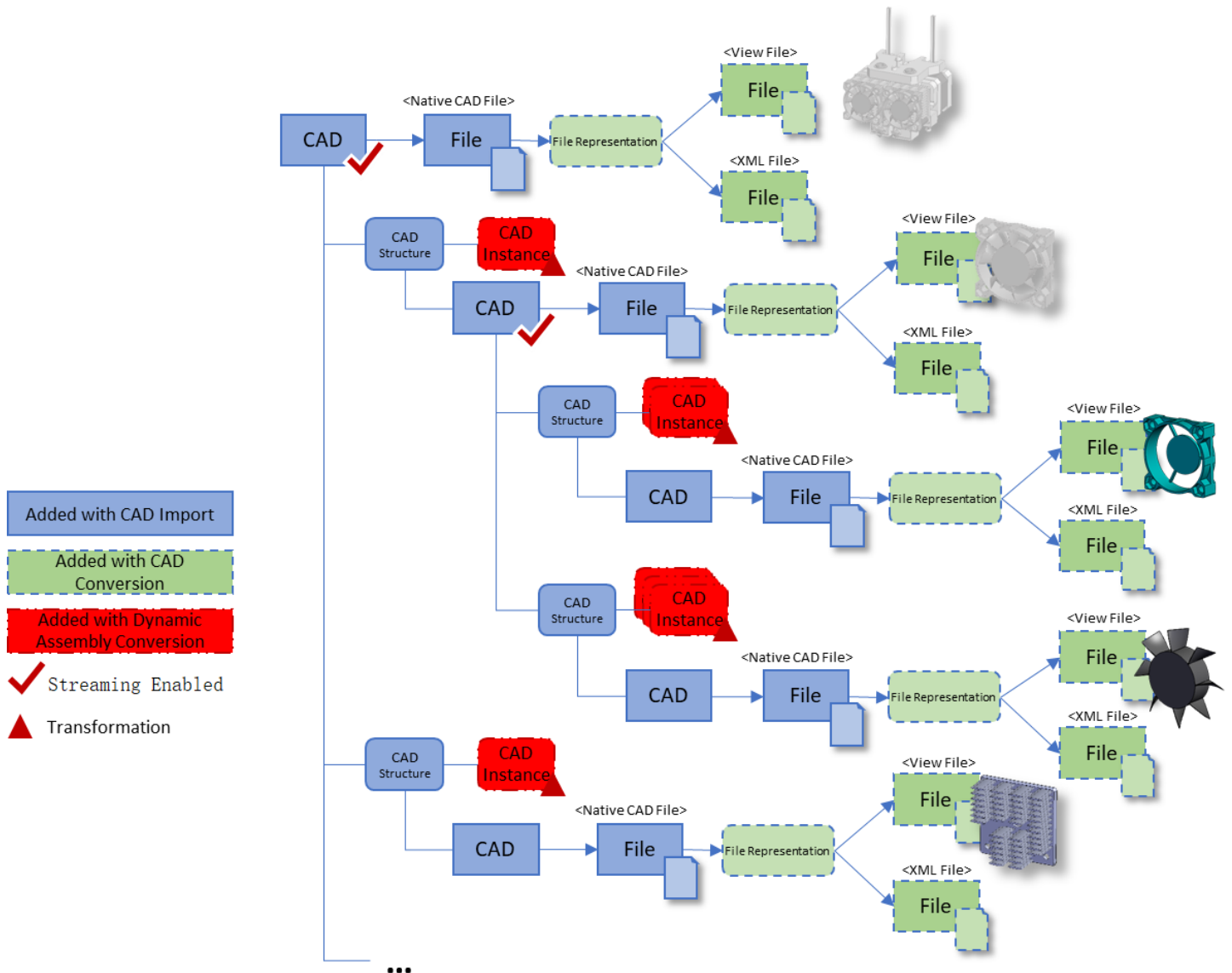


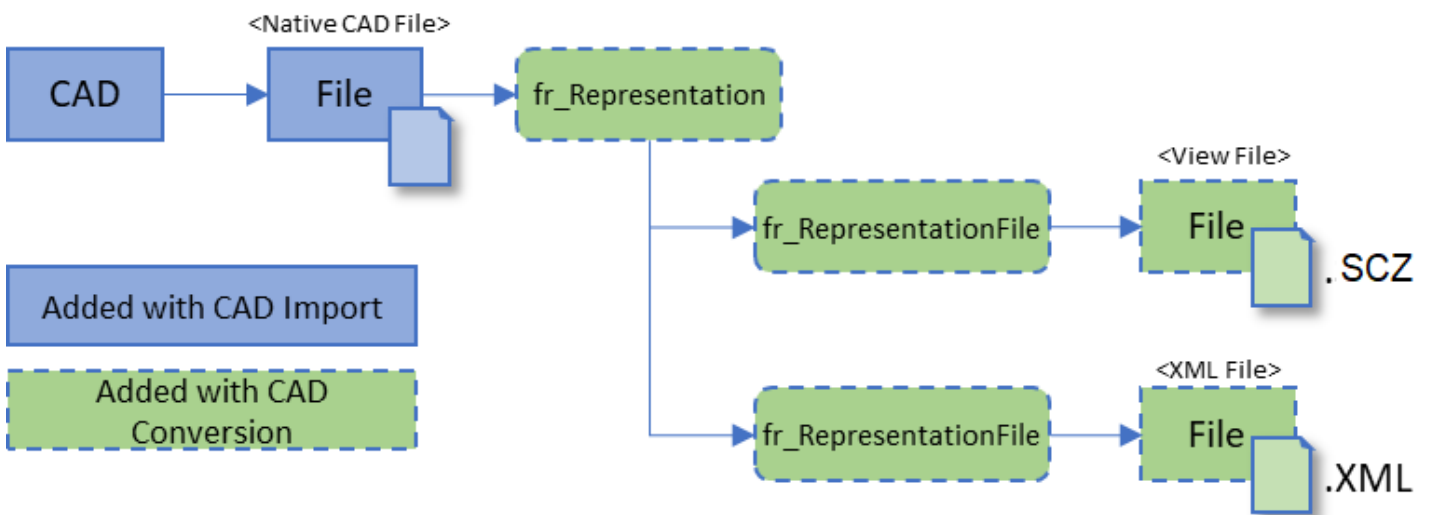
CAD Data Model

Before reviewing the Streaming Viewer features, it is important to understand the CAD ItemType data model, so it is clear what data is required to support Dynamic Visualization and where this information is stored and retrieved by default. This section describes the process of creating CAD Items, their related ItemTypes, and CADFile conversions using the following diagram.



The CAD Items and CAD Structure Relationship Items are typically created by a CAD Connector when CAD native files are checked into the Aras Innovator. A CAD Item represents a single 3D CAD assembly, part, or 2D drawing. For this document, CAD Items representing 3D CAD assemblies and parts are assumed. In this case, the native CAD file is attached (via the File ItemType property) to each CAD Item. If this CAD Item represents an assembly, all related subassemblies and parts will be included in separate CAD Items and referenced via CAD Structure Items. The CAD and CAD Structure Items represent a mechanical BOM.

CAD Conversion is the process of generating alternate versions of native CAD data. It is triggered by the existence of a CAD file. The Streaming Viewer Viewers render 3D component geometry stored in a Compressed Stream Cache (SCZ) view file. Note that thumbnail images, PRC, 3D PDF, and other converted formats can also be created as part of the CAD Conversion process and stored in a CAD Item or its related Items. An XML file is also created and stored. This XML file is generated from the conversion process and used to identify all the instances of parts and subassemblies included in a CAD assembly. This information is used to generate CAD Instances and 3D Transformations for the Streaming Viewer. The SCZ view and XML files are stored as related Items attached to a File Item for the native file. Note that the figure uses a single Relationship graphic labeled File Representation to simplify the diagram. However, File Representations use two RelationshipTypes, as shown in the following figure.



For the Streaming Viewer, the conversion process appends the CAD Instance Items for all instances of an associated (related) CAD Item. CAD Instances contain a property that stores the 3D Transformation information as a 4X4 matrix. In addition, the added Streaming Enabled Boolean property is set to true. Note that these Instances and their transformation information are created automatically by the 3D Conversion Process based on information extracted from a native CAD assembly file.

