How to Get Started – Level 4 Model Based Definition

Integrated Manufacturing- Disconnected Enterprise

The chart below defines the Model Based Enterprise Capability Level 4:

Design Data (CAD)	Technical Data Package	Change and Configuration Management Data	External and internal Manufacturing Data Exchange	Quality Requirements, Planning, and Inspection Code Generation	Enterprise Collaboration and data Exchange
-2D drawing creation & information content. 　- Presents geometry and part annotations from the model. No information defined in the 2D drawing 3D model creation & information content 　- Defines all part geometry Defines all part annotations (including notes, dimensions, PMI, etc.) Model/drawing associatively 　- 2D drawings are an output of the 3D model and verified (2D drawings or the exception) Supplementary Data (Notes, Parameters, non-geometric data) 　- Notes are defines in the 3D model Checking & Model Quality 　- 3D Model geometry and part annotations validated. 2D drawing validated not to define any annotation content (semi automation using discrete tools) -BOM 　- eBOM managed in PLM eBOM linked to CAD models	-Collection of elements into TD 　- Structured, manual collection of digital TDP data -Management of TDP 　- Manual digital delivery of TDP data	-Release and change processes 　- Model Based -Element Management (supplementary data, 3Dmodels/Drawing) 　- 3D model is managed 2D drawing created by exception and managed in sync with 3D model -Authority 　- 3D model	-Process for providing PMI Data to Mfg and inspection and any other groups that may need PMI 　- Native 3D CAD model, 3D lightweight viewable and eBOM manually sent to mfg suppliers both internal and external (also support neutral file exchange) -Mfg Process Generation (Process Plans & Work instructions) 　- Native 3D CAD models used to generate process plans and work instructions -Mfg Code Generation 　- Association to model and controlled within PLM system -Mfg Data Management (Process plans & work instructions) 　- Managed in the same PLM system as design models and most data is derived from models (at a minimum process plans and work instructions should be stored and managed in PLM) -Mfg Process Associatively (Process Plans & Work Instructions, tooling) 　- Managed in the same PLM system as design models and most data is derived from models (at a minimum process plans and work instructions should be stored and managed in PLM)	-Quality/Inspection Code Generation 　- Use native 3D design models to generate NC/CMM programs -Quality Requirement Data Management 　- Fully managed in PLM	-Design Data provided to internal enterprise 　- Differentiated user access to all model data based on user roles within the organization -Design Data use by the internal enterprise 　- Product data inputs are remastered or exported 3D neutral model used -Design Data provided to external Design Authority 　- Native 3D CAD model, 3D lightweight viewable and eBOM sent to external enterprise using automated methods. Able to automatically control created packages based on the role of the receiving company.

This capability builds upon the level 3 capability. The model is now the sole master of the product definition. It also begins to further integrate the manufacturing tool suite into the environment allowing for the reuse of not only the model but its Meta data as well. This is done partially by further utilization of Product Lifecycle Management tools. The same is true for the quality areas as well. Finally the delivery of the product definition to the extended enterprise is now automated.

Summary:

- 3D Models are the master
- Drawings are created by exception
- The model and its meta data are integrated into the manufacturing and quality arenas
- The product definition delivery is automated
- There is little or no connectivity with the extended enterprise
- Internal use of Product Lifecycle Management tools