

# Guidance for Determining Cardinality

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## Properties:

Properties should be 0..1 to 0..n unless one of the following are true:

1. Property has a default value
  - a. Example: isUniversallyUnique in AnnotatedIdentifiable
2. Property has a fixed value
  - a. Example: totality, reflexivity, symmetry, transitivity defining profile for a BinaryRelation
3. The properties are required for the class to function and the class is always optional
  - a. Example: Content in a StructutedString

## Relations:

### Source Cardinality:

The possible number of **SOURCE** instances with which the **TARGET** object may have the stated relationship.

1. All **Composition** relationship types should have cardinality 0..1 or 1..1 as there is a lifecycle dependency between the part (target class) and the whole (source class), i.e. if the whole is deleted the part is deleted
  - a. 0..1 is the common case and **MUST** be used if the target cardinality is 0..n or 1..n.
  - b. 1..1 indicates that the part (the target class) cannot exist except as part of the whole and **MUST** exist. The target cardinality in this case must be 1..1.
2. **Aggregation** relationship types have a target class that has an existence independent of the source class may have the any of the following cardinalities:
  - a. 0..n when the target class can exist independently and belong to multiple source classes
  - b. 0..1 when the target class can exist independently but belong to only one source class
3. A **Simple Association** includes any relationship that does not imply a whole/part relationship
  - a. 0..n would be the default source cardinality

### Target Cardinality:

The possible number of **TARGET** instances with which the **SOURCE** object may have the stated relationship.

Target cardinality regardless of the relationship type should be 0..1 to 0..n to allow for:

- Flexibility in the process of producing metadata
- Restriction of the source class for its use by a Functional View

Target cardinality should be restricted to 1..1 to 1..n only if the following are true:

- The content of the target class is required for the usefulness of the source
- The information for the class is available at all points in the process of producing metadata where the source class would be used
- Restricting the source class by not including the target class in a Functional View renders the source class unusable
- The relationship is a Composition and the source cardinality is 1..1. Then the target cardinality must be 1..1