

PTC Creo Granite Cross Release Interoperability

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What is GRANITE-based Cross-Release Interoperability (CRI)?

GRANITE-based Cross-Release Interoperability (GCRI) allows users of an **earlier release** of Pro/ENGINEER[®] to open parts and assemblies saved in a **later release** of Pro/ENGINEER or PTC Creo. **Earlier release** users may utilize these parts and assemblies for down-stream applications like assembly, mold design, and cable routing. Changes made in the model in the **earlier release** can be brought forward to the **later release**.



In the current GCRI method, the model's geometry, attributes, and parameters are retained. Existing features are displayed in the model tree as read-only, and the earlier Pro/ENGINEER release user has the ability to:

- Add fully associative features to the “read-only” model
- Update (via ATB) the geometry, attributes, and parameters of the “read-only” model
- Regenerate any features relations, parameters added to the model

GCRI is different from forward compatibility. Users have always been able to create and save Pro/ENGINEER or PTC Creo parts and assemblies in an **earlier release** and then open them in a **later release** without any special effort. Standard forward compatibility is not part of the CRI interaction.

GRANITE-based Cross-Release Interoperability (GCRI) PTC®

GRANITE-based Cross-Release Interoperability (GCRI) is based on PTC's GRANITE Interoperability Kernel. The GRANITE Kernel, is a software library that has the ability to read (or write) geometry, geometry attributes, layer information, user-defined parameters, and assembly structure from (or to) a Pro/ENGINEER or Creo *.prt or *.asm file without Pro/ENGINEER or PTC Creo being present.

From Pro/ENGINEER Wildfire 3.0 release, PTC provides a GRANITE plug-in module to support cross-release inter-operability. An user of Pro/ENGINEER Wildfire 4.0 can read a PTC Creo 2.0 model directly, if he installs just the GCRI plug-in module for PTC Creo 2.0 in his Pro/ENGINEER Wildfire 4.0 installation.

GCRI leverages PTC's Associative Topology Bus (ATB) to maintain feature and placement references during geometry updates. The previous release model is an ATB Translated Image Model (TIM). The TIM is created automatically when a user attempts to open a **later release** model in an **earlier release** of Pro/ENGINEER or PTC Creo:-

- Existing content is read-only in the **earlier release**, but can be updated with newer **later release** content when needed.
- Additional features, parameters, and relations can be added to the read-only TIM model.
- If an updated **later release** model is available, the **earlier release** user can update the TIM directly via the ATB.

The ATB functionality allows a **later release** user to append the new content to the original **later release** model, resulting in an extended, fully featured and modifiable **later release** model.

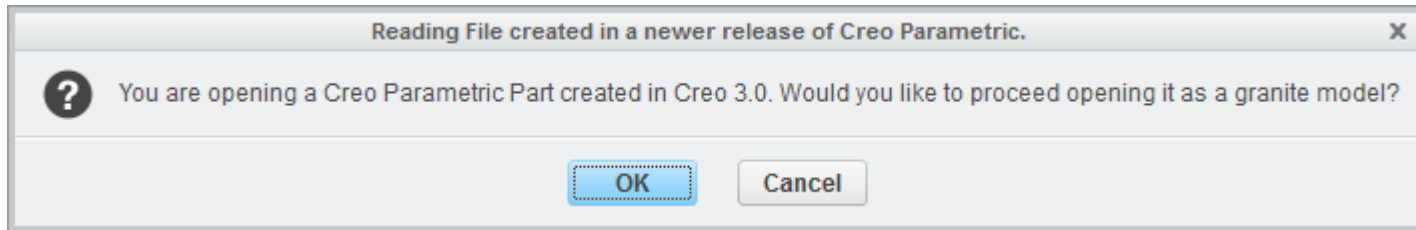
Using GCRI

There are three elements in the workflow for GCRI. These are:

- Reading a newer release model into an older release and creating a TIM
- Using ATB functionality to check the status of a TIM model read using GCRI or updating such a GCRI TIM to match its master model
- Grafting of features, added to the GCRI TIM, back onto the master model it was created from

Note: Before attempting to use the techniques described here, please refer to Appendix A, "How to Set Up GCRI", for information about setting up PTC Creo or Pro/ENGINEER to use GCRI and review the notes and limitations listed below.

Reading a **later release** model (prt or asm) into an earlier session is quite simple. The Pro/ENGINEER user simply selects File→Open from the menu bar to display the File-Open dialog and then selects any **later release** Pro/ENGINEER or PTC Creo part or assembly file for opening.



When reading backward, the banner shown above appears indicating that the model is a GCRI TIM, and asks for confirmation to open it.

The confirmation is simply to inform users that they are opening a GCRI TIM, not a native model, and that certain model behavior and content differences exist between these two model types (see Notes and Limitations section for details).

Although the **earlier release** user does not own the fully featured **later release** model, the user can use the model for any other downstream use.

Examples of such use include Mechanics analyses, cable routing, manufacturing, annotation, rendering, or even the addition of new modeling features. Because of ATB associativity, rapid updating of the TIM based on changes made to its master model are handled quickly and easily.

The normal flow of operations here are to check the status of the GCRI TIM relative to its master model.

This is done by selecting **File > ATB > Check Status** from the menu bar. The ATB functionality in PTC Creo or Pro/ENGINEER will check the status of the **earlier release** TIM relative to its **later release** master model. The result will be a change in the color of the ATB icon for that part from blue (🔧) to red (🔧!) and the presentation of a warning message in the message bar if the model is out-of-date relative to its master model. The user can choose to act on that notification right away or simply wait until a more convenient time to perform the second operation, the Update.

The Update operation is performed by selecting **File > ATB > Update** from the menubar. The ATB functionality will replace the existing **earlier release** TIM with the latest version of the **latest release** master model and re-attach, automatically, any **earlier release** features added to the model. Similarly, any downstream uses of the updated TIM (manufacturing, analysis, routing) will, of course, associatively update too!

For more information the ATB and how to customize ATB operations using configuration settings, refer to the PTC Creo On-Line Help pages for ATB.

A unique feature of GCRI is the ability of **later release** users to take new features that have been added to the TIM by the **earlier release** user and graft those features onto the original, fully-featured master model.

This is similar to how a UDF works except the user doesn't have to pick the reference for the UDF to be placed - GCRI functions handle this placement automatically.

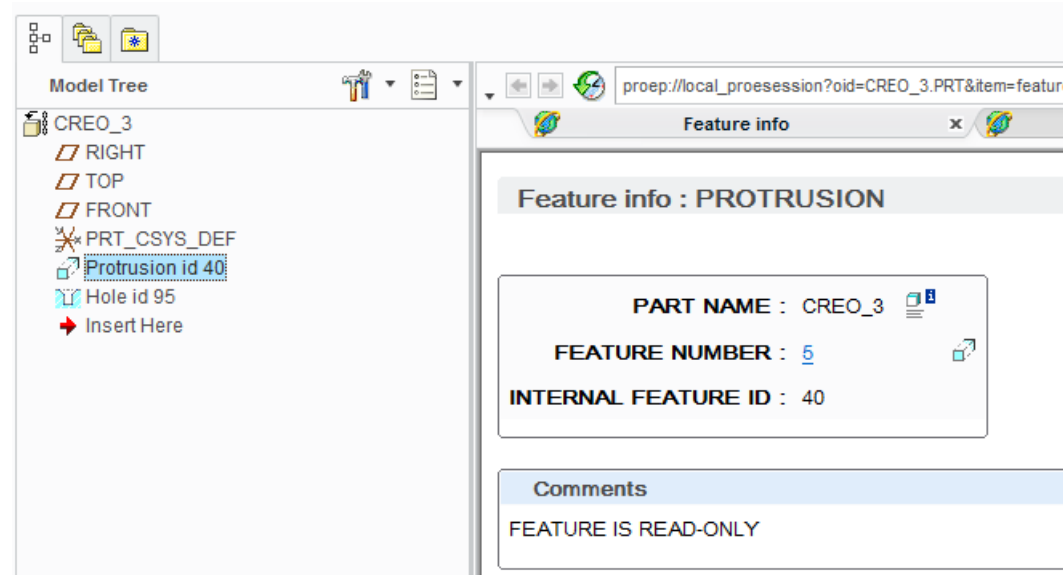
In order to perform a graft, the **later release** user starts with the original **later release** master model in memory. The **later release** user selects **File->Graft Features** from the menu bar. In the presented File-Open dialog, the **later release** user navigates to, and selects, the **earlier release** TIM that corresponds to the master model in session.

That's it! With just a few mouse clicks, the added features from the **earlier release** TIM are automatically copied into the active **later release** model and correctly referenced to the original master model references.

Some key considerations which need to be taken into account when using the GCRI capabilities are:-

- ❑ When an **earlier release** TIM is created, it is **not** saved back to the same location as the original **later release** master model. TIMs take the same names as their master model counterparts, hence saving the TIMs in the same directory as the master models will result in the creation of a new version of the model file with the static, associative image content that will refer back to the fully-featured master model in the previous iteration. No data loss results however ATB operations are disrupted since ATB does not consider the version number of a model when referencing it. Hence, **earlier release** TIMs should be segregated in a different directory structures. The user can use File > Back-up to for this purpose.
- ❑ GCRI is supported **only** for parts and assemblies. Drawings, layouts, and manufacturing models, for example, are **not** supported.
- ❑ Fully-featured, master definitions will **not** be transferred from **later release** to **earlier release** as fully-featured models. The user will see a static (non-modifiable) feature tree with highlighting (smart selection). Features shown in the tree will be **read-only** and these features can not be regenerated, reordered, or redefined.

Please also refer to the [PTC Knowledge Base](#) for additional detail about known issues and limitations of the GCRI process.



- ❑ Geometric attributes such as layer and color will be transferred as will all user-defined parameters (model, entity, and feature).
- ❑ Patterns are supported in that all instances of a patterned component and all geometry associated with instances of a patterned feature are transferred however pattern information is not (i.e. reference patterning in the GCRI model is not possible). Groups also have the same limited support as patterns. All of the features of the group will transfer, but there will be no group node in the GCRI model, grouped features will be exploded into individual features.
- ❑ Family table instances are supported as long as the family table instant accelerator files (*.xpr for parts and *.xpa for assemblies) are saved with the master model, but simplified representations and explode states are not. Assembly features are only supported if accelerators have been used or if the assembly feature geometry has been stored in the part.
- ❑ Bulk and Skeleton components will be identified as 'regular' components in the GCRI TIM. For Skeletons, this means that certain types of reference control for external references based on skeleton filters will not be possible in the GCRI TIM.
- ❑ Unicode character encoding has been introduced in Pro/ENGINEER Wildfire 4.0. Conversion of Unicode to EUC encoding used in earlier Pro/ENGINEER releases is not supported by GCRI. This issue is visible when converting files with Unicode language characters, used in parameters, model notes, and model names to EUC encoded releases.

Appendix A – Setting Up PTC Creo GRANITE Cross Release Interoperability (GCRI)

STEP 1. Copy the latest release *readnewermodels.dll* application component^ in your **earlier release** loadpoint (i.e. `<loadpoint>/i486_nt/obj/readnewermodels.dll`).

STEP 2. Add the following configuration options to your **earlier release** config.pro **before** launching:-

topobus_enable yes

atb_auto_check_on_update off

atb_show_log off

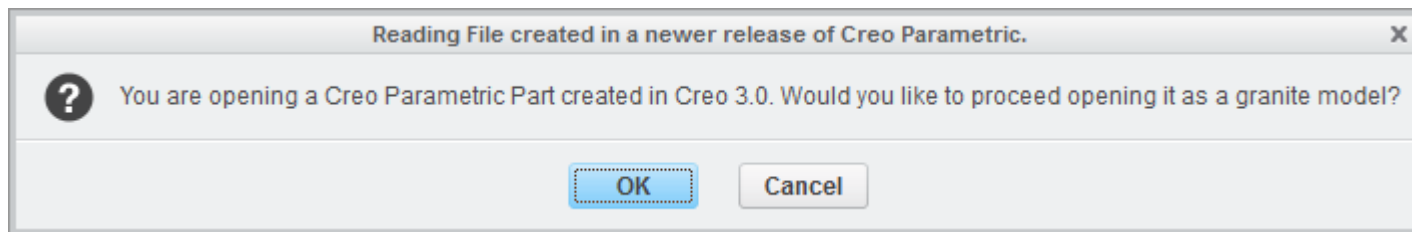
atb_auto_check_on_retrieve on

STEP 3. Add the config option “*cri_grafting_enable yes*” to your **later release** config.pro **before** launching the **later release**

STEP 4. Start your **earlier release** and check to see that you have the menu:

File > Associative_Topology_Bus

STEP 5. Validate the plug-in installation. When you attempt to open a **later release** model you should get a message like the one shown in Figure A-1.



Note: The GCRI plug-in for PTC Creo 2.0 is supported for use with Creo Elements/Pro 5.0 and Wildfire 4.0. It is available on the Creo 2.0 Installation at:-

`<loadpoint>\Common Files\DateCode\<machine_type>\gcri\readnewermodels.dll`

GCRI plug-ins for Pro/ENGINEER Wildfire are available on the Free Downloads page.

GCRI is not supported within the same PTC Creo or Pro/ENGINEER release.

GCRI support is limited to the previous two releases, except in Wildfire 3.0 which is limited to the previous release.

GCRI Support Matrix					
		Source Version			
		Creo Elements/Pro 5	PTC Creo 1.0	PTC Creo 2.0	PTC Creo 3.0
Target Version	Pro/ENGINEER Wildfire 4.0	NCRI \ GCRI	NCRI \ GCRI		
	Creo Elements/Pro 5		NCRI \ GCRI	NCRI \ GCRI	NCRI \ GCRI
	PTC Creo 1.0			NCRI \ GCRI	NCRI \ GCRI
	PTC Creo 2.0				NCRI \ GCRI