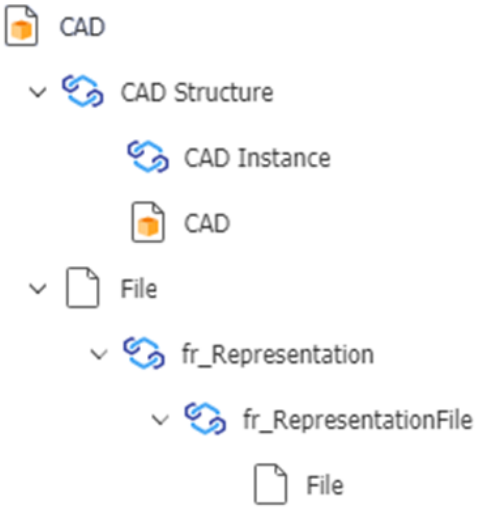
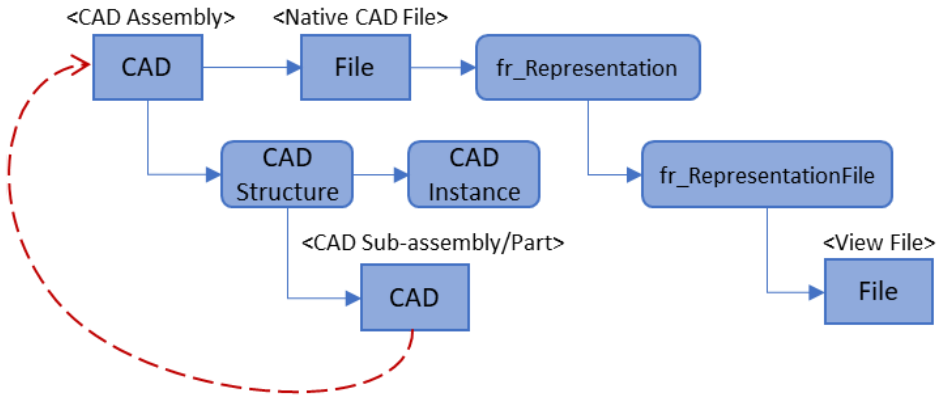
CAD / CAD Structure Data Model



Query Definition

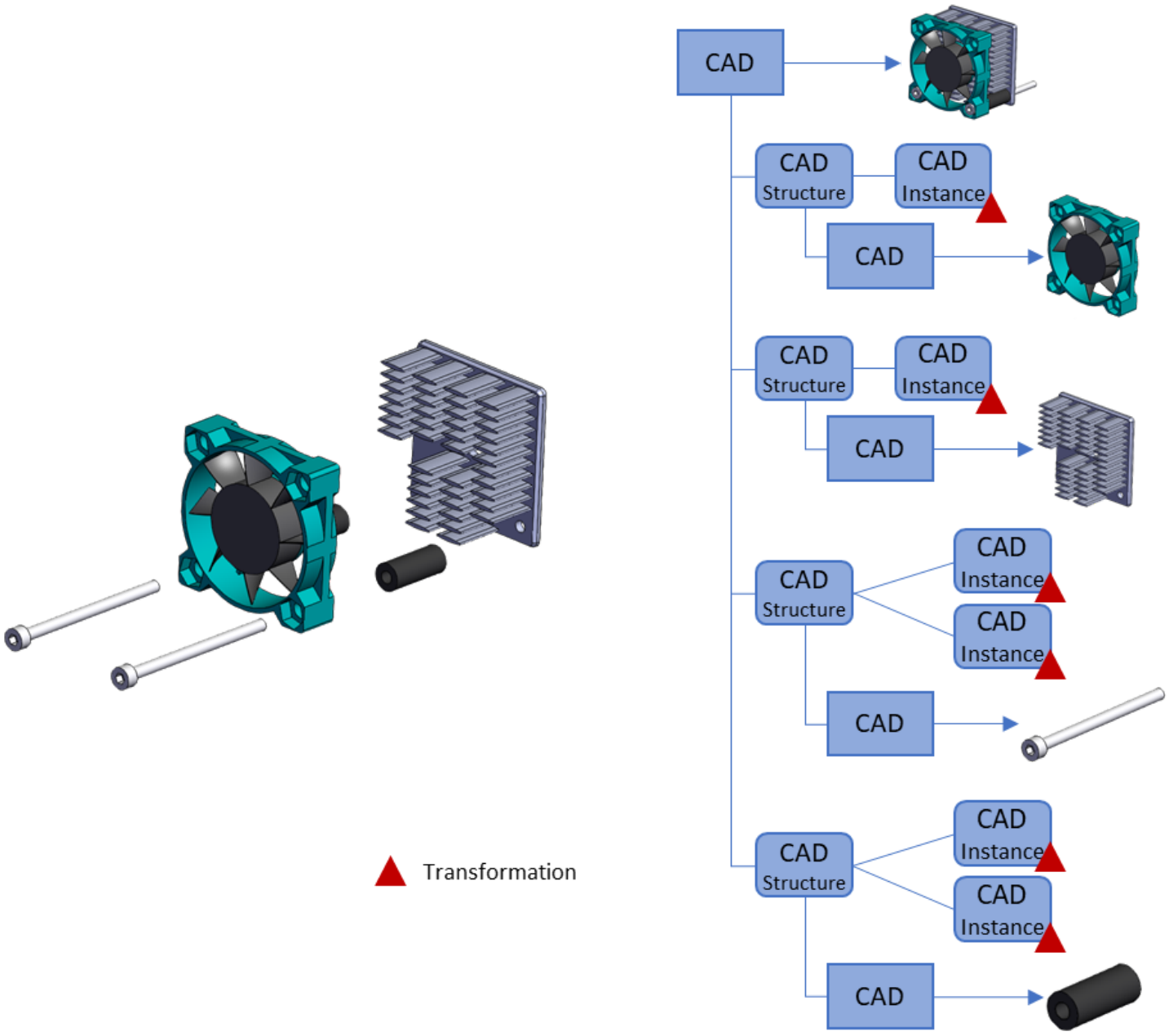


CAD Structure Data Model

To render a 3D View, the following data is required:

- View files, for 3D component geometry
- Transformations, to determine where to place the 3D component geometry in 3D space
- Instances, to determine the number of each of the 3D components
- Assembly hierarchy, to determine the lineage of transformations to apply.

CAD Item in the CAD Structure. It is accessed as related content on the File Item used for storing the native CAD File. This ‘related content’ is referred to as a ‘File Representation’ because the generated View File is based on the associated native CAD file. Note also that the XML data generated from the conversion process (see Section CAD Data Model) is also stored as a File Representation. The Transformation is stored as a String but parsed as a 4X4 matrix of floating-point values[1]. This String Property is contained in the CAD Instance Relationship Item, which is directly associated with the CAD Structure Relationship. The number of CAD Instance Items determine the number of Instances of the related/child CAD Item within the parent/source CAD Assembly. The following diagram further illustrates the data model. Note that the File Representations are removed for clarity.



CAD Structure queries are processed top-down in a recursive manner. That is, CAD Items ‘higher’ in the CAD Structure hierarchy are processed before their children and so on. The order of processing determines the order of applying the transformations.

1. The interpretation of the matrix values is determined by the ‘CAD Transformation Matrix Format’ Variable (see Variables in the Administration folder in the main Table of Contents).