DOWNSTREAM BLUEPRINT 7.0 RELEASE NOTES

Build: 2075
Date: 10/29/2024

Contents

RELEASE SUMMARY

BluePrint 7.0 build 2073 is a minor update to the currently released BluePrint 7.0 product. This release includes several customer defect fixes and enhancements. New BluePrint 7.0 product features are described later in this document. They include a new BluePrint Documentation Compare feature, a new BluePrint SQL Database Engine, as well as several enhancements.

INSTALLATION AND LICENSING

The installer for the client software (CAM350 15.0 and BluePrint 7.0) will create new folders and you can run both your previous release (CAM350 14.6 and BluePrint 6.6) and your new Release software side by side on the same PC if you wish. There is a new 15.0-7.0 License Manager and License that must be installed. This new License Manager and License will run your 15.0-7.0 software as well as previous releases (ie BluePrint 6.6 and 6.5).

Note: The CAM350 15.0 – BluePrint 7.0 License Manager will NOT run CAM350 12.2 – BluePrint 5.2 product licenses.

For many users your installation should be as simple as this:

1. Run the installation executable
2. Choose "Install or Update Licensing" to install your new License Manager and License File.
    a. If you are an existing customer on maintenance, choose "Install license from media" to install your new license file.
    b. If you are a new user or your license is not found on media, get your new license from DownStream, copy it to your PC and then choose "browse to find License File".
3. Choose "Install DownStream Products" to install the new CAM350 15.0 and BluePrint 7.0 software on your PC.

If you are installing to a Virtual Machine or have any questions, reference our DownStream Installation Guide or contact us at support@downstreamtech.com.

SYSTEM REQUIREMENTS

Your PC should meet or exceed the following requirements:

OS: Windows 10, 11 (**64 bit only**)
Processor: 2GHz or faster
Memory: 8-16GB+
Disk Space: 2GB available, SDD Recommended
Graphics: Discrete graphics card with on-board memory preferred (for best 3D performance)

BLUEPRINT 7.0 NEW FEATURES

- ✓ New Documentation Compare tool
- ✓ Enhanced Reference Designator handling on ECO
- ✓ New SQL Database engine
- ✓ Cadence Allegro interface enhancements
- ✓ Licensing support for Nutanix AHV Virtual Machine

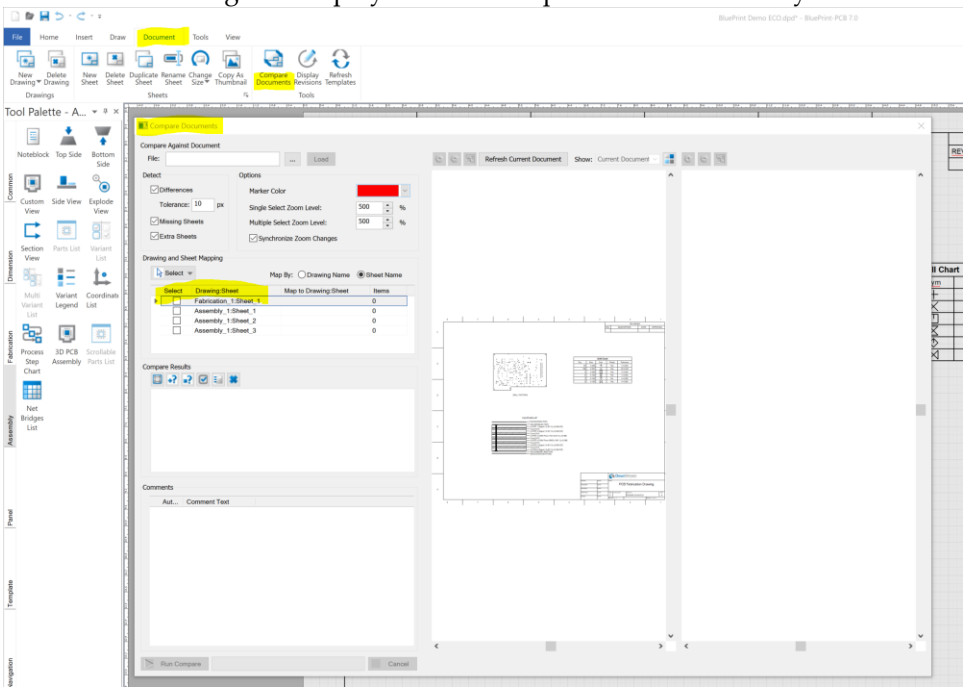
BLUEPRINT 7.0 – NEW FEATURES DETAILED

NEW DOCUMENTATION COMPARE TOOL

The new Documentation Compare tool allows you to compare two revisions of a BluePrint document. The Document Compare tool allows you to map the sheets, to visually inspect both sheets side by side and to explore the differences found.

EXAMPLE – In this example, we compare the original document, "BluePrint Demo New.dpd", to the ECO document, "BluePrint Demo ECO.dpd". The ECO contains a layer change, additional drills, and part changes. The ECO also has one extra Assembly sheet.

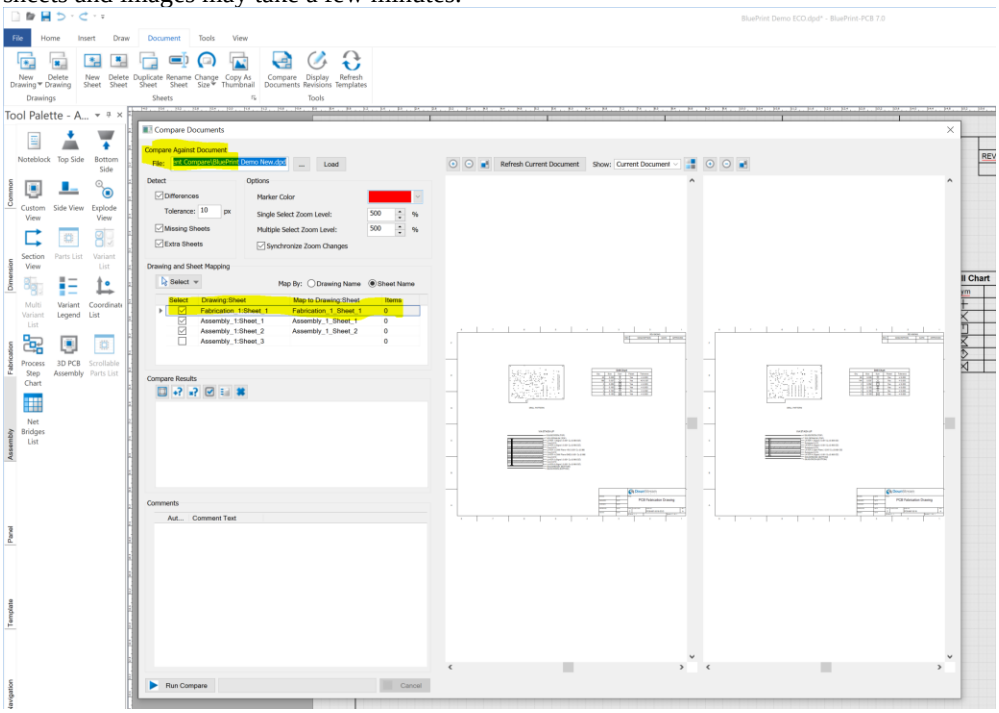
1. Open "BluePrint Demo ECO.dpd"
2. In BluePrint, select Document on the ribbon and then Compare Documents. The Compare Documents dialog will display the current open document already loaded.



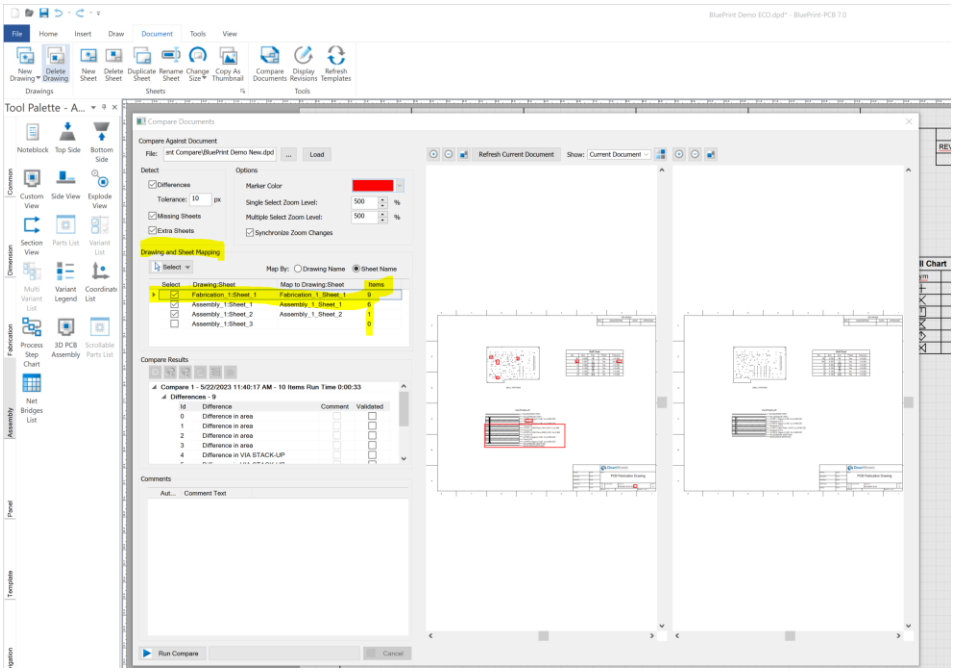
3. Now you will load the original document to compare. Under "Compare Against Document", select the three ellipses and browse to select and Open "BluePrint Demo New.dpd". This document will be loaded and you will now see a default mapping of the sheets and both documents previewed. If you needed to change the Compare Document mapping you would

select the sheet under the column “Map to Drawing Sheet” and select the new sheet from the drop down menu.

a. Note: Document Compare performs a “graphical” comparison of the two sheets. Part of the “load” process in this step is to create graphical images of each sheet for the compare. A small document may take 30+ seconds, while a larger document with many sheets and images may take a few minutes.



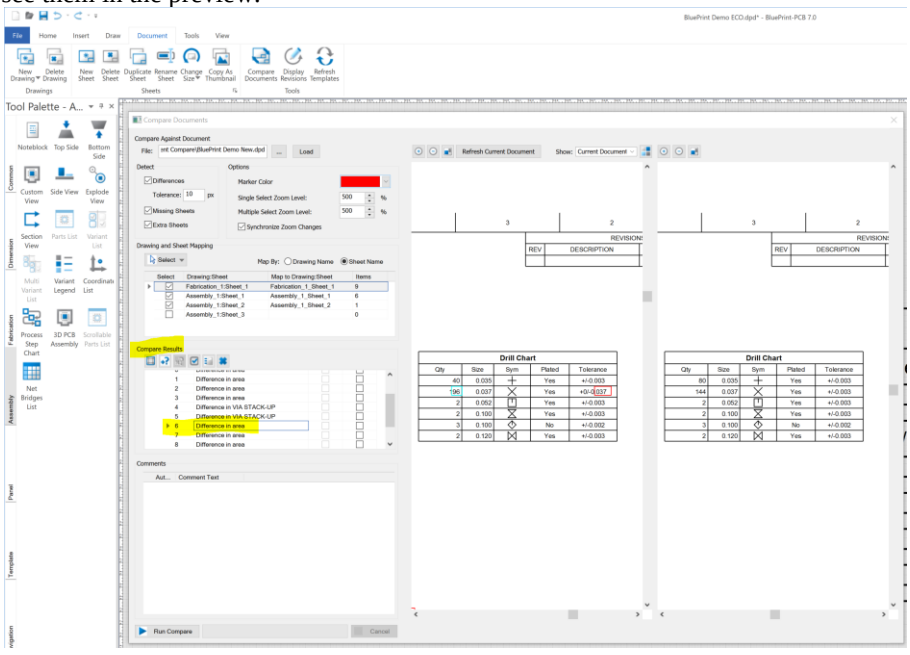
4. There are several Options that you can select before running your compare analysis. Under “Detect” you can enable looking for graphical differences, missing sheets and extra sheets. You can also set a tolerance. This is a graphical compare and the Tolerance is based on a pixal. So the smaller the Tolerance (1 px) the greater the differences found, but you may find the tolerance is too small in some cases and you are finding false errors. For instance, a tolerance of 1px may find a line or text font difference that you are not really interested in. For this example, I have set the tolerance to 10px. Under “Options” you can set a “Marker Color” and Zoom levels. These Options are for identifying and navigating compare results. In this example, compare results will be highlighted in red and when I select and navigate to a compare difference it will zoom 500% and the preview of both sheets will be synchronized.
5. Now lets Compare the two documents. Select Run Compare at the bottom left of the Compare Documents dialog. The compare may take 30+ seconds for a small document or a few minutes for a larger document with many sheets. Under “Drawing and Sheet Mapping” and the “Items” column you can see that Compare Documents found 9 differences on the first sheet, 6 on the second and 1 on the third sheet. By default, the first sheet is selected and in the preview you can visually see that compare documents found the additional drills in the drill pattern and drill chart, the additional layers in the layer stackup and a change I made to the drawing number in the title block.



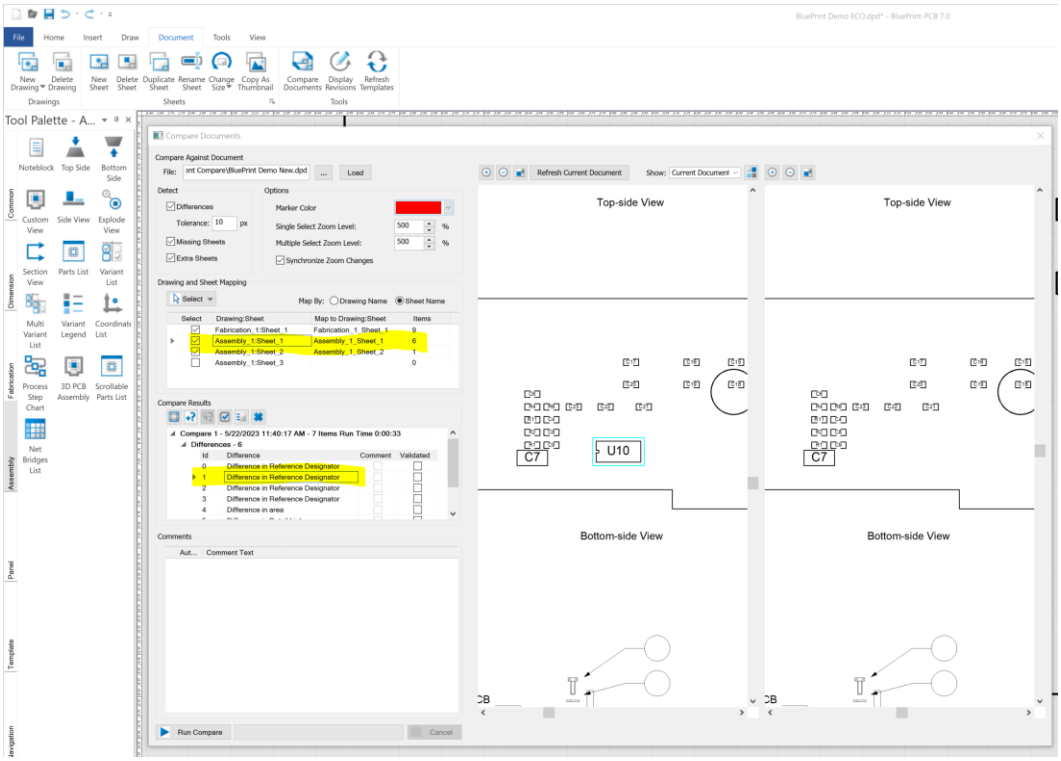
Note: Currently, there are some sheet items that Document Compare cannot compare. This includes:

- Differences in line styles
- Color differences
- Differences in fill pattern
- Embedded OLE Objects, Images and Bitmaps
- 3D Views and Stackups

6. Under “Compare Results”, you can select and step through each of the nine differences to zoom in and see them in the preview.



7. Select another sheet under “Drawing and Sheet Mapping” to see that sheets Compare Results for that sheet and navigate through the differences.



8. There are also features to add a note to a Compare Result and to designate it as “Validated”. You can generate a Compare Results report and you can delete compare result from the list if it is of no value to you.

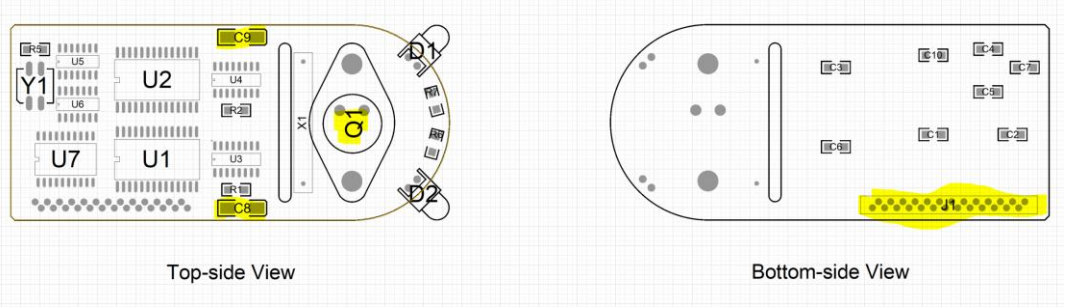
ENHANCED REFERENCE DESIGNATOR ECO

BluePrint reference designators are generated and maintained in BluePrint drawings for PCB Views. The BluePrint reference designator formatting and placement is maintained in BluePrint independent of formatting and placement in the CAD system. BluePrint 7.0 reference designator enhancements for preserving formatting and placement are focused on (1) component renaming and (2) component relocation. Component relocation includes moving, rotating and flipping from top to bottom of the PCB board.

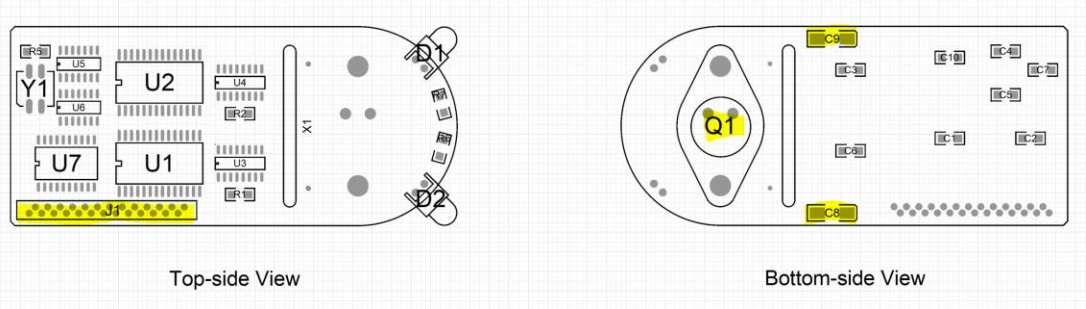
For component reference designator rename, part type change, location change, rotation change, and part flipping, the reference designator will be maintained in the relative same orientation and same formatting as the matched original component and its original orientation. If the new reference designator placement for a component creates overlap with component geometry from other components or other board geometry, then the reference designator will **not** be automatically regenerated for the relocated or updated reference designator. For components that are added with regards to the new CAD netlist on ECO import, the associated BluePrint reference designator will be regenerated.

EXAMPLE – In this example, we will open a document and then perform an ECO of the design data.

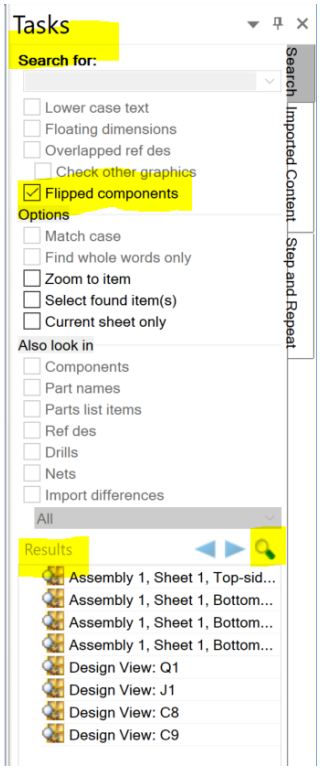
1. Open "flipping comp's-defaultViews.dpd". Take notice of parts Q1, C8, C9 and J1.



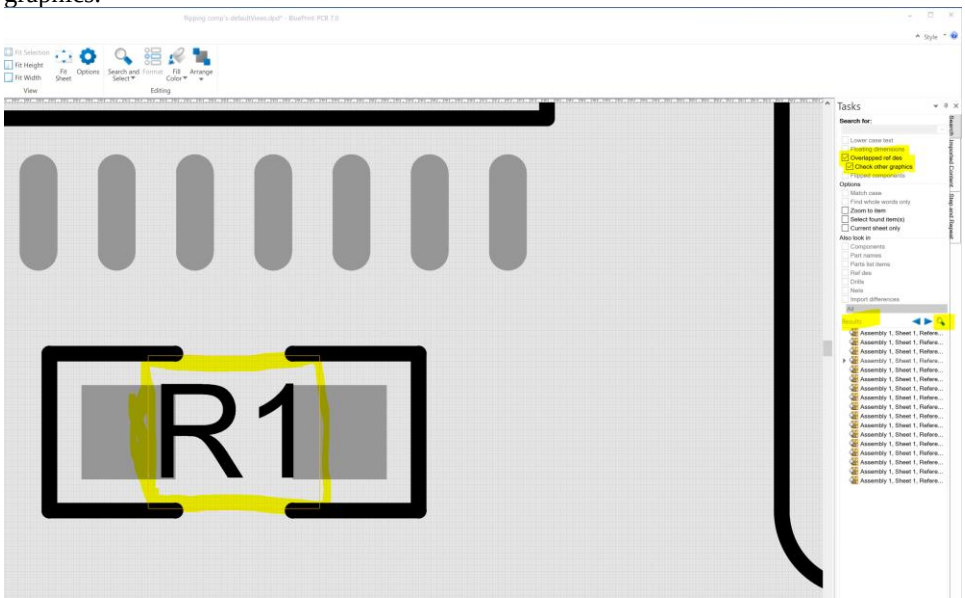
2. Now import the ECO design. File – Import – ODB++ - preview_flipped.tgz. With this ECO, parts Q1, C8 and C9 from the Top Side will move to the Bottom Side and part J1 from the Bottom Side will move to the Top Side. In previous releases, the component graphics would move correctly on ECO but the moved art reference designator would be left behind or centered incorrectly. This BluePrint 7.0 image is correct:



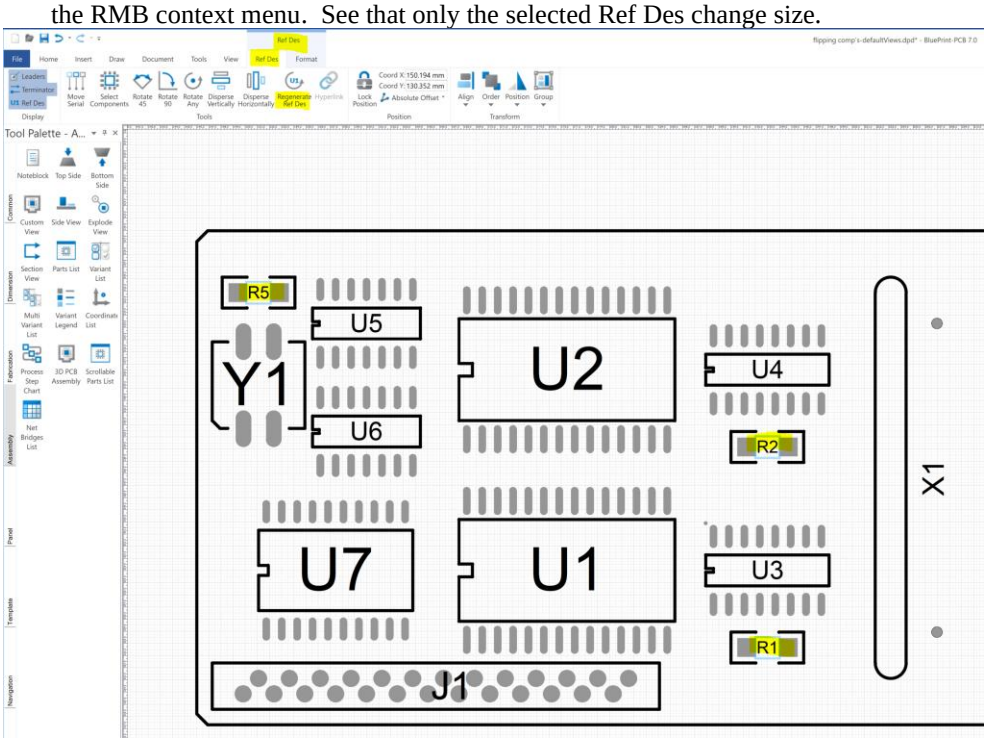
3. We have also added a feature that allows you to search for the "Flipped components" after ECO. Under the Search Task Pane enable the checkbox for "Flipped components" and select the search icon. The Results will include those flipped components found on your document sheets as well as in the design view:



4. We also enhanced our Search pane check for “Overlapping Reference Designators” to find overlap with any graphics in the current PCB view, including overlap with other reference designators, and part attributes, any pin numbers, any pin graphics and any component outline. In the Search pane, disable the check for “Flipped components” and enable the checks for “Overlapped ref des” and “Check other graphics” and then select the search icon. In this example it will find all of the ref des in the PCB Views that overlap pins and component graphics. For instance, select the Results for “R1” and BluePrint will automatically zoom in so you can see that the ref des overlaps the pin graphics.



5. We also enhanced BluePrint so that you can selectively regenerate the BluePrint ref des in a PCB View. For instance, in this example you may want to regenerate and cleanup R1, R2 and R5, but not change U1-U7 because they look fine.
    a. Fit your zoom selection to the Top Side View
    b. Format the Top Side PCB View and choose the BluePrint Ref Des tab. Change the maximum font size to 4 and select OK to close the dialog.
    c. Change the Selection filter for the PCB View to select Reference Designators. Use Ctrl-Select to select R1, R2 and R5. Select Regenerate Red Des from the Ref Des ribbon or the RMB context menu. See that only the selected Ref Des change size.



    d. You can now run the search for overlapped ref des again and see that R1, R2 and R5 are no loger in the Results list.

NEW SQLITE DATABASE REPLACES MICROSOFT ACCESS DATABASE ENGINE

Lift the hood on most any CAD application, and you'll reveal some way to store and use structured data. SQL databases are used to quickly and efficiently retrieve a large amount of records from a database. In BluePrint, we use Microsoft's SQL Access Database Engine to store and search large amounts of imported CAD design data. SQL is used in BluePrint's template creation for Parts Lists, Variant List, Coordinate Lists, Process Step Charts, Stackups, Details, user created templates, etc…. Anywhere PCB Design data is referenced in a template, we use SQL queries to find data and populate those templates.

For BluePrint 7.0, we have replaced the Microsoft Access Database Engine with SQLite. SQLite is an upgrade to Microsoft Access in performance and quality, and also addresses the following issues:

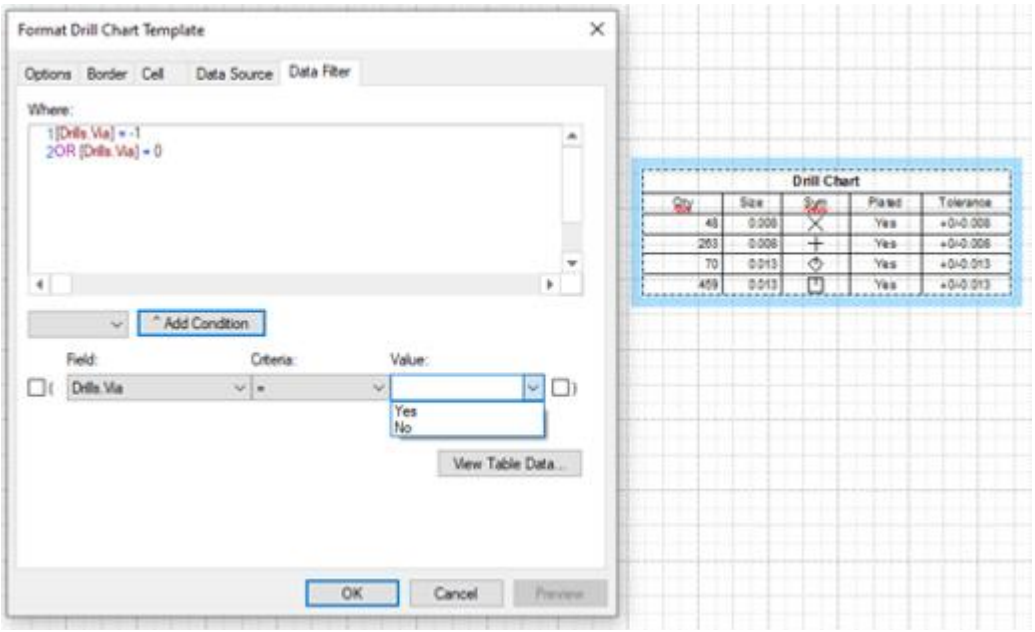
- Windows updates will no longer have any potential impact on BluePrint's database.
- BluePrint no longer depends on Microsoft Office "bitness". Either Microsoft Office 64 bit or 32 bit, can now be run on the same PC as BluePrint 7.0.
- BluePrint will run seamlessly with both Microsoft Office "Click to Run" and "MSI" installed products.
- BluePrint no longer has any limitations on the number of design database part attributes it can import and use.
- SQLite is a popular and widely deployed database engine used by Google, Amazon and many others, while the Microsoft Access Database Engine appears to be entering "legacy" mode for Microsoft.

SQLite differences from MS Access SQL

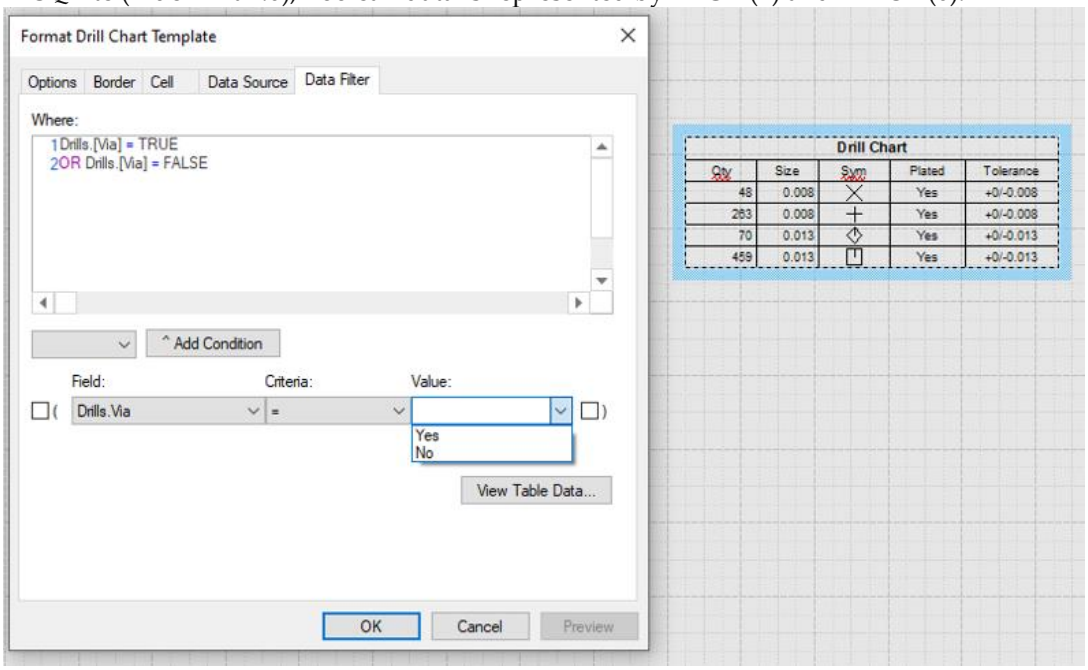
The SQL language is a "standard". Even so, no two SQL database engines work exactly alike. This document highlights some of the differences we found as we started working with BluePrint 7.0 and the new SQLite engine. You can also select the links below for more information on SQLite.

Query Language Understood by SQLite
https://www.sqlite.org/quirks.html

1. **Boolean Data Type**
   In MS Access (BluePrint 6.6 and earlier), boolean data is represented as TRUE (-1) and FALSE (0). For example, if you invoke the Format Drill Chart dialog and select the Data Filter and enter Drills.Via = "Yes" you will see [Drills.Via] = -1:



In SQLite (BluePrint 7.0), Boolean data is represented by TRUE (1) and FALSE (0):



In example 1, if you have a BluePrint 6.6 or earlier document which references a Boolean filter you will need to change the references to = “TRUE” or “FALSE”, to work correctly in both BluePrint 6.6 and BluePrint 7.0.

2. **Data Type Bracket Syntax**
MS Access (BluePrint 6.6 and earlier), supports both [Table.Type] and Table.[Type].
SQLite (BluePrint 7.0), supports only Table.[Type]. In the example 1 above, see that for the syntax for [Drills.Via] in BluePrint 6.6 (MSAccess) needs to be changed to Drill.[Via] in BluePrint 7.0 (using SQLite).

3. **Autoincrement**
The Autoincrement feature in SQLite works differently than it does in MS Access SQL. If you are using Autoincrement in your BluePrint 6.6 (or earlier) scripting, then you should see the SQLite AUTOINCREMENT documentation for detailed instructions on what AUTOINCREMENT does and does not do in SQLite.

Here is an example of a change we made in a script so that it would work with SQLite:
BluePrint 6.6 (MS Access SQL script):
App.Packages(0).DataManager.ExecuteSQL("CREATE TABLE tbl_name(ID Autoincrement)")

BluePrint 7.0 (SQLite script):
App.Packages(0).DataManager.ExecuteSQL("CREATE TABLE tbl_name(ID INTEGER PRIMARY KEY)")

4. **Scaler and String Functions**
MS Access SQL and SQlite have many of the same scaler and string functions. However, the function syntax may be different. For example:

BluePrint 6.6 MS Access SQL	SQLite
UCASE	UPPER
LCASE	LOWER
LEN	LENGTH

You can search here for SQLite equivalent functions and syntax, Website Keyword Index (sqlite.org)

5. **Double Quoted Literal Strings are accepted**
In MS Access SQL (BluePrint 6.6 or earlier), both double quotes (") and single quotes (') can be used to designate a literal string.

The SQL standard requires double-quotes around identifiers and single-quotes around literal strings. For example:
- "this is a legal SQL identifier"
- 'this is a SQL string literal'

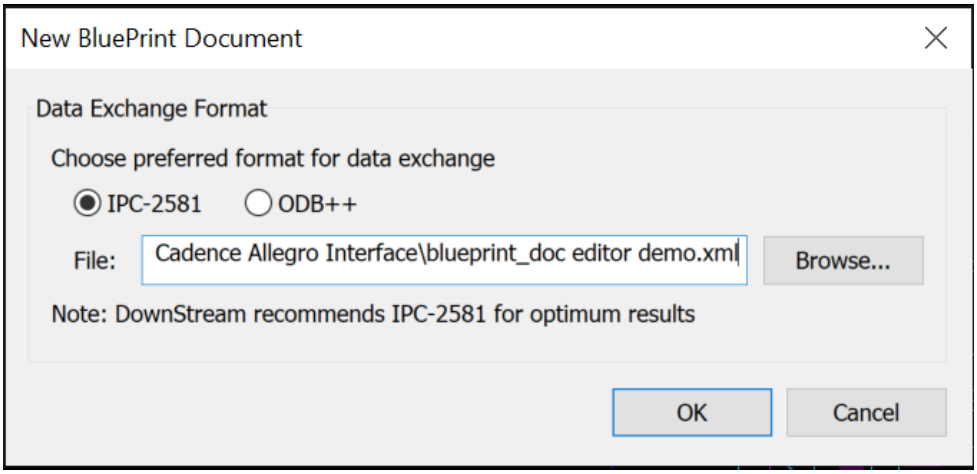
SQlite (BluePrint 7.0) supports single quote (') string literals and will interpret a double quote (") string as a literal if it does not match any valid identifier.
Note: Please be aware, this means that a misspelled double quoted identifier will be interpreted as a string literal, rather than generating an error.

ENHANCED CADENCE ALLEGRO INTERFACE

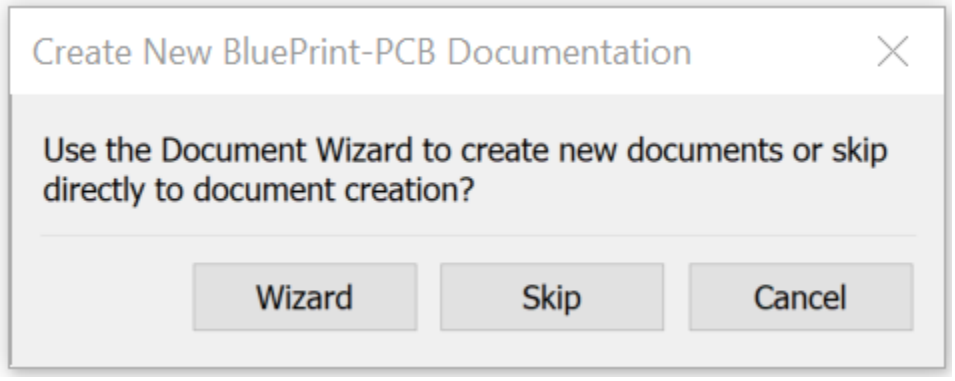
We have updated our Cadence Allegro to BluePrint flow to include both "New Document" and "Update Document" modes. We also allow the user to select either IPC-2581 or ODB++ as the design data that is passed from Allegro to BluePrint.

EXAMPLE – In this example, we start with a design in Allegro, Create a new Document in BluePrint, then make a modification to the design in Allegro and Update the BluePrint Document.

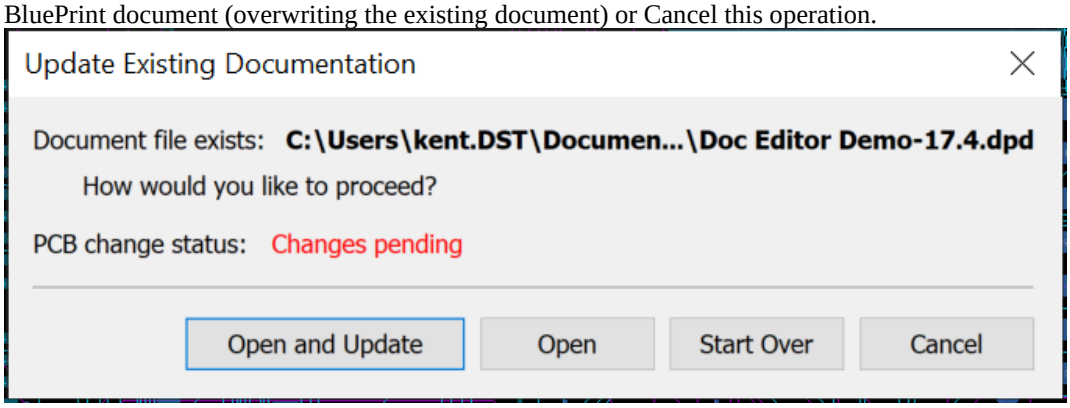
1. Open "Doc Editor Demo.brd" in Cadence Allegro.
2. In Allegro, select Tools – New BluePrint Document… from the menu.
3. This dialog will appear which allows you to select the data exchange format from Allegro to BluePrint. We recommend IPC2581. It is more complete and better supported by Cadence. Select OK.



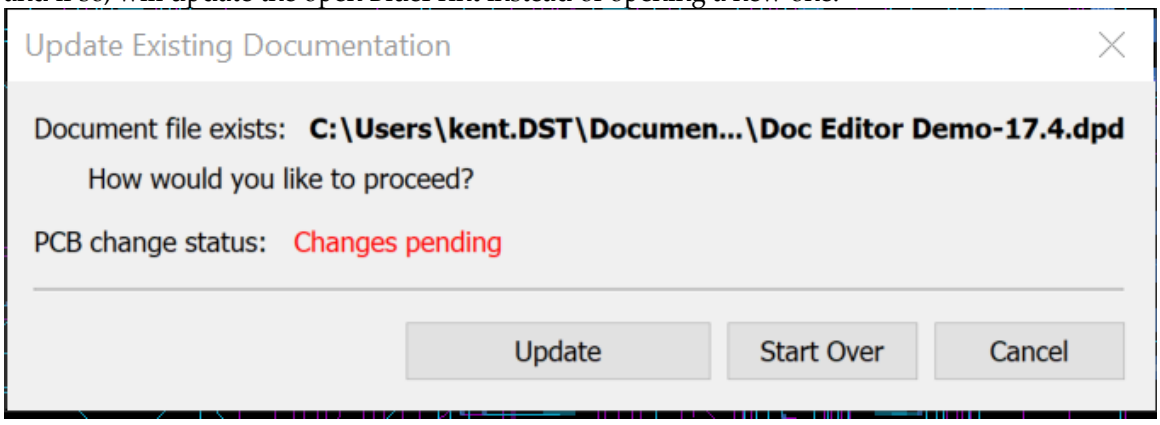
4. The design data is generated by Allegro and you are asked if you want to create the document using BluePrint's document Wizard, or do you want to SKIP the Wizard and simply open BluePrint with the design data imported.



5. After you have created your new document in BluePrint, File – Save the document and File – Exit BluePrint.
6. In your open Allegro session, move a part to modify the design and select Tools – Update BluePrint Documentation. The following dialog will appear. You have the choice to Open your existing BluePrint document and Update (refresh) the design data, or to Open your existing BluePrint document (and not Update or referesh the design data), to Start Over and create a new BluePrint document (overwriting the existing document) or Cancel this operation.



Note: The "Update BluePrint Document" command from the Allegro Tools menu looks to see if a DPD file exists with the same name and in the same folder that the open Allegro BRD file lives. The Allegro interface will also check to see if the BluePrint document is already open in a process and if so, will update the open BluePrint instead of opening a new one:



Note: For Cadence Manufacturing Operation users, if you have already created a Document Editor or Panel Editor document then you will have a .ORD file that lives in a sub-folder of the folder where the Allegro BRD file lives, named "*BRDfilename*_XML". The Allegro interface will look to see if there is a .ORD file in this subfolder and if yes, it will open the .ORD on update, save the document as a BluePrint DPD file and rename the ORD file to "*filename*.ORD_BACKUP". This is a onetime translation process. All future Opens or Updates will be performed on the BluePrint DPD file.

BLUEPRINT 7.0 CUSTOMER DEFECT FIXES AND ENHANCEMENTS

BLUEPRINT 7.0 BUILD 2075 DEFECT FIXES

73179	BluePrint = CAD import – MaxPadSize for drill table should not consider soldermask pads
73148	BluePrint DXF import – elliptical arcs are failing on import for this DXF
73147	BluePrint API – OpenGL drill display issue when changing drill visibility
73129	BluePrint API – Properties to set layer top and bottom component visibility are not working properly
73128	BluePrint API – Active sheet not set properly
73113	BluePrint – Pin vs Via visibility conflict on soldermask layer for this document
73110	BluePrint ECO Import of IPC258, of this document results in incorrect PCB View scale change, dimension shift and dimension not marked as floating
73107	BluePrint API – PlaceOnSheet does not place item in correct location
73106	BluePrint API – Transform- Back drawing element = drawing element disappears and is not present on the drawing sheet
73088	BluePrint Aligned Dimension is displaying incorrect dimension value
73087	BluePrint ECO import issue after File Open on 6.5 DPD file results in incorrect pads and via visibility
73086	BluePrint – Sort changes in Adaptive Template Drill Chart after re-execution incorrect
73029	BluePrint is not able to import this ODB++ file with missing electrical layers

BLUEPRINT 7.0 BUILD 2067 DEFECT FIXES

72996	BluePrint 7.0 fails to Open this BluePrint 5.2 BPD file
72995	BluePrint 7.0 Component settings incorrect after Opening this BluePrint 5.2 BPD with filled components
72994	Some issues found when saving settings to profile
72992	Zuken IPC2581 issue – component pins are not associated with padstacks
72960	BluePrint Import IPC2581 ECO issue – Ref Des rotation incorrect on this design
72958	Zuken IPC2581 issue – after import a component outline is missing. Option to use PCB decal outline instead
72957	BluePrint 6.5 DPD opened in BluePrint 7.0 has incorrect PCB View drill visibility settings
72956	BluePrint 7.0 Drill Chart Adaptive Template fails after opening a 5.2 BPD database and ECO import
72939	BluePrint API CSV import – Enhancement to set character code in API
72850	BluePrint Panel Drills have incorrect data type for Mill Tabs and Pinning Holes
72849	If a Panel Drill Chart is placed before a Panel Drawing Element in a Document then the Panel Drill chart is associated with the incorrect Drill Data Table.
72793	BluePrint API enhancement for PCBFilterComponentMountType and DisplayOppositeSidePads
72847	BluePrint API – One note in a Noteblock is not getting set to the correct size
72828	BluePrint COM model – proper registration

BLUEPRINT 7.0 BUILD 2059 DEFECT FIXES

72800	The "Add Dual Side Parts" button on the Customize PCB CAD Data dialog is not working correctly for this customer design
72799	BluePrint API Enhancement, FilterByXXXX comparison mode for Strings
72796	BluePrint API Set LimitExtentsToBoard Property always generates ref des which does not match GUI behavior.
72793	BluePrint API Enhancement for PCBFilterComponent MountType and DisplayOppositeSidePads
72784	IPC2581 import missing internal pads for this design
72782	IPC2581 Import does not correctly mirror padstack element instances
72781	IPC2581 import failure on this Zuken CR8000 design with slot cavity
72780	Regression from 6.6 - In the Format PCB View PCB CAD Data Advanced Components tab, the ADD DUAL SIDE PARTS button does not turn off components that have only opposite side graphics.
72759	API call PCBViewFilterComponents - find visible components and aggregate properties enhancement
72758	BluePrint Ref Des display improvements when design components swapped on ECO
72757	BluePrint Component display improvements when design components swapped on ECO
72755	BluePrint spawned via COM fails to load some resources
72746	This customer document created in BluePrint 5.2 does not fill component correctly when opened in BluePrint 7.0
72733	Bottom View incorrectly shifts on File Open for this design
72731	PADS design which contains slot with zero length fails to import
72726	Side View regression where component height not being displayed
72717	This customer template created in BluePrint 5.2 does not operate correctly after being loaded into BluePrint 7.0.
72713	Process Steps are not correctly refreshed for this design using component attribute types
72709	After DXF import and convert and scaling of this DXF file, arc incorrectly inverts
72705	Compare Document Results not retained on close of dialog
72680	BluePrint Japanese version has erroneous/extra profile selections in Options General pulldown
72679	This DXF fails to import
72651	BluePrint does not recognize a design ECO when importing a ODB++ folder. This works correctly when importing a ODB++ compressed file (tgz).
72748	Some parts being clipped by Assembly side view canvas for this design
72427	Deleting text in Table cell for this design causes BluePrint failure

BLUEPRINT 7.0 BUILD 2053 DEFECT FIXES

72632	Publish to Web not executing when BluePrint not installed on same PC
72661	BPBasicIDE64.exe does not execute script with long path name – 7.0 regression
72650	Display Parts List as Variant does not work correctly in 7.0
72641	New Document Compare API enhancement
72612	Document Compare enhancement to purge the compare bitmaps before File – Save if customers don't want to increase the size of their database.
72582	BluePrint 7.0 Registry entry for shell open command missing quotes for path
72505	Document Compare Automation API implemented
72467	DPD saved in CAM350 does not open in BluePrint for this document
72439	Panel – set view as compensated to On for CAM350 Panel Save
72438	Panel – Vscore not converted correctly to CAM350 line type
72416	Panel – Mill Tab not converting correctly from BP to CAM350
72235	Document Compare – False Errors found on Detail Template
72228	ECO Import - components with no assembly outlines or pins appear that were not previously displayed
72088	Enhancement API - Vertical spacing above and below table template split sections
72087	BackDrill Stackup Template does not display multiple callouts
72086	Table Template Enhancement - add vertical spacing for split sections
72041	PADS ASCII import regression - vias names and hole count
72031	SUV import failure when importing 2581 xml file with only stackup info
71895	Pads should not be used to determine component outline width in Format Comp dialog
71884	Enhancement to attach to BluePrint or CAM350 application OLE Object using Windows System Handles or PIDs
71731	Pin number visibility on ECO import does not work for duplicate pin numbers
71670	DXF import - text is offset compared to CAM350 import
71614	ODB++ import Regression - components w/ no outline and no pins are not visible by default
71607	Enhancement API - methods to move Notes to previous and to next Note Block Sections
71544	Start Page bitmap cleanup
71536	BluePrint failure - required resources not available - backdrill stackups
71531	Format Backdrill Stackup - Drill Spans tab does not reflect actual columns
71514	Backdrill stackup template does not auto expand for this design

70908	BluePrint API to create Process Steps repaired
70907	Enhancement API - support to be able to control Fill option for Lines while creating PCB views for cut sheets in Assembly drawings.
70132	Embedded layer field is missing in the DATA TABLE Component SQL table
69778	Support for Hyphens in Reference Designators
69845	Process step stops working after ECO for this design

HOW TO CONTACT

Please send any defects, feedback or questions to blueprint@downstreamtech.com.

PATENTS, COPYRIGHTS, AND TRADEMARKS

PATENTS

"AUTOMATED PCB MANUFACTURING DOCUMENTATION RELEASE PACKAGE SYSTEM AND METHOD", United States Patent No. 7,409,666 B2
"ADAPTIVE TEMPLATE SYSTEM FOR AN AUTOMATED PCB MANUFACTURING RELEASE PACKAGE SYSTEM", United States Patent No. 8,875,072 B2

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