations with ISO numbering systems include IATA for aviation, ATA for aerospace manufacturers, VDA for German automotive, AIAG for North American automotive, MIL-STD 129 for U.S. Department of Defense, and ISO/IEC 20248 for secure digital signatures and vehicle identification.
    - For a complete listing of ISO numbering system options see: https://www.aimglobal.org/uploads/1/2/4/5/124501539/iso-iec_15961-2_data_constructs_register_2021-09-22.pdf

3. **For *anything else*, including asset tracking, closed-loop logistics, or any use case that isn't covered by options #1 and #2, use the RAIN Alliance ISO numbering system.**
    - This numbering system is intended for closed systems, defined by ISO/IEC 19762-1 as an "application which is intended for use by a closed group of users" and "a closed group of users is typically within a single organisation or subject to a specific agreement."
    - This numbering system allows for maximum flexibility for diverse RAIN RFID use cases, while ensuring compatibility with existing GS1 encoding standards.
    - See here for more info: https://rainrfid.org/wp-content/uploads/2022/05/RAIN-Alliance-Tag-Encoding-Guideline.pdf

RAIN ALLIANCE

How do I put data in a RAIN RFID Tag?

What is your application type?

Open system – system containing publicly defined interfaces and protocols to facilitate global interoperability with other systems, perhaps of different design or manufacture (ISO/IEC 19726)

Open System

Closed system – implies that the data in the tag is not shared with others and could be **proprietary**. Care is required in encoding because of possible exposure to open system tags. It is important to create a unique selectable encoding format that will enable the selection of your tags when in the presence of other unknown tags.

Closed System

Open System branch:

GS1 Route
- Use your existing GS1 GCP or get a GCP from GS1
  - GCP: Global Company Prefix
- Follow GS1 TDS Tag encoding instructions

ISO Route
- Check for Industry AFI and Applicable encoding Standard
- Have an ISO Recognizable Company Identifier or get one from one of the listed Registries
- Follow ISO Standard Tag encoding instructions

Closed System branch:

GS1 Route
- Use your existing GS1 GCP or get a GCP from GS1
- Follow GS1 TDS Tag encoding instructions

ISO Route
- Use a closed system AFI (01_H-07_H)
  - AFI: Application Family Identifier
- RAIN AFI: Obtain a CIN from RAIN Alliance
  - CIN: Company Identification Number
- Follow RAIN Encoding Instructions for data content encoding / compaction options

Legend:

Tag data ownership is traceable and tag data is unique (recommended)

Tag data ownership is not traceable and tag data is subject to duplication

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2. Registering for a RAIN Alliance Company Identification Number

The first step in implementing the RAIN ISO numbering system is registering for a Company Identification Number (CIN) with the RAIN Alliance. The RAIN Alliance is a CIN issuing agency per ISO/IEC 15459.

4 lengths of CINs are available, to cover deployments of a few hundred tags to hundreds of millions.

CIN Length	Recommended deployment size
2 digits / 8 bits	≥ 100,000,000 tags/year
4 digits / 16 bits	≥ 1,000,000 tags/year
6 digits / 24 bits	≥ 10,000 tags/year
8 digits / 32 bits	≥ 100 tags/year

Select the CIN length appropriate for your deployment size. Note that a single company or group of companies may therefore have more than one CIN.

- Apply for a CIN
- CIN Registry
- RAIN Alliance Tag Encoding Guideline

The RAIN Alliance will provide the issued CIN in a few different formats: hexadecimal, decimal, and Extensible Bit Vector (EBV-8) hexadecimal. Most encoding software works in hexadecimal, while decimal is the ISO unit. The EBV-8 format allows for variable length data up to 32 bits, and ensures uniqueness of tag data for all CIN lengths. If you're unfamiliar with EBV-8 and the conversion between decimal and hexadecimal, there are additional details in the tag encoding guidelines and the encoder/decoder tool.

Price

There is an application fee of $50 for all applications. This fee is paid when the application is submitted. Processing of the application will start until the application fee is received.

There is an annual fee for all CIN types:

CIN CLASS	ANNUAL CLASS FEE
2-digit CIN	$2,000
4-digit CIN	$1,000
6-digit CIN	$500
8-digit CIN	$50

Payment may be made by credit card or by invoice. The CIN number will not be issued until payment is received.

More Information

- GS1 RFID
  - https://www.gs1.org/standards/rfid
- List of 8 bit AFI Assignments
  - https://www.aimglobal.org/uploads/1/2/4/5/124501539/iso-iec_15961-2_data_constructs_register_2021-09-22.pdf
- RAIN ISO+CIN Standard:
  - https://rainrfid.org/cin/
  - https://rainrfid.org/technology/rain-alliance-iso-numbering-system
- RAIN Relevant Standards List
  - https://rainrfid.org/wp-content/uploads/2022/05/RAIN-RFID_TWG_RAIN_RFID_Relevant_Standards_FINAL_20220503-v1.3.pdf