Five rules for
Digital Twin Streaming

UUID conference call

2/15/2023

Context -

- See - http://www.steptools.com/blog/20230208_jsonstep/
- This script describes one of the operations in a STEP-NC program to make thready
- The goal is to send the script to a cutter vendor so that they can suggest a better solution

1. The cutter vendor must identify what should be changed to make the better solution
2. The customer may also want to indicate what can be changed

The JSON example

- Made by a server from a STEP file

- Creates JSON objects for the ARM

- And appropriate encodings for AIM properties
  - Date time: 2023-02-07T16:32:31-05:00
  - Workpiece: 6b35d480-930c-451e-93c6-232565a10e0
  - Placement: 4 x 4 matrix
  - Toolpath: List of JSON objects
  - Measures: Value and unit as string

- As per JSON rules/conventions
  - No id attributes
  - Reference paths for shared objects

Possible roles for UUID's

- As identification in the stream header

- References to external data (see example)

- In streaming of model updates
  - New toolpaths
  - New cutter definition/selection
  - Adjusted definitions for operations and features

"UUID/tools/1"
"UUID/project/main_workplan/elements[1]/elements[1]/operation/axial_depth/value = 1.2"

Five rules for digital twin streaming

1. The UUID of a property definition is in its property data
   - As per AP235, ISO 13399 and PLIB
2. The UUID of a prototype definition is in its entity data
   - When the anchor and entity match this prototype is also an instance
3. The UUID of an instance definition is in its anchor data
   - UUID's in the data are for properties and prototypes
4. A UUID in a stream may reference a property, prototype or instance
   - The rules defined for an encoding may be more specific
5. Each stream has a different UUID
   - When the content of the stream changes, the UUID changes