



Design Central

Pro/ENGINEER

Understanding Layers

Doug Schaefer

d.schaefer@design-central.com

www.design-central.com

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Why use layers?

Layers simply help control the visibility of items in Pro/E

Layers let you ...



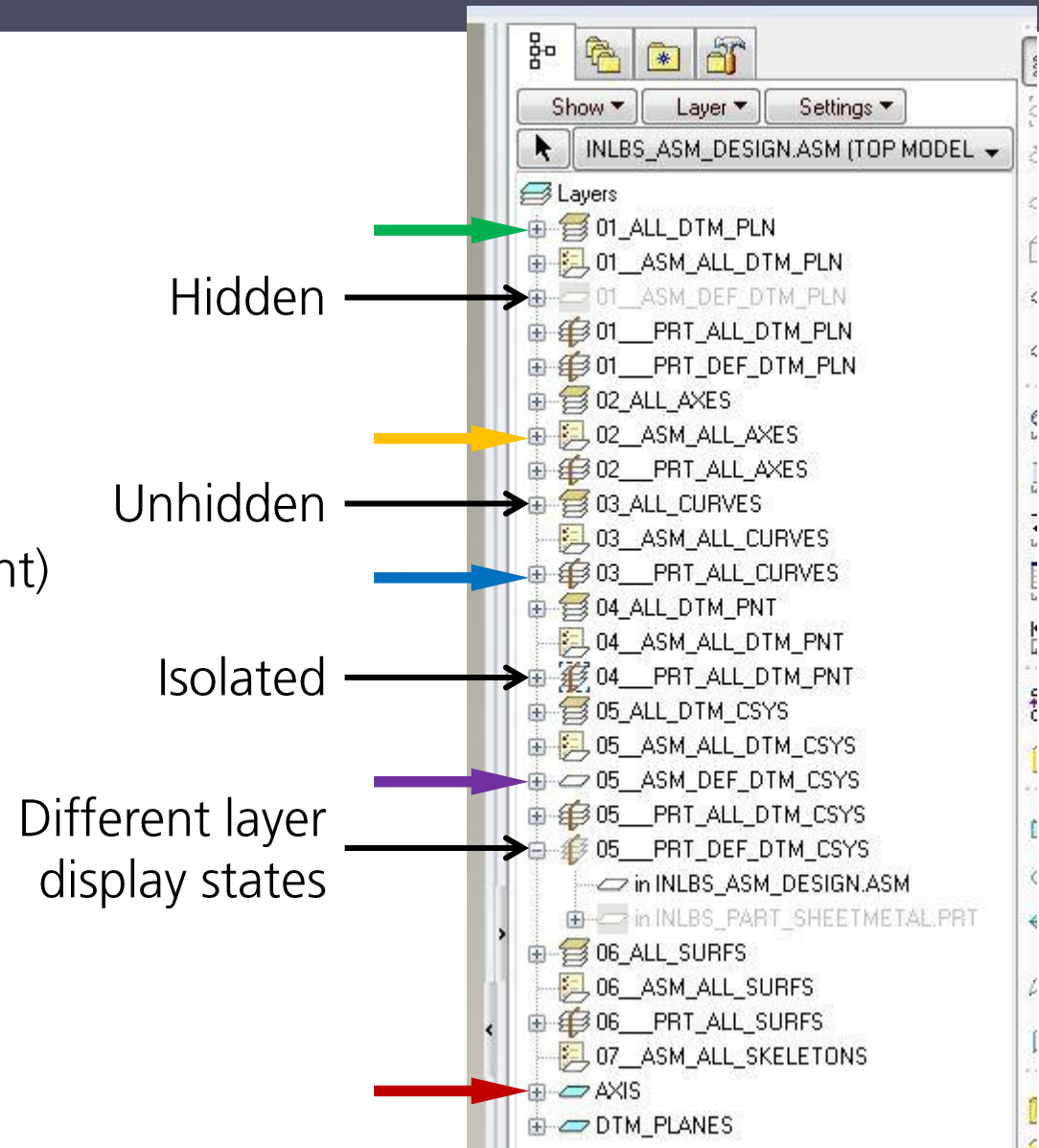
- Control the visibility of **specific** non-solid geometry items
- Control the visibility of items **without** built in display controls (surfaces, curves, sketches, cosmetics)
- Group unlike items and control their display **together**
- Control the visibility of items in a **specific part** only while in the assembly

Layer Types

- 1. Manually** created
 - Created as needed.
 - Only items on the layer are items added manually.
- 2. Rule** based (Automatic)
 - Layer created manually, but contain rules to automate addition of items to the layer.
 - Rules can be turned on or off and can evaluate only new items or all items.
 - Items that satisfy the rule can be *excluded* but not actually *removed*.
 - Rules can be deleted.
- 3. Config** based (Automatic)
 - Layer created automatically by **def_layer** config file options when a certain type of feature is created.
 - Layer doesn't exist until needed.
 - Evaluates new items only.
 - Items can be manually removed.
 - If the config statement is missing, the layers revert to manual layers.

Layer Icons

- **Layer** that contains other layers
- **Rule** driven layers
- **Group** of layers (in more than one component)
- **Manually** created layers
- **Config.pro** def_layer driven layers



What can be placed on layers?

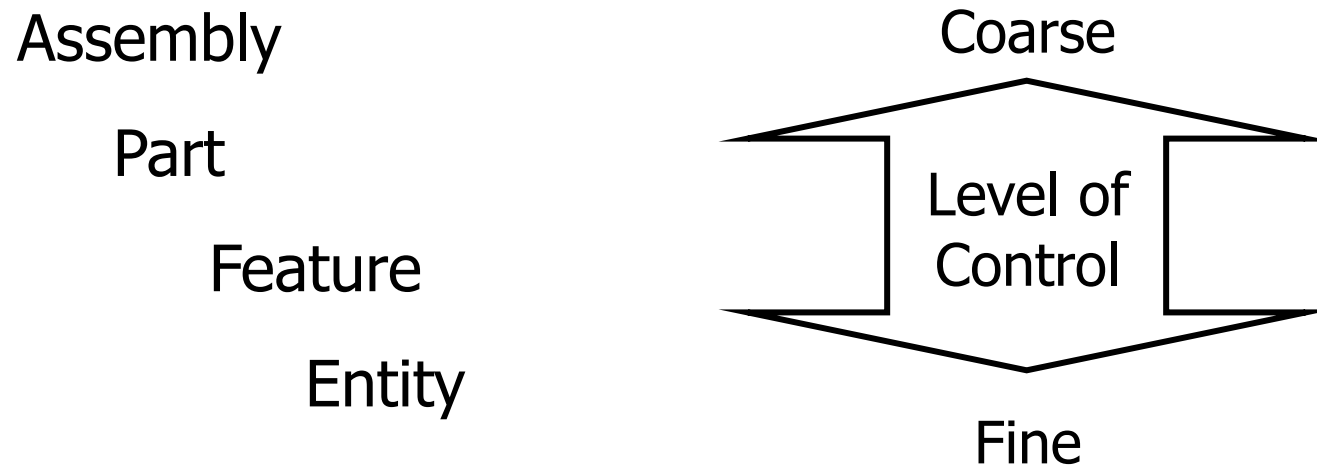
- Planes
- Points
- Axis
- Coordinate Systems
- Quilts
- Curves
- Solid geometry
- Notes
- Dimensions
- Sub assemblies
- Parts
- Features
- Feature entities
- Other layers
- GTOLs
- Datum tags
- More

There are **ramifications** to placing some items on layers.

Understanding how placing items on layers effects visibility will help you decide what to place on layers and what not to.

Impact of Placing Different Item Types on Layers

- **Assemblies, parts, features** and feature **entities** can all be placed on layers, but doing so has downstream ramifications.

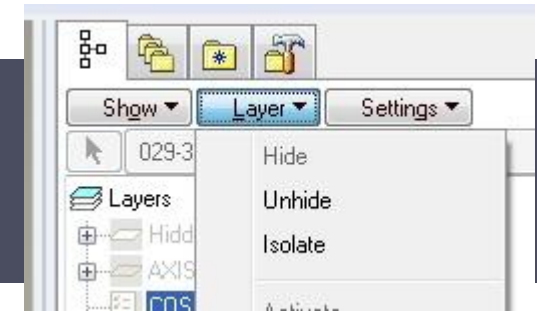


- If the parent of an item is **hidden**, it *cannot* be made **visible**.

Layer states

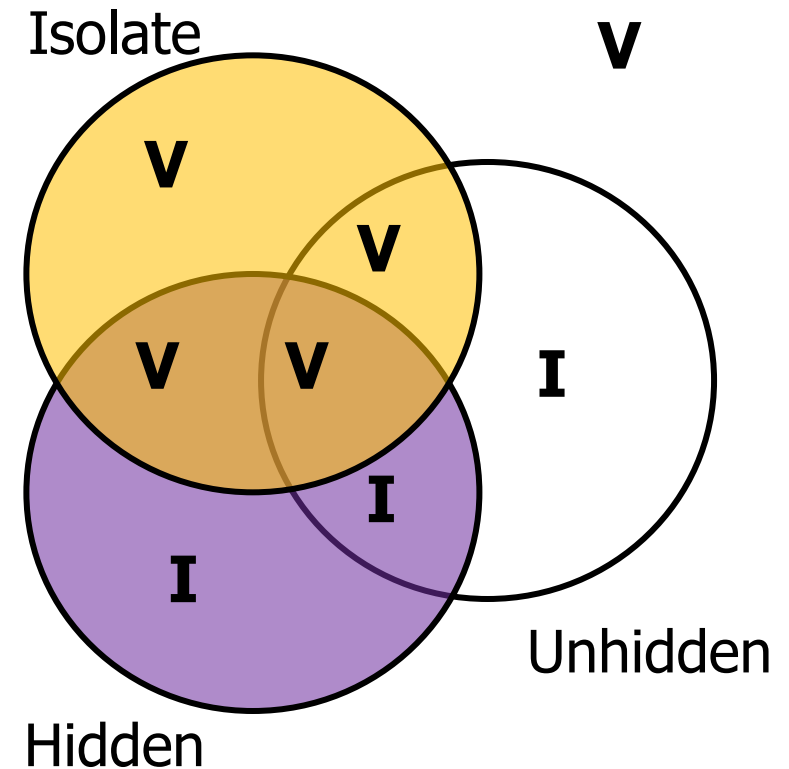


RMB Menu



Layer Menu

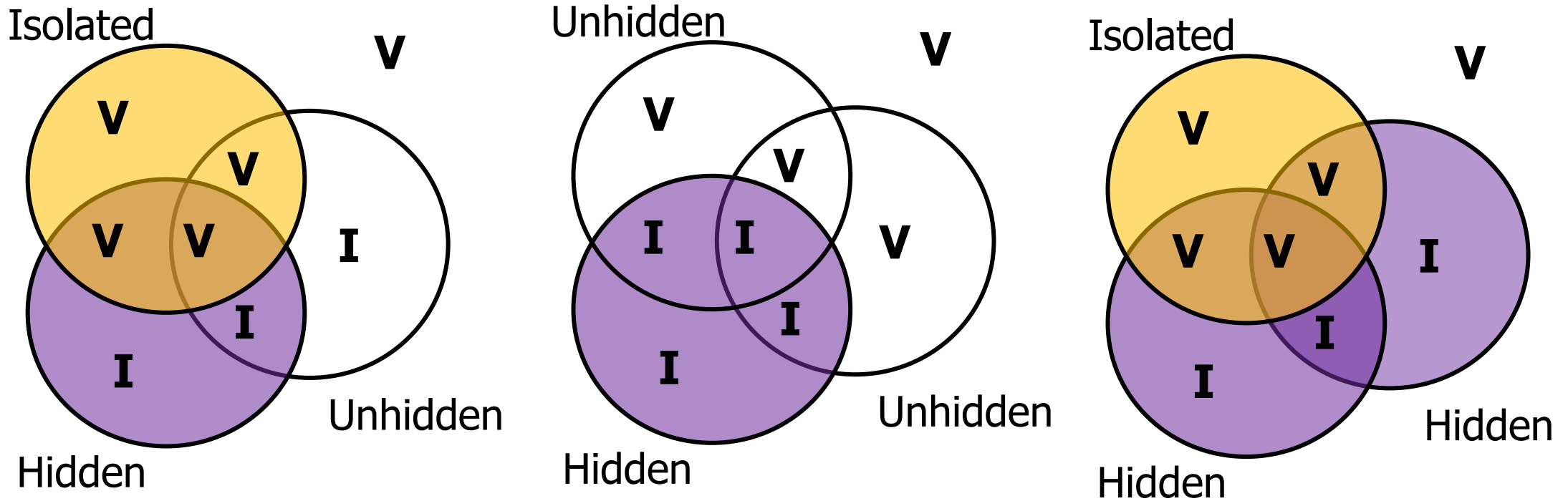
- Layers can have one of 3 possible display states, **Hidden**, **Unhidden** and **Isolated**.
- Items on multiple layers, follow a hierarchy:
 - If *all layers* that the item belongs to are **Unhidden**, it will *usually* be **visible**.
 - If *any one layer* is **Hidden**, the Hidden status trumps the Unhidden and the item is **invisible**.
 - If *any one layer* is **Isolated**, the Isolated status trumps the Hidden status and the item is **visible**.
- **Isolating** a layer makes all other layers **invisible**.



Isolated beats **Hidden*** which beats **Unhidden**.

*The **Hidden Items** layer is special and overrides the **Isolate** setting.

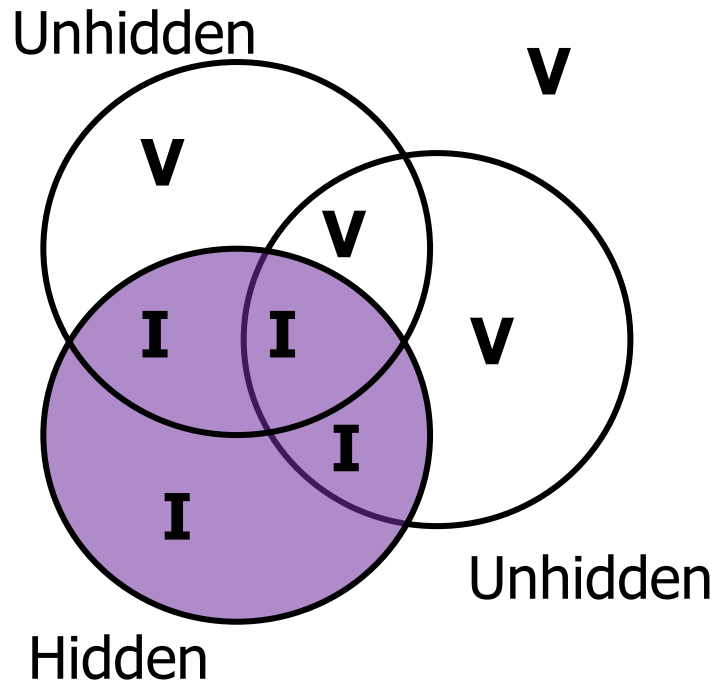
More Examples



Using all three states does not make much sense.

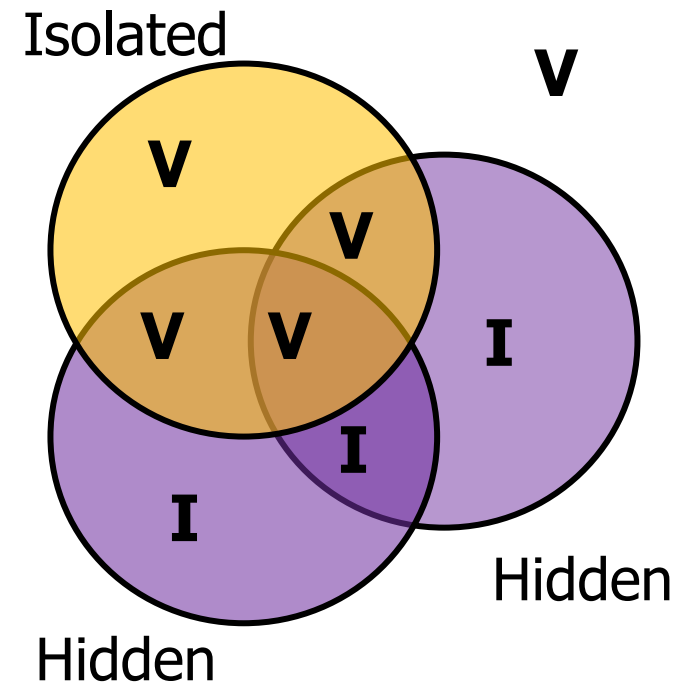
Conclusions

Hide / Unhide



- Useful if you prefer everything **visible** and want to chose what to **hide**
- Save your default layers as '**Unhidden**'
- Create new layers of items you want to hide
- **Hide** layers as needed

Hide / Isolate

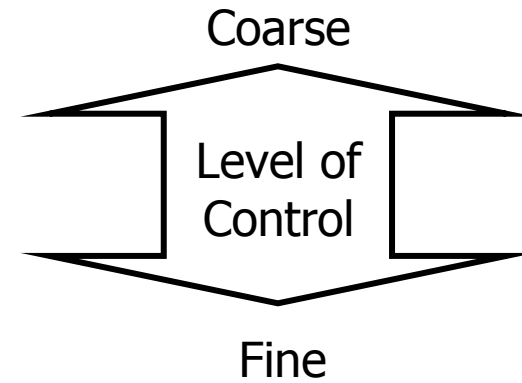


- Useful if you prefer everything **invisible** and want to chose what to **see**
- Save your default layers as '**Hidden**'
- Create new layers of items you want to see
- **Isolate** layers as needed

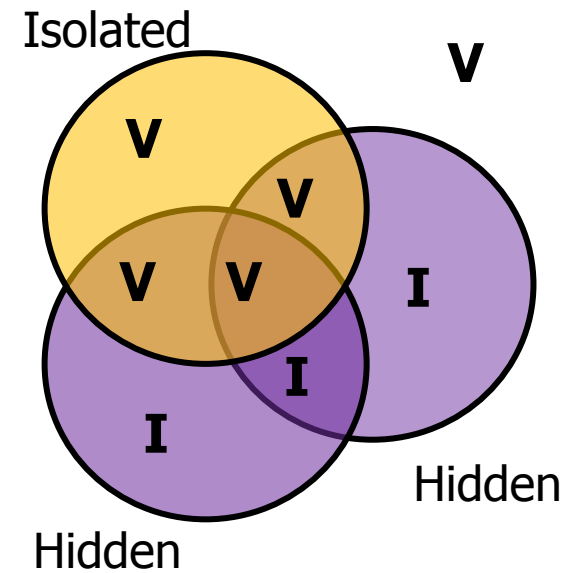
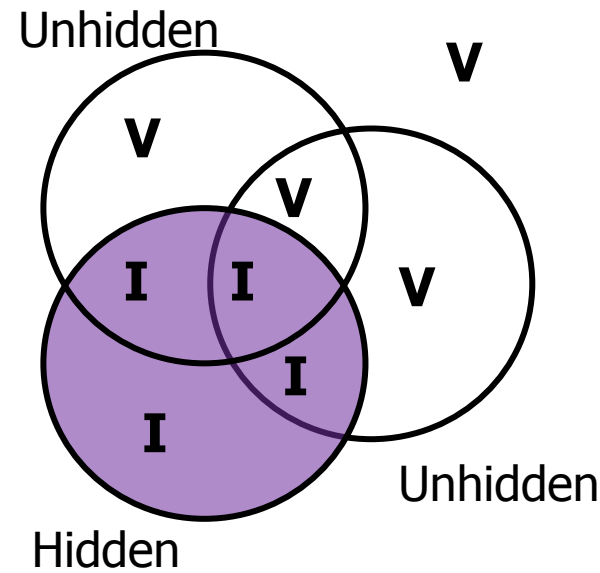
Two Big Concepts

Visibility Rule

Assembly
Part
Feature
Entity



Layer States

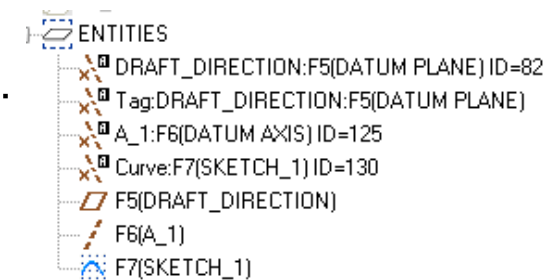


Goals of DC Layers

- Provide a layer system that allows for finer control of what is displayed and what is not.
- Capture all hide-able items on one of our default layers.
- Allow more effective use of additional user-defined layers.
- Provide a flexible system that each user can use as is best for them.
- Make it very easy to update old models through the use of mapkeys.

Guidelines for Using DC Layers

- All DC layers begin with 00_ to keep them together and at the top of the list
- All user layers should **not** begin with 00_, but can have any other name appropriate
- Generally only place **features** on layers, not feature **entities** or **parts**.
- Use only 2 of the 3 display states:
 - **Hidden / Unhidden** if you want to group items by what you want to **hide**.
 - **Hidden / Isolate** if you want to group items by what you want to **see**.
- Leave the display toggles on and control visibility by layers



DC Layers (Rule Driven)

- **00_AXIS**
 - Finds all features that have axes, except mirrors or copy geoms
 - **00_COORD-SYS**
 - Finds all coordinate system features
 - **00_CURVE**
 - Finds all datum curve features
 - **00_IMPORT**
 - Finds all copy geom, external copy geom or import features
 - **00_MIRROR**
 - Finds all mirror features
 - **00_NOTE**
 - Finds all 3D notes
 - **00_PLANE**
 - Finds all datum plane features
 - **00_POINT**
 - Finds all datum point features
 - **00_SURF**
 - Finds all features that have quilts, except mirrors or copy geoms
- Optional:
- **00_COSMETIC**
 - Finds all cosmetic features



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Thank You

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