Bill of Materials Management – the Centre of your PLM Universe

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PL7340-P

This hand-out is delivered with the AU 2014 class PL7340-P, entitled ‘Bill of Materials Management – the Centre of your PLM Universe’. It is designed to give you an overview of the key BoM capabilities of PLM 360, outside of the core management of items and subassemblies.

This document provides a reminder of some of the fundamental functions available, and outlines those new to PLM since AU 2013. It also touches on the enhancements available in the most recent new product releases, and contains some tips on lesser-known functionality you may not already be aware of.

Lesson Description

Product development today requires a vast universe of information, which needs to be navigated by all product stakeholders. At the very centre of that universe are your product Bills of Materials. This makes BoM Management probably the most fundamental, core aspect of PLM 360. Because it’s so critical, this is a key focus area for our development teams, and so continues to evolve. This class outlines what is now possible in the BoM Management area of PLM 360, using real-life scenarios to demonstrate the power and business value of the latest release. It also looks at Bills of Materials through the eyes of those different stakeholders, to help you understand the value different departments can obtain from them. So join us, as we take a journey to the centre of the universe!

Key Learning

- The latest core capabilities in PLM 360 BoM Management
- Using views and configurations to provide a contextual BoM for each stakeholder
- How to compare two different BoMs to help facilitate wider product awareness
- Using BoM date effectivity to meet the needs of those further downstream
- How effective BoM management can maximise business value for all product stakeholders
About the Speaker

Gavin England represents the global Autodesk PLM 360 Technical Marketing team in EMEA, and is based in the UK. Gavin spent 11 years in Manufacturing, as a Design Engineer, and has spent the last 14 years in the PLM industry as a Pre-Sales Consultant, Account Executive and Business Value Consultant for IBM, Dassault Systemes, and Siemens. He has extensive experience in helping companies understand how PLM can deliver real business value, and is a strong advocate of the benefits cloud-based PLM can bring.

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Brief Reminder of Key Bill of Materials Management capabilities

Configured BoM Views

Multiple, configurable views of Bill of Materials structures can easily be defined, enabling users to view BOMs in the right context, seeing only the columns of information relevant to them. This provides stakeholders across the organization, as quickly as possible, with the real-time product information they need to make accurate decisions in a concise, easy to digest way.

For further information on BoM views and how to create them, refer to the relevant PLM 360 Help Guide section, [here](#). Alternatively, view our Briefing Video on our PLM TV YouTube channel, [here](#).

Date Effectivity and Revision Pinning

Components and sub-assemblies added to a BOM can be made effective from a specific date onwards, adding the element of time to the configuration of that product. New versions of an existing part can be phased in on a specific future date, enabling easier and more flexible production planning, to use remaining stock of the existing version, for example. The ability to view a BOM configuration as active on a historic date offers an aspect of traceability, enabling a powerful means of determining exactly what was manufactured or delivered on a particular day. It is also possible to ‘pin’ an item in a BoM to a fixed revision, offering a flexible means of temporary manual intervention should problems occur with future releases of that item.
For further information on how to define date effectivity on an item, refer to the relevant PLM 360 Help Guide section, [here](#). For details of how to view BoMs based on their date effectivity, refer to its section in the PLM 360 Help Guide, [here](#). Alternatively, view our Briefing Video on our PLM TV YouTube channel, [here](#).

**BoM Import and Export**

Whilst there is always scope to integrate PLM 360 to other enterprise systems, such as ERP, in order to synchronise Bills of Materials, items and BoM structures can also simply be imported into PLM 360, typically via an Excel spread sheet. A comprehensive set of import tools allows fast configuration of each import to ensure successful field mapping results. This offers a quick way to carry out a one-off import, for example when introducing legacy product data into your PLM environment. PLM 360s re-import functionality also allows already imported BoMs to be updated, should its original source data change. BoMs in PLM 360 can also be exported via an Excel spread sheet, enabling a fast, ad-hoc means of getting data into other enterprise systems.
For further information on how to import items and BoM structures, refer to the relevant PLM 360 Help Guide section, here. For details of how to export BoMs, refer to its section in the PLM 360 Help Guide, here. Alternatively, view our Briefing Video on our PLM TV YouTube channel, here.

**Sourcing Tab BoM Synchronisation**

Component parts and assemblies can contain embedded cost information within their ‘Sourcing’ tab. This enables all stakeholders to understand, at a glance, the cost of a supplied item, without the need to interrupt the Procurement team or waste time accessing other databases and systems to find that information. This cost information can be automatically synchronised and rolled-up within a BoM to provide an overall total for a product, reducing the time otherwise spent looking elsewhere for cost data and manually calculating the total. The visibility of sub-total costs for each sub-assembly allows more in-depth analysis of a product. Roll-up capability is in real-time, so stakeholders can immediately assess the impact of any changes on the total cost, and better analyse what effect alternative components could have.
For further information on using the Sourcing tab to manage item costs which roll-up in the BoM, refer to the relevant PLM 360 Help Guide section, here.

**Recently Introduced Bill of Material Management capabilities**

**Attachment Visibility and Download from BoM**

When accessing a BoM for any assembly in PLM 360, providing the BoM view selected allows it, you can see which items in that BoM have documents attached to them. Furthermore, you can select any of these attachments to access the document, assuming you have the authority to do so, or you can download all attachments for each item into one single zip file. This enables stakeholders in a product to quickly and easily find related, valuable information, contained within any number of attached documents, without having to navigate to each item’s Attachment tab.

The image below summarises what this looks like, and how access to those attached documents is achieved …

<table>
<thead>
<tr>
<th>#</th>
<th>Descriptor</th>
<th>Revision</th>
<th>Lifecycle</th>
<th>Quantity</th>
<th>Total Weight [pounds]</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.0</td>
<td>10-000700-01 - LED UltraBright 1 Flashlight [REV A]</td>
<td>WIP</td>
<td>Working</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>1.1</td>
<td>20-000570-01 - LED UltraBright 1 Flashlight Body [REV A]</td>
<td>Working</td>
<td>1.0</td>
<td></td>
<td></td>
<td>EA</td>
</tr>
<tr>
<td>1.2</td>
<td>15-000592-01 - T3951LT Inner Body Assy [REV A]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>EA</td>
</tr>
<tr>
<td>1.3</td>
<td>15-000591-01 - L5920D Flashlight Board Assy [REV A]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>EA</td>
</tr>
<tr>
<td>1.4</td>
<td>50-000566-01 - AAA Battery [REV A]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>EA</td>
</tr>
<tr>
<td>1.5</td>
<td>50-000560-01 - LumiLed Luxe on [REV A]</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>EA</td>
</tr>
</tbody>
</table>

Firstly, open the BoM tab on the relevant assembly. Any documents attached to each item will be outlined with a specific symbol, as shown here, against that item entry in the BoM. To access one or more attachments …

1. Click the Attachments icon on the relevant line item
2. All documents attached to that item will be listed. Click the required document to download and open it.
3. To download all documents attached to the item, click on this link.
4. Selecting the ‘Go To Attachments’ link will take you to the Attachments tab for that item. You would need to do this if you wanted to check-out one or more documents attached to that item.

For further information on accessing attached documents in a BoM in PLM 360, refer to the relevant PLM 360 Help Guide section, here.
BoM Compare

In PLM 360, you can quickly identify what’s changed when releasing a new version of your product, or the differences between two similar products. The BOM Comparison capability can be used on different revisions, configurations and date effectivities of the same product or on two different assemblies. The BOM compare features in PLM 360 offer an easy-to-understand, graphical indication of the differences between the two. Traceability of the history of a product can be more easily achieved by analysing previous iterations, helping to meet compliance requirements.

To compare two different BoMs, or revisions of the same BoM, follow these steps …

![Diagram of BOM Compare process]

Firstly, open the BoM tab on the baseline assembly you want to compare. Then …

1. Select the ‘Compare BoM’ red pen icon.
2. This section confirms the current BoM being viewed, which is the baseline for the comparison.
3. This section defines the assembly you want to compare against. By default, this is the same item as the baseline – the system assumes you want to compare two different revisions of the same item. If you want to compare two different assemblies, select the relevant one from the pick list.
4. These two pick lists define the revisions of the assemblies you’re comparing. This could be two different revisions of the same assembly, for example. Select the relevant revision for each assembly.
5. Here you can specify date criteria. This is linked to the date effectivity for either assembly. By default, superseded revisions will be set to the date they were superseded, and current production or working versions will be set to the current date. If you want to compare BoMs on two different dates – setting one to a past or future date, use these to select those dates.
6. You can specify a particular BoM configuration for either assembly here. Refer to the section, below, on this topic for more information.
7. Apply the compare, using this button, once all parameters are set correctly.

The BoM comparison will then appear, giving you a visible guide of the differences. Items in the open, baseline BoM which are not in the BoM of the assembly being compared against, or is different, are shown as a bold blue font. Items in the BoM of the assembly being compared against which are not in the open baseline BoM, or are different, are shown as a red strikethrough font …
Details of the differences are confirmed via the symbols in the second column. Moving the cursor over these symbols will highlight whether the difference is a change, added or removed item.

Note that selecting the Attachment icon for any item in this mode will also compare the states of those attachments in both BoMs.

For further information on comparing BoMs in PLM 360, refer to the relevant PLM 360 Help Guide section, [here](#).

**Pre-Set BoM Configurations based on Lifecycle**

Another capability in PLM 360 which allows viewing of a BoM in a specific context is the ‘Pre-Set Configuration’ function. This enables a user to select which item revisions are shown in the BoM, to enable deeper interrogation of the lifecycle states of those items. For example, the BoM can be set to show all of the latest released revisions of each component and subassembly in that BoM. Alternatively, the BoM can be viewed showing each item’s current working version. Also, this function enables a user to further investigate the effect current pending engineering changes will have on the assembly.

To view one of the pre-set configurations, select the desired state from the pick-list …
There are currently four pre-set configurations to choose from …

- **Release Revisions**: This displays the latest released revisions of all items in the BoM, as of the selected effective date. This configuration effectively shows the BoM in its latest approved state.

- **Working Revisions**: This displays the current working version on all items in the BoM, providing a view of the working state of the BoM as a whole.

- **Pending Changes**: If the open assembly is the subject of a pending change order, selecting this configuration will display the working versions of all other items in the BoM associated with that same change order. This allows a ‘future view’ of the BoM, to represent its status were that change order to be approved.

- **All Pending Changes**: This configuration displays the working versions of all items in the BoM subject to any change order. This allows a ‘future view’ of the BoM, to represent its status, were all pending change orders to be approved.

Note that this function can be used in conjunction with date effectiveness by setting the ‘BoM View as of’ field to a different date, to analyse lifecycle states at a particular point in time. Refer to the above section on ‘Date Effectivities and Revision Pinning’ for more details.

For further information on Pre-Set BoM Configurations in PLM 360, refer to the relevant PLM 360 Help Guide section, [here](#).

**Change Pending Flag**

When accessing a BoM for any assembly in PLM 360, providing the BoM view selected allows it, you can see which components and sub-assemblies in that BoM are subject to a pending change. If an item is selected as one which will be changed in a process managed within a revisioning workspace (typically in the Affected Item tab of a change order), but that process is not yet complete, it will display a specific green ‘stamp’ symbol in the BoM. This is a powerful feature that ensures anyone accessing the BoM can be made aware that a component or sub-assembly is likely to be imminently changed. That person can then select the green stamp symbol to find out more about the proposed change. This ensures decisions are not made based upon information about to become superseded, such as Purchasing ordering a component which may be obsolete by the time it arrives, which could lead to wasted time, excessive costs, scrap and re-work.

Moving your cursor over any of these symbols will provide feedback on the change order which that item is related to. Selecting the icon will take you straight to that change order item.
Selected BoM Enhancements in Recent Releases

PLM 360 is a constantly evolving product, providing a steady stream of usability and functionality enhancements. The list below outlines some of those key enhancements in recent releases, relating to Bill of Material management …

**Item Details check box field roll-up:** When adding a check box-type field to an item, and then creating a custom roll-up of that field in a BoM, previously, there were some issues with the accuracy of that roll-up. Those issues have recently been resolved.

**Lead-time field can be added to BoM View:** When an administrator creates a BoM View for users to access, he has the choice of adding most of the fields within an item which that BoM will manage. These can be fields from the Item Details tab, or various other tabs within that item. Until recently, the Lead-Time field from the Sourcing tab of an item was an exception to this. This has been resolved, and this field can now be used in a BoM View.

**Improved ‘Where Used’ logic:** The logic rules which provide a list of all parent assemblies which incorporate the open item, via the ‘Where Used’ tab, has been improved recently. It now takes into account the date effectivity of the revision of the open item. Whether parent assemblies are shown in the ‘Where Used’ list depends upon that effectivity. For a further explanation of how this logic works, refer to the relevant PLM 360 Help Guide section, here.

**BoM view works on flat as well as nested view:** When the ability to create configured BoM Views was introduced, they only applied to the nested view of a BoM, and not the flat view. A recent enhancement now allows BoM views to be applied to either.

BoM Tips and Tricks

This section lists some lesser-known functions related to BoM management in PLM 360, which you may not have been aware of, but which you could find valuable …

**Default BoM View Override**

When an administrator creates BoM views, he decides which one is the default view for that workspace. This then becomes the default for all users accessing BoMs in that workspace. Many users assume that default is fixed, but it is possible for an individual user to override this so that a different BoM view is the default one they see when they access that workspace.
To set their personal default view, a user simply needs to click on the end of the line item in the view list corresponding with the view they want, and this will then move the tick symbol to that view, making it their default.

**View BoM as it was on a Previous Date**

Many people are now aware that date effectivities can be applied to BoMs in PLM 360 in order to delay the introduction of a new item or new release until a future point in time (refer to above section on 'Date Effectivity and Pinning'). However, it is also possible to use this function to view a BoM as it was configured at a previous point in time. For example, you may want to see what the BoM of a product looked like 18 months ago to better understand the configuration of that product delivered to a customer on that date.

Simply select the ‘BoM View as of’ field, and set a previous date. The BoM will then change to reflect its structure, and item release levels, on that date.
Automatic Pinning of Superseded Revisions

On the topic of date effectivities and pinning, did you know that if you add an item to a BoM, and that item is a superseded revision, it is automatically pinned at that revision? This avoids confusion and possible errors by ensuring everyone is made aware that it is a superseded revision, and so is clearly a pinned item.

Incidentally, if an item is pinned at a previous revision in a BoM, such as in the above example, when it is unpinned, it automatically reverts to the latest released version.

Add Item to a BoM from within the Item Record

In order to build a BoM, or add further items to it, most people always access the BoM tab of the relevant assembly and add new line items from there. However, it’s possible to do this the other way around—in other words, to select the child item to be added, a new component part, for example, and add it to a BoM directly from that item’s record.

From within the child item, select the orange ‘Create Relationships’ icon and, on the drop-down menu, select ‘Items and BoMs’, and ‘Bill of Materials’.

The same window as that when you’re adding items to a BoM then appears. You then follow the same set of steps, but the items you select in this case are the parent items who’s BoMs you may want to add your child item to. The system will guide you by greying out all items which do not have a BoM (i.e. are components rather than assemblies) ...
You then need to add quantities, as with the usual method, and your item will be added to the chosen assembly’s BoM.

This provides more choice and flexibility in how a BoM is built, and offers an often faster means of adding a single component to an existing assembly.

**Selecting a Non-Default Quote as the Item Cost in a BoM**

As you probably know, within a BoM in PLM 360 a cost roll-up is automatically created, assuming the BoM View you have active allows it, by synchronising the cost information in each item’s ‘Sourcing’ tab (refer to the above section on ‘Sourcing Tab BoM Synchronisation’ for more details). The Sourcing tab can contain many different supplier quotations and costs, but one is usually set as the current default. It is this one which is reflected in the cost information in the BoM.

However, many people do not realise that this can be overridden on each line item, and a non-default cost selected.

To do this, edit the BoM of the assembly you want to modify. Then complete the following steps …

1. For the item who’s cost you want to change, select the pencil icon which appears on the BoM editing screen
2. A panel appears listing all of the different quotes in the Sourcing tab of that item.
3. The default costing will be outlined with a blue tick symbol
4. To select a non-default cost, select the relevant quote line and the ‘Selected Quote, radio button. This then sets the cost for this item, in this specific BoM only, to the new cost value.

This provides flexibility in defining costings for specific BoMs, to reflect availability at a certain point in time, for example, and also allows cost differences due to quantity variations to be taken into account.
Export Filtering using BoM Views

When exporting a BoM to an Excel spread sheet, the use of Configured BoM views can control and filter what information is exported. BoM Views (as outlined in the above section entitled ‘Configured BoM Views’) determine what columns of a BoM are displayed. The columns displayed at the point of export, controlled by the current active BoM view, are those which are actually exported. Any columns hidden at that time are not.

Should you wish to export BoMs on a regular basis, therefore, it may be a good idea for an administrator to create a BoM view called ‘Export’, displaying only the required columns. This would be a convenient and fast way to set the export up every time.

Compare Pending Changes against Latest Release

Earlier we looked at how two versions of a BoM in PLM 360 can be compared with each other (refer to above section entitled ‘BoM Compare’). Another useful function on this theme, but perhaps less well known, is the ability, directly from within a change order, to compare the current BoM against the new BoM, after the pending change has taken place, of any sub-assemblies being modified. This is a convenient way to better understand the impact of a change before it is committed.

In order to do this, within the ‘Affected Items’ tab of any change order, select the red pen icon on the line item of the relevant assembly. This will provide you with the standard BoM Compare view which shows the differences between the latest released revision and the result of the pending changes on the working version.

Thank you for attending my AU2014 class. I hope you find this hand-out a useful companion to the session, and a valuable resource in the future.

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