



BOMs in the Cloud with Autodesk PLM 360 ([PL2818](#))

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Product Manager

Class Content

- Introductions 40 min
 - Class
 - BOM Basics
- Getting started 20 min
 - BOM Modeling
 - Importing a BOM
 - Change Orders and Release Processes
- Using the BOM 20 min
 - Authoring the BOM
 - Downstream uses
- Summary and Q&A 10 min



Introductions

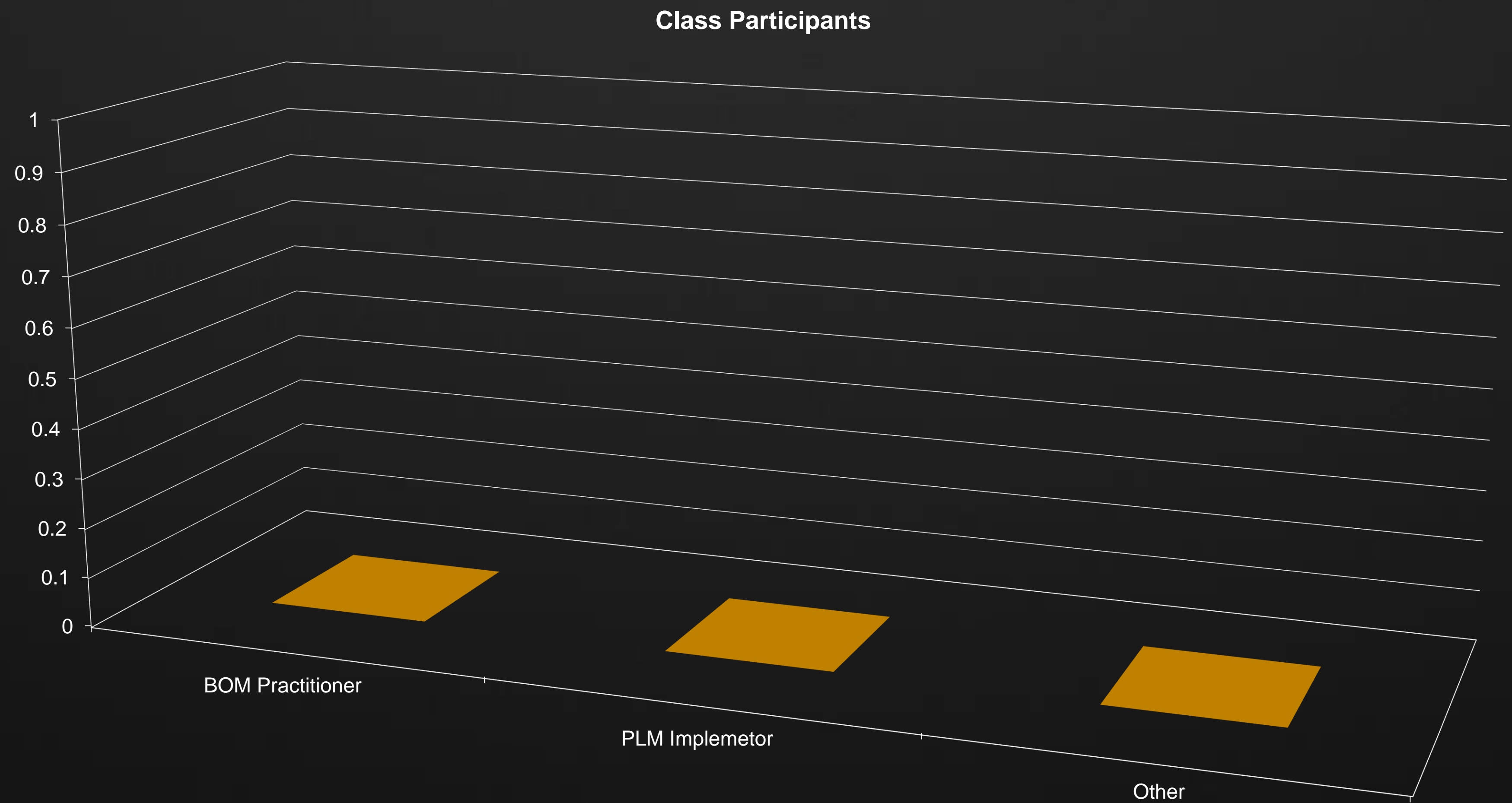


Who Are We?

- Hagay Dvir, Product Manager
 - 15 years experience with Enterprise Systems in general and PLM in particular, mostly in the Manufacturing domain
- Kevin Robinson, Product Manager



Who Are You?



The Class

- The class will focus on the basics of BOM management with Autodesk PLM 360
- Due to the broad nature of the subject, we will touch many areas and will stay very shallow
- Please jump in with any *comprehension questions* during the presentation and demo. Due to time constraints, please leave any *subject expansion questions* to the end of the presentation.

BOM Basics

What Is A Bill Of Materials (BOM)?

A list of everything that needs to be **ordered or consumed** by the manufacturing facility and that is delivered as **part of the Product**

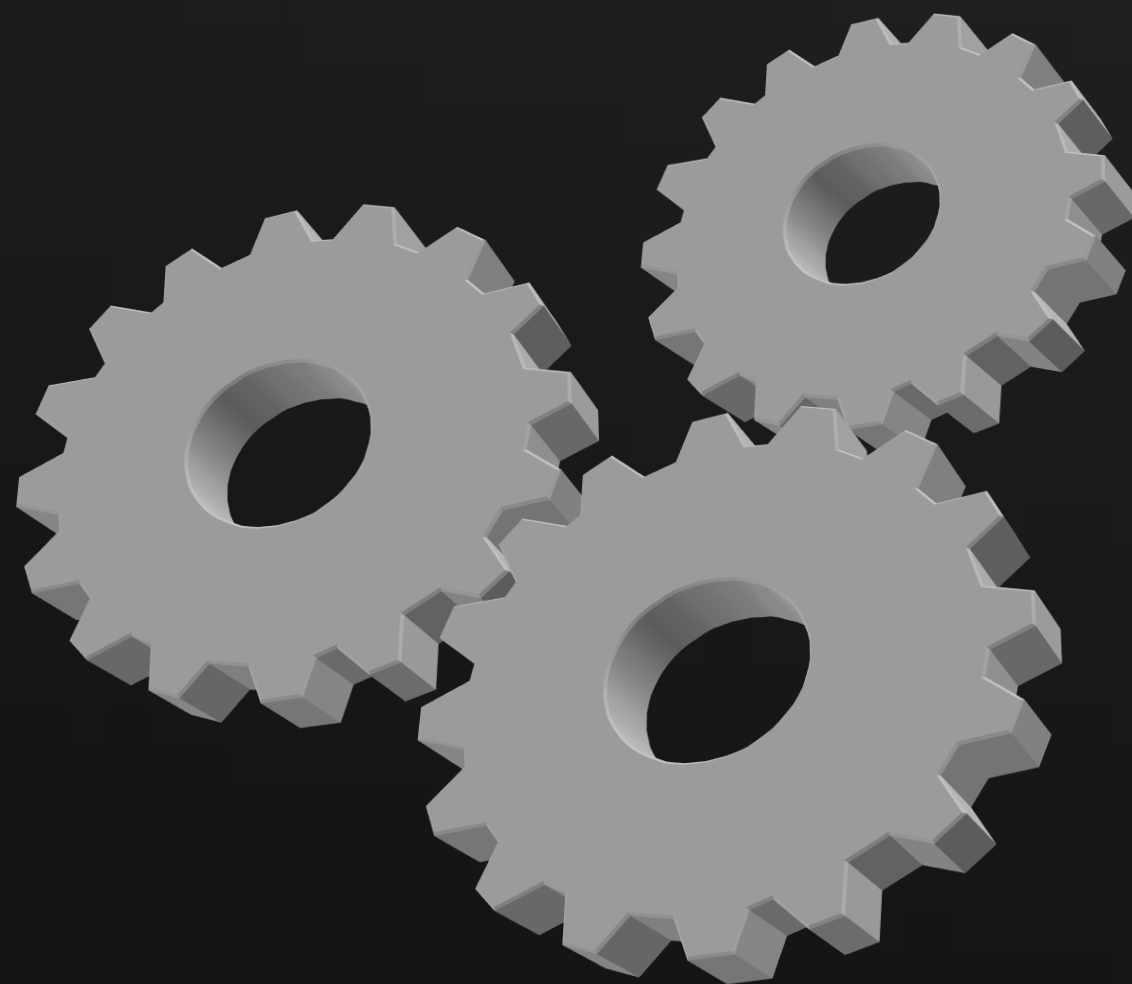
PN	Name	Q	UoM
5439492-01	ATX Box	1	Each
3321929-02	Optical Drive	2	Each
2239193-01	Main Board	1	Each
1120301-01	2GB Memory Chip	4	Each
3329939-01	20cm SATA Cable, class 4	2	Each

Revision?!

Included (examples)	Excluded (examples)
<ul style="list-style-type: none">• Raw materials• Parts / Assemblies• Consumables• User guides• Packaging	<ul style="list-style-type: none">• Manufacturing tools• Manufacturing consumables

Question

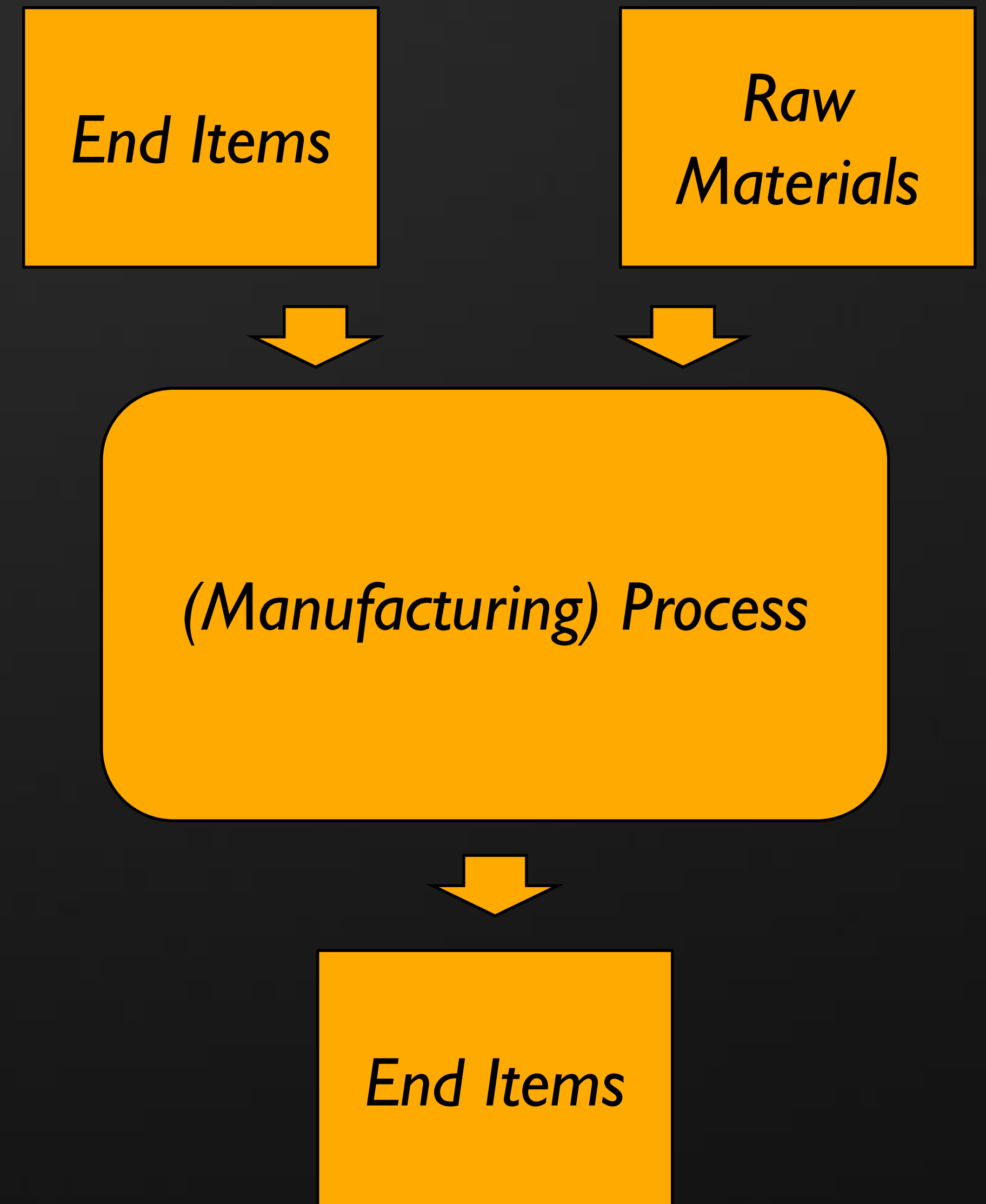
- When looking at a Bill of Materials for a Car, should I be able to find the transmission gears in the BOM?



Answer

End Items?

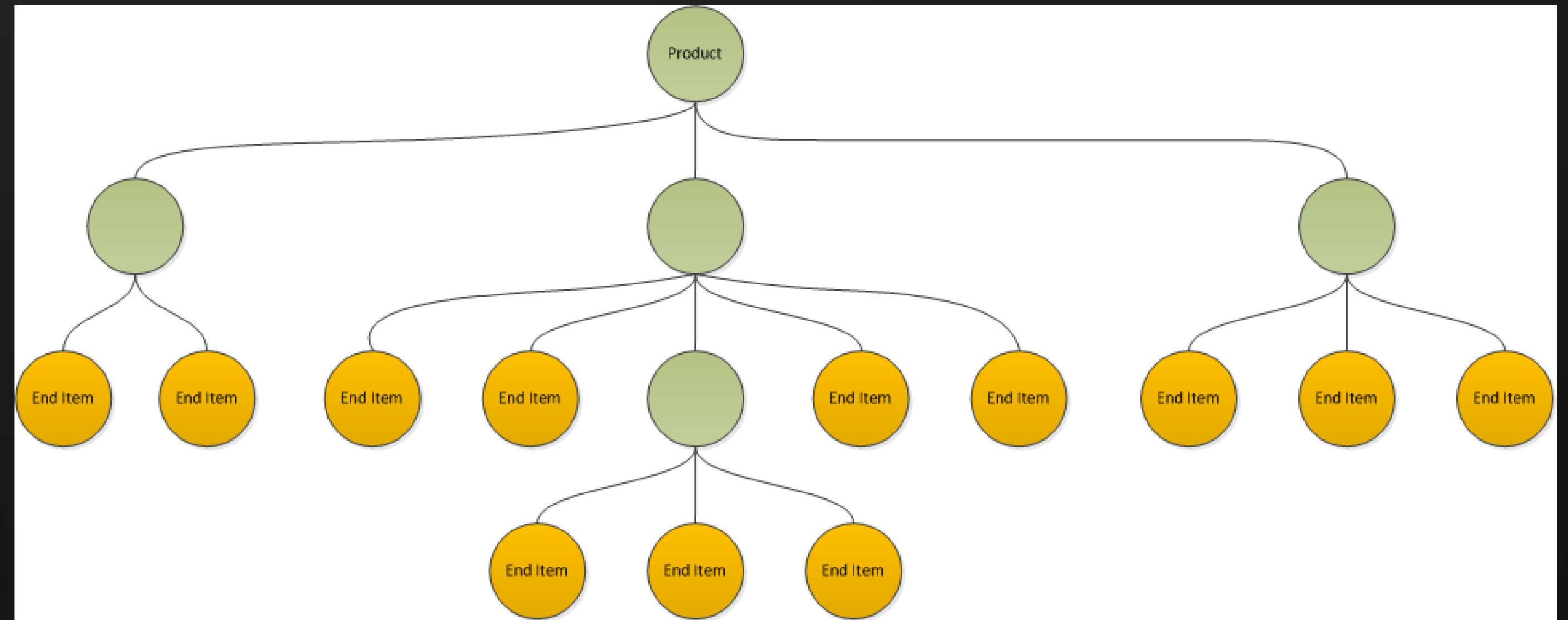
- Made
- Ordered (must have a PN)
- Stocked, Shipped



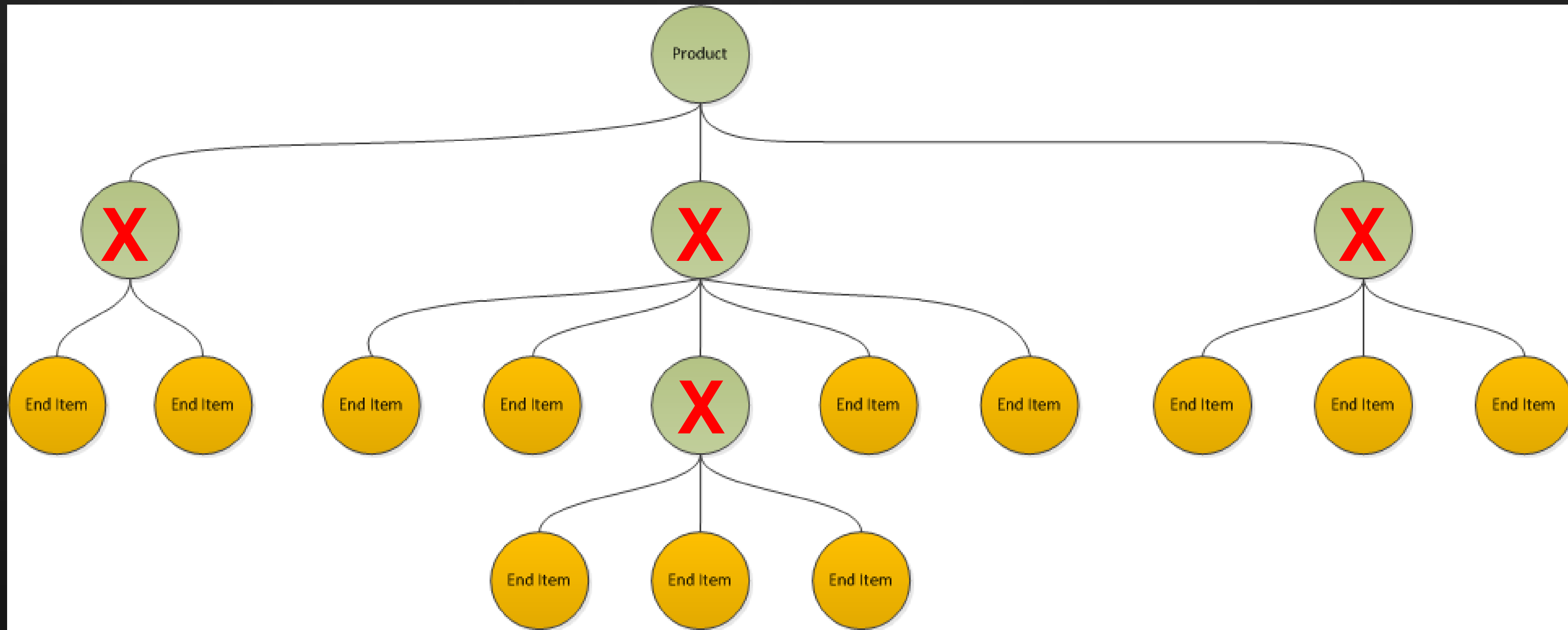
So Is The BOM Simply A List of End Items?

The Case for a Nested BOM

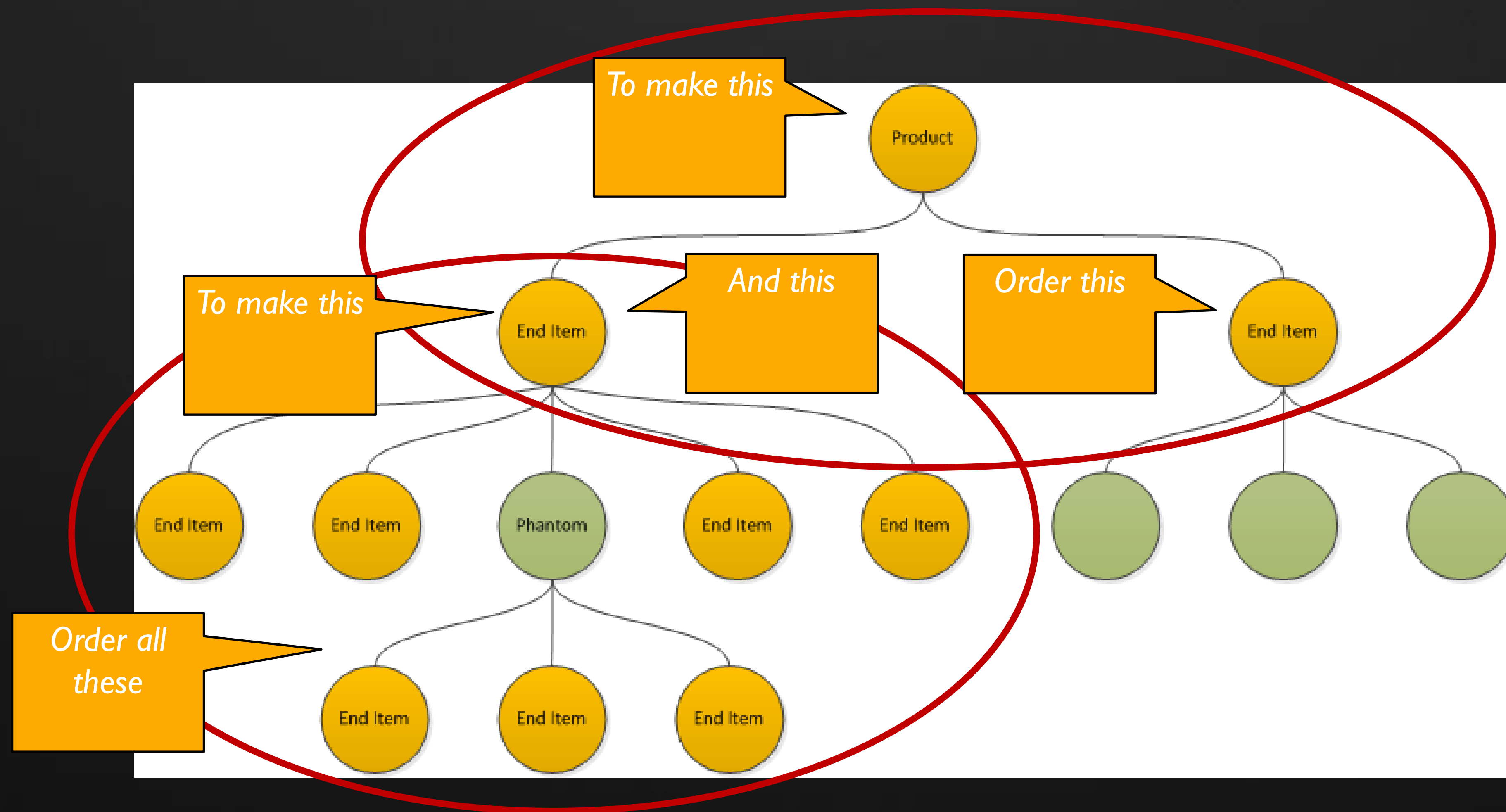
- Design context
- Configuration elements
- Manufacturing planning
- Procurement
- Spare Parts



From Nested BOM To Flat BOM

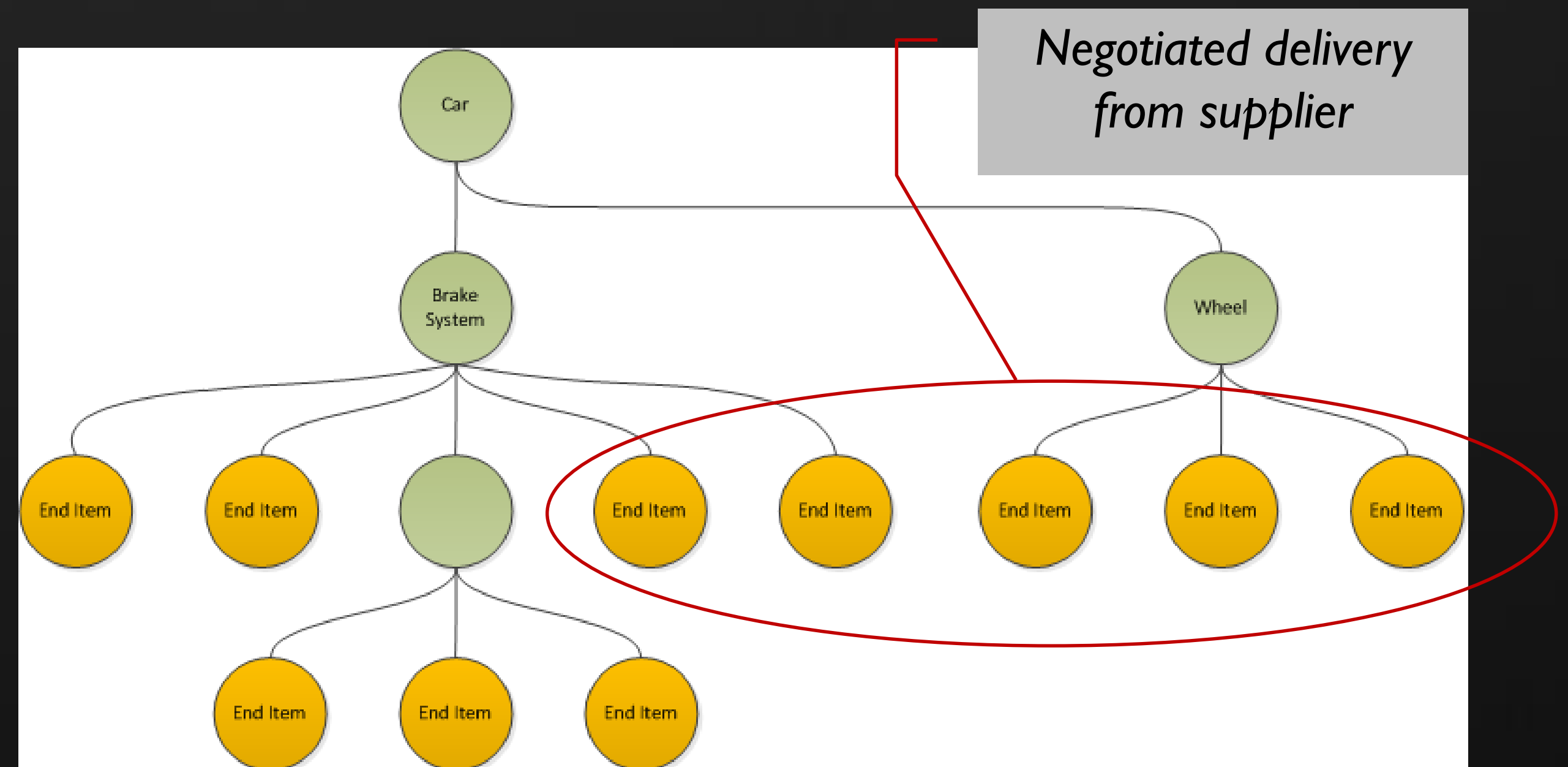


An End Item May Also Have a BOM



Can The Same BOM Have Different Views?

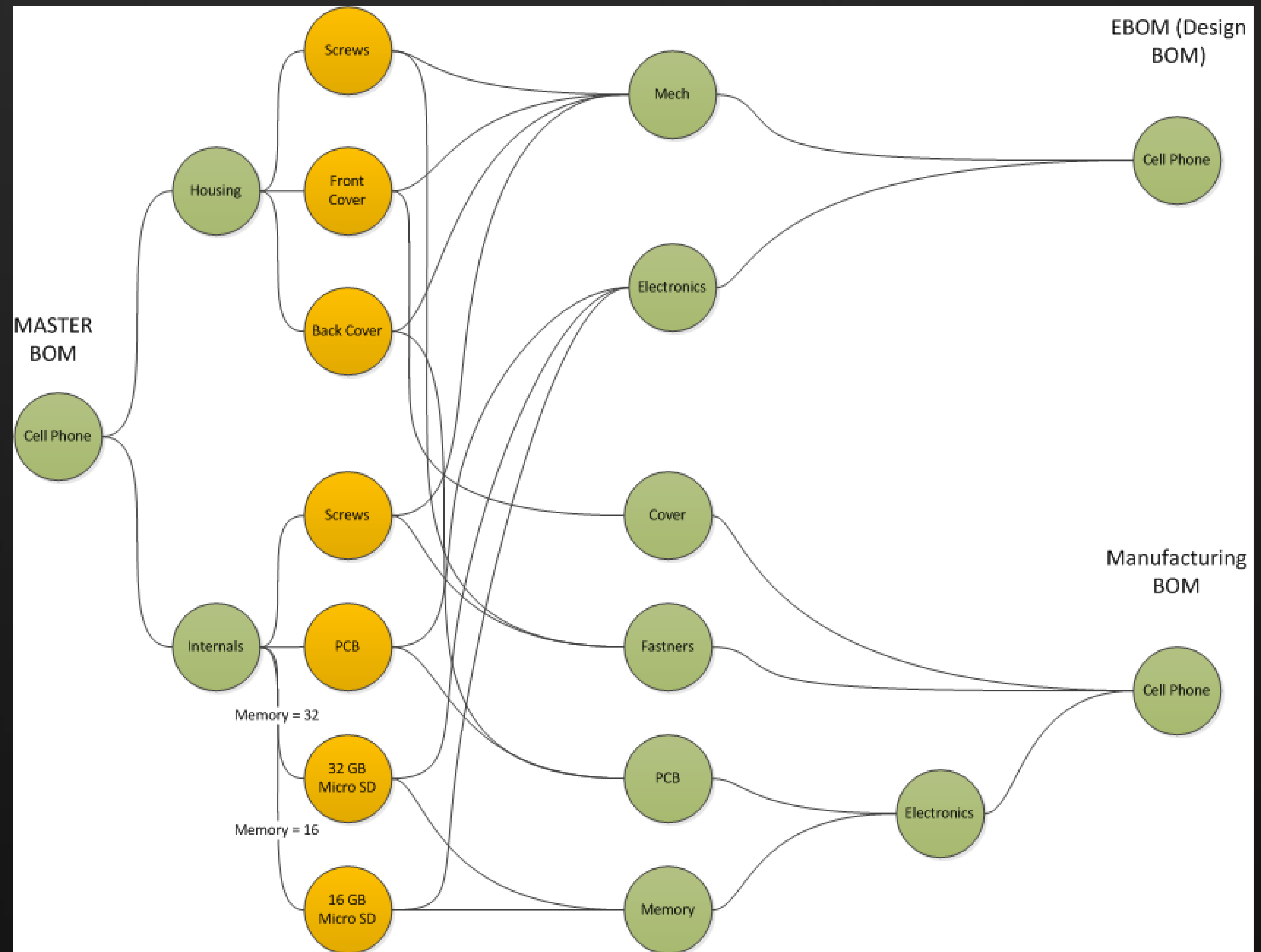
- There are some good reasons to do so
 - In Process Assemblies (IPA) that are different from the Design Context
 - Delayed Make/Buy decisions (or different decision for different facilities)
 - Procurement of Kits
 - Spare Parts Catalog



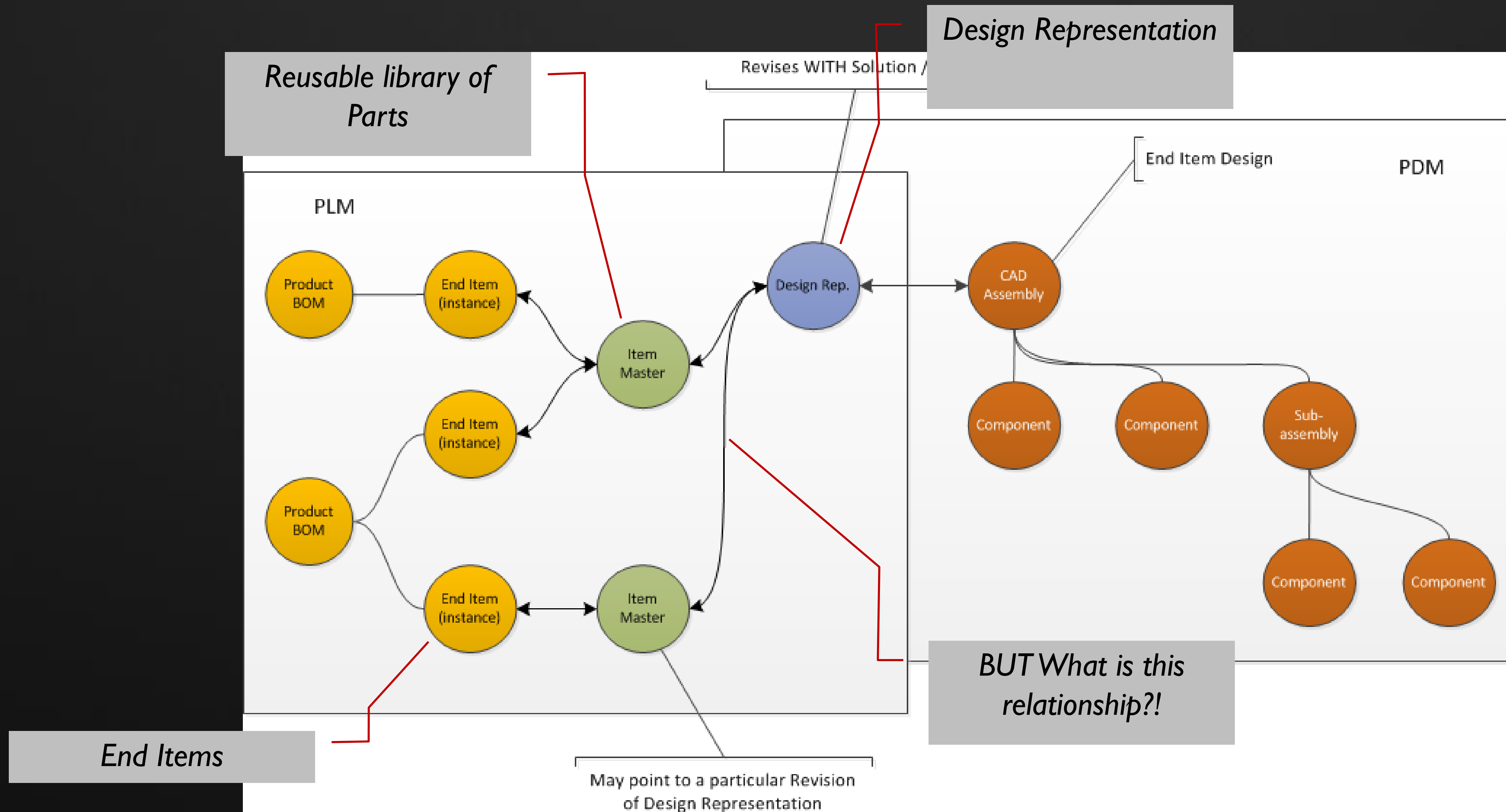
A Model For BOM Derivatives

No cross-departmental information may be stored on the department specific branches!

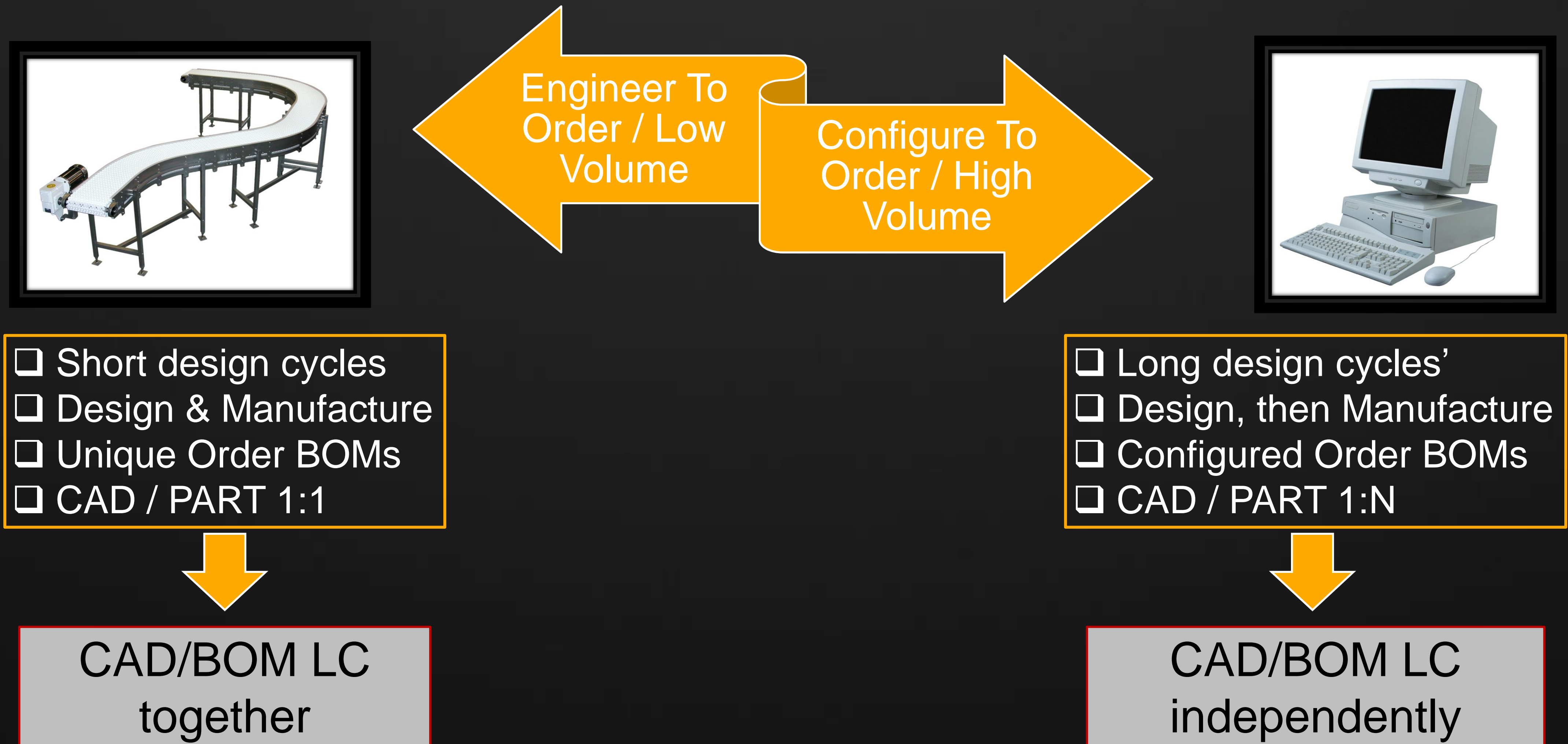
(so where should geometry go?!)



A Model For CAD/BOM Alignment



From Custom To Standard Products



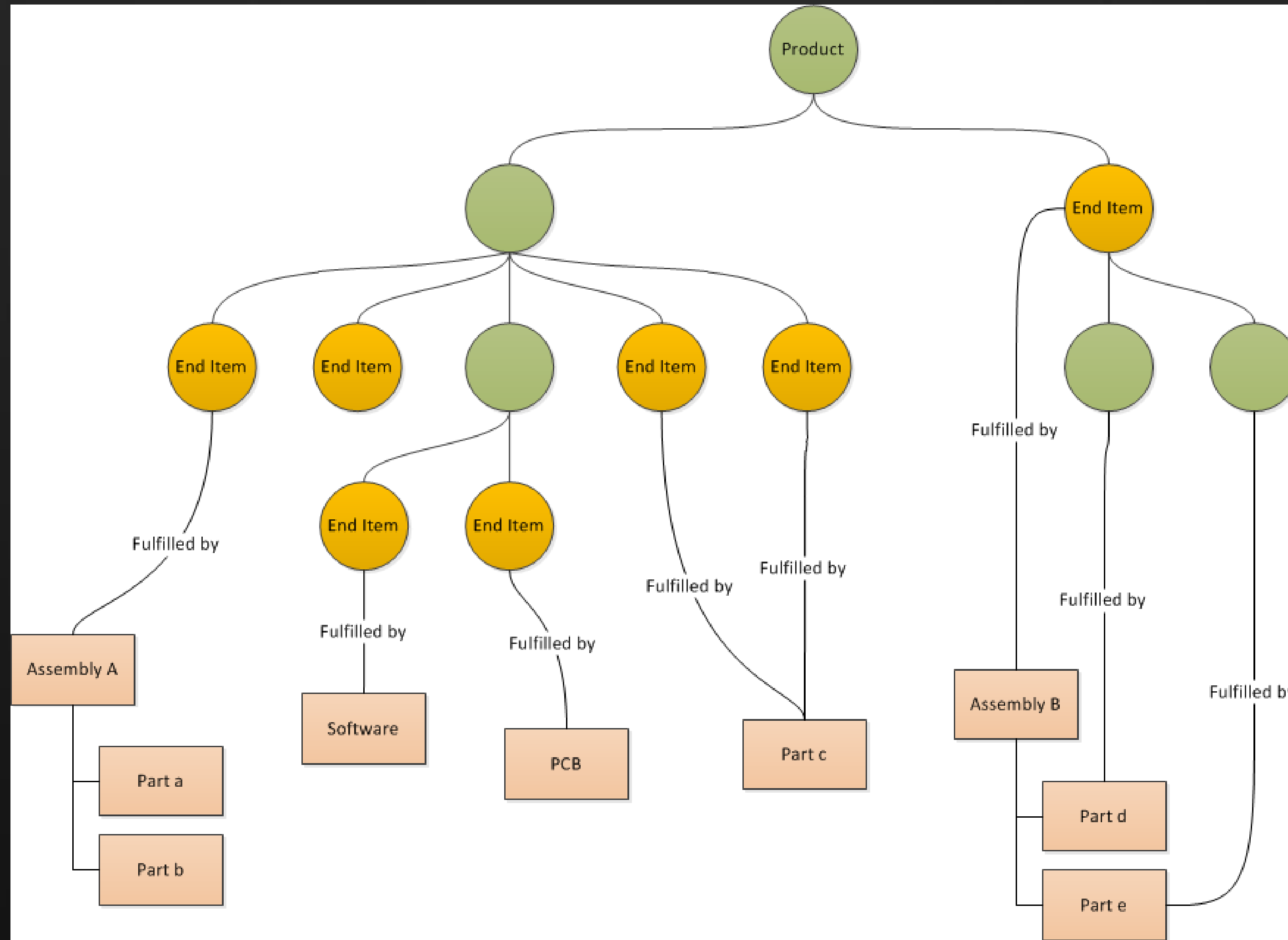
BOM Modeling Example

Product

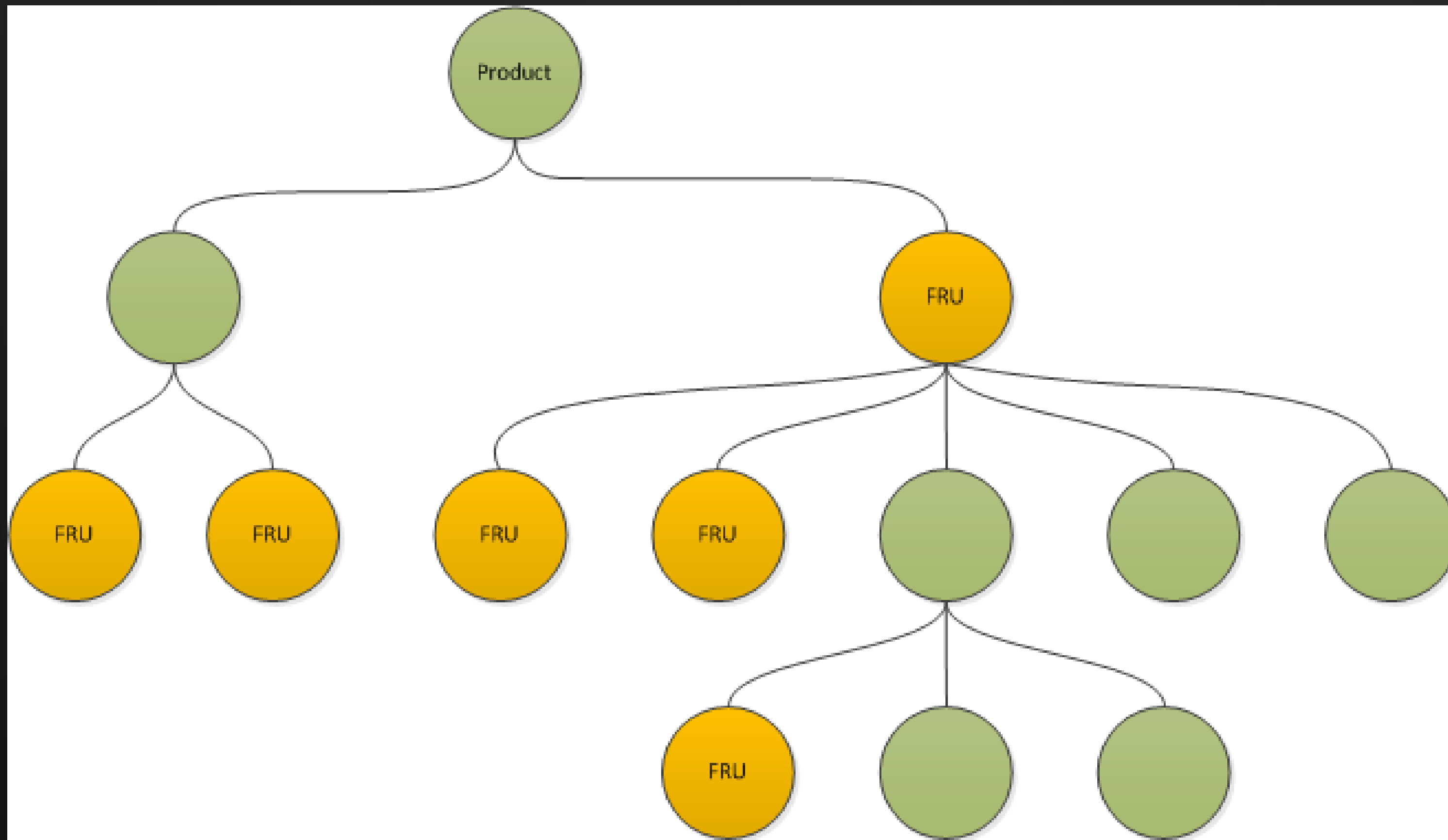
Hierarchy (green)

End Items (yellow)

Design Rep



Spare Parts Catalog – A Special Case



Each item in the Spare Parts catalog is a product

Getting Started With BOMs in PLM 360

BOM in PLM 360

Demo Snippet

- Where is the BOM
- Flat BOM vs. Nested BOM

Autodesk® PLM 360

Home

Main Menu

Reports

Tools

Administration

My Default View

1

Items and BOMs

10-000565-01 - Ultrabright Flashlight (Red) [REV:A]

Lifecycle Production Revision Production A - 02/12/2012 7:19:23 PM

Item Details

Bill of Materials (4)

Where Used (0)

Attachments (0)

Requirements (0)

Sourcing (0)

Associated Change Orders (1)

Change Log (0)

Nested

Flat

#	Item	Lifecycle	Quantity	Units	Ref Des	Supplier/Part No.	Unit Cost	Sub Total
1.1	20-000569-01 - Ultrabright Flashlight Body (Red) [REV:A]	Production	1.0	EA		Mouldco/UBF1231RED	3.67	3.67
1.2	15-000562-01 - TS951ILT Inner Body Assy [REV:A]	Production	1.0	EA			3.79	3.79
2.1	20-000573-01 - Aluminum Structural Frame, FAB [REV:A]	Production	1.0	EA		Lowell, Inc./20-000573-01	3.00	3.00
2.2	50-000564-01 - AAA 2 cell battery holder [REV:A]	Production	1.0	EA		Mouldco/50-000564-01	0.79	0.79
1.3	16-000561-01 - L6920D Flashlight Board Assy [REV:A]	Production	1.0	EA			8.39	8.39
2.1	20-000572-01 - L6920PCB Flashlight Board PCB [REV:A]	Production	1.0	EA		Flicktronix/L6920PCB	1.54	1.54
2.2	50-000551-01 - 47uF 6.3V SM electrolytic capacitor [REV:A]	Production	2.0	EA	C1, C2	Flicktronix/6TBP47M	0.01	0.02
2.3	50-000552-01 - 0.1uF X7R ceramic capacitor [REV:A]	Production	2.0	EA	C3, C4	Flicktronix/EJ2VB1H104K	0.04	0.08
2.4	50-000553-01 - 1nF X7R ceramic capacitor [REV:A]	Production	1.0	EA	C6	Flicktronix/VJ0603Y102KXACW1BC	0.02	0.02
2.5	50-000554-01 - Wire pads [REV:A]	Production	4.0	EA	J1, J2, J3, J4	Flicktronix/WP0-23	0.50	2.00
2.6	50-000555-01 - 10uH inductor [REV:A]	Production	1.0	EA	L1	Flicktronix/DO1608C-103	0.08	0.08
2.7	50-000556-01 - 0.330 1% resistor [REV:A]	Production	2.0	EA	R1, R2	Flicktronix/RL1220S-R33-F	0.60	1.20
2.8	50-000558-01 - 1kO 5% resistor [REV:A]	Production	3.0	EA	R3, R4, R5	Flicktronix/ZZ1220S-R33-F	0.76	2.28
2.9	50-000559-01 - 51kO 5% resistor [REV:A]	Production	1.0	EA	R6	Flicktronix/GC23452	0.12	0.12
2.10	50-000563-01 - SPDT Slide Switch PC Mount [REV:A]	Production	1.0	EA	SW1	Mouldco/KAH8320	1.05	1.05
1.4	50-000566-01 - AAA Battery [REV:A]	Production	1.0	EA		McMaster-Carr Supply Co./71455K62	0.68	0.68
Total								16.53

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Autodesk® PLM 360

BOM Setup

Demo Snippet

- Define properties for Parts & Assemblies
- Include a reference to the Design Representation
- Define properties for the BOM
- Define BOM Relationships

Workspaces General Scripts

Add Field Add Matrix Add Section Cancel

Create new Fields and sections or edit the existing ones. Drag fields

Item Details Fields

▼ Details

Number [Single Line Text]

Item Category [Single Selection]

Title [Single Line Text]

Vault Item [Single Selection]

Unit of Measure [BOM UOM Pick List]

▼ Additional Details (Uncontrolled)

Comments [Paragraph]

1

Defining an Item

BOM is defined in PLM 360 as a collection of Items with Hierarchy

3

BOM Fields

Ref Des [Single Line Text]

Defining the BOM

2

BOM Essentials

Custom Properties

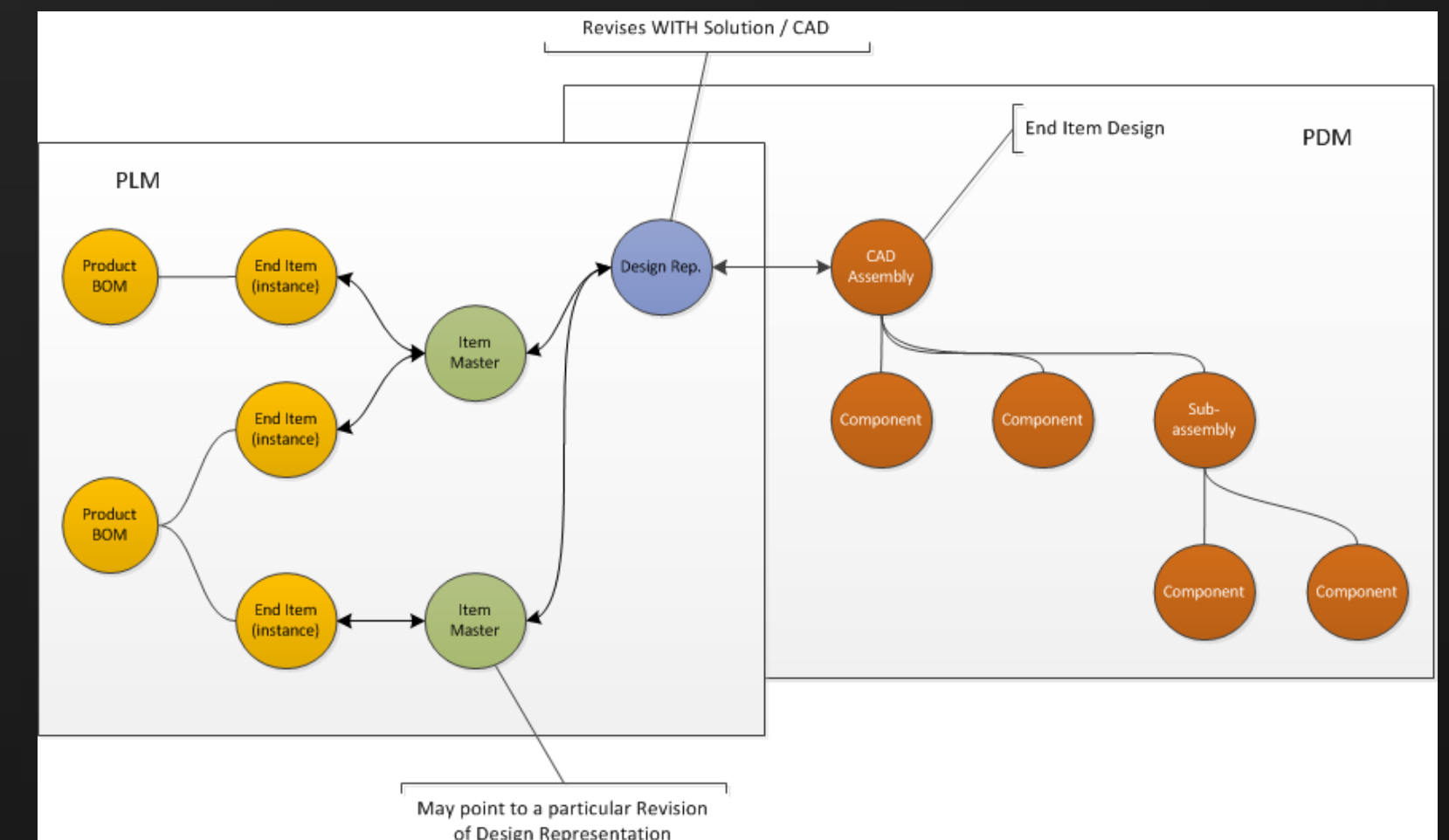
Sourcing

4

#	Item	Lifecycle	Quantity	Units	Ref Des	Supplier/Part No.	Unit Cost	Sub Total
1.1	20-000569-01 - Ultrabright Flashlight Body (Red) [REV:A]	Production	1.0	EA		Mouldco/UBF1231RED	3.67	3.67
1.2	15-000562-01 - TS951ILT Inner Body Assy [REV:A]	Production	1.0	EA			3.79 ⓘ	3.79
2.1	20-000573-01 - Aluminum Structural Frame, FAB [REV:A]	Production	1.0	EA		Lowell, Inc./20-000573-01	3.00	3.00
2.2	50-000564-01 - AAA 2 cell battery holder	Production	1.0	EA		Mouldco/50-000564-01	0.79	0.79

Getting BOM Data to PLM 360

- Author with PLM 360
- Import from Excel
- Import using API (Direct / Middleware)



NOTE: Vault Integration creates a Design Representation of the Vault structure in PLM but does not create a PLM BOM

Import From Excel

- Two Step Process
 - Import Items
 - Import Relationships
- One Step Process
 - Combine data into a single import file

	Parent	Title	Child	Quantity	
BRANCHES & RELATIONSHIPS	13	16-000561-01	L6920D Flashlight Board Assy	20-000572-01	1
	14	16-000561-01	L6920D Flashlight Board Assy	50-000551-01	2
	15	16-000561-01	L6920D Flashlight Board Assy	50-000552-01	2
	16	16-000561-01	L6920D Flashlight Board Assy	50-000553-01	1
	17	16-000561-01	L6920D Flashlight Board Assy	50-000554-01	4
	18	16-000561-01	L6920D Flashlight Board Assy	50-000555-01	1
	19	16-000561-01	L6920D Flashlight Board Assy	50-000556-01	2
	20	16-000561-01	L6920D Flashlight Board Assy	50-000558-01	3
	21	16-000561-01	L6920D Flashlight Board Assy	50-000559-01	1
	22	16-000561-01	L6920D Flashlight Board Assy	50-000563-01	1
END ITEMS	23	20-000569-01	Ultrabright Flashlight Body (Red)		
	24	20-000570-01	LED Ultrabright Flashlight Body		
	25	20-000572-01	L6920PCB Flashlight Board PCB		
	26	20-000573-01	Aluminum Structural Frame, FAB		
	27	50-000551-01	47uF 6.3V SM electrolytic capacitor		
	28	50-000552-01	0.1uF X7R ceramic capacitor		
	29	50-000553-01	1nF X7R ceramic capacitor		
	30	50-000554-01	Wire pads		
	31	50-000555-01	10uH inductor		
	32	50-000556-01	0.33O 1% resistor		
	33	50-000557-01	30kO 5% resistor		
	34	50-000558-01	1kO 5% resistor		
	35	50-000559-01	51kO 5% resistor		
	36	50-000560-01	LumiLed Luxeon		
	37	50-000563-01	SPDT Slide Switch PC Mount		
	38	50-000564-01	AAA 2 cell battery holder		

How The Import File Is Organized

- Parent – Child notation
 - Parent object is duplicated
 - One or no child object referenced in each line

	Parent	Child	Parent Properties			BOM Properties
	A	B	C	D	E	F
1	Parent	Number	vault Item	CAD File	Item Description	Quantity
2	100220	101684	Assembly - 100220 REV:A Eng Release	Assy, Cab.iam	Top Level	2
3	100220	101683	Assembly - 100220 REV:A Eng Release	Assy, Cab.iam	Top Level	2
4	100220	101682	Assembly - 100220 REV:A Eng Release	Assy, Cab.iam	Top Level	4
5	100220	101681	Assembly - 100220 REV:A Eng Release	Assy, Cab.iam	Top Level	2

Import From Excel

Demo Snippet

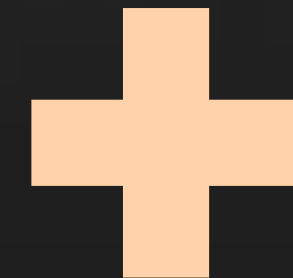
- Show how to import a Vault exported BOM file into PLM
- Show how to auto create the Design Representation links to the Vault Integration items

	A	B	C	D	E	F	G	H	I	J
1	Number	Parent	Vault Item	Title (Item,CO)	Quantity	Category Name	Item Descript	Revision	Units	State
2	100020	100216	Assembly - 100216 REV:A Eng Release	208370.iam	2	Assembly	P_100	A	Each	Releas
3	100021	100400	Assembly - 100400 REV:A Eng Release	2108-3508012.iam	1	Assembly	2108-350801	A	Each	Releas
4	100022	100214	Assembly - 100214 REV:A Eng Release	door left.iam	1	Assembly	Left door	A	Each	Releas
5	100023	100214	Assembly - 100214 REV:A Eng Release	door left.iam	1	Assembly	Left door	A	Each	Releas
6	100024	100214	Assembly - 100214 REV:A Eng Release	door left.iam	1	Assembly	Left door	A	Each	Releas
7	100025	100214	Assembly - 100214 REV:A Eng Release	door left.iam	1	Assembly	Left door	A	Each	Releas
8	100026	100214	Assembly - 100214 REV:A Eng Release	door left.iam	1	Assembly	Left door	A	Each	Releas
9	100027	100214	Assembly - 100214 REV:A Eng Release	door left.iam	1	Assembly	Left door	A	Each	Releas
10	100028	100214	Assembly - 100214 REV:A Eng Release	door left.iam	1	Assembly	Left door	A	Each	Releas
11	100029	100214	Assembly - 100214 REV:A Eng Release	door left.iam	1	Assembly	Left door	A	Each	Releas
12	100030	100214	Assembly - 100214 REV:A Eng Release	door left.iam	1	Assembly	Left door	A	Each	Releas
13	100031	100214	Assembly - 100214 REV:A Eng Release	door left.iam	1	Assembly	Left door	A	Each	Releas
14	100032	100214	Assembly - 100214 REV:A Eng Release	door left.iam	1	Assembly	Left door	A	Each	Releas
15	100033	100214	Assembly - 100214 REV:A Eng Release	door left.iam	1	Assembly	Left door	A	Each	Releas
16	100034	100214	Assembly - 100214 REV:A Eng Release	door left.iam	1	Assembly	Left door	A	Each	Releas
17	100035	100211	Assembly - 100211 REV:A Eng Release	PK46.13.09.000.iam	1	Assembly	PK46.13.09.0	A	Each	Releas
18	100036	100211	Assembly - 100211 REV:A Eng Release	PK46.13.09.000.iam	1	Assembly	PK46.13.09.0	A	Each	Releas
19	100037	100211	Assembly - 100211 REV:A Eng Release	PK46.13.09.000.iam	1	Assembly	PK46.13.09.0	A	Each	Releas

Revision Controlled Workspaces

Parts, Assemblies,
Requirements, Documents are
all Revision Controlled

Revision
Controlled



They get revised by the
Revisioning item (e.g. a Change
Order)

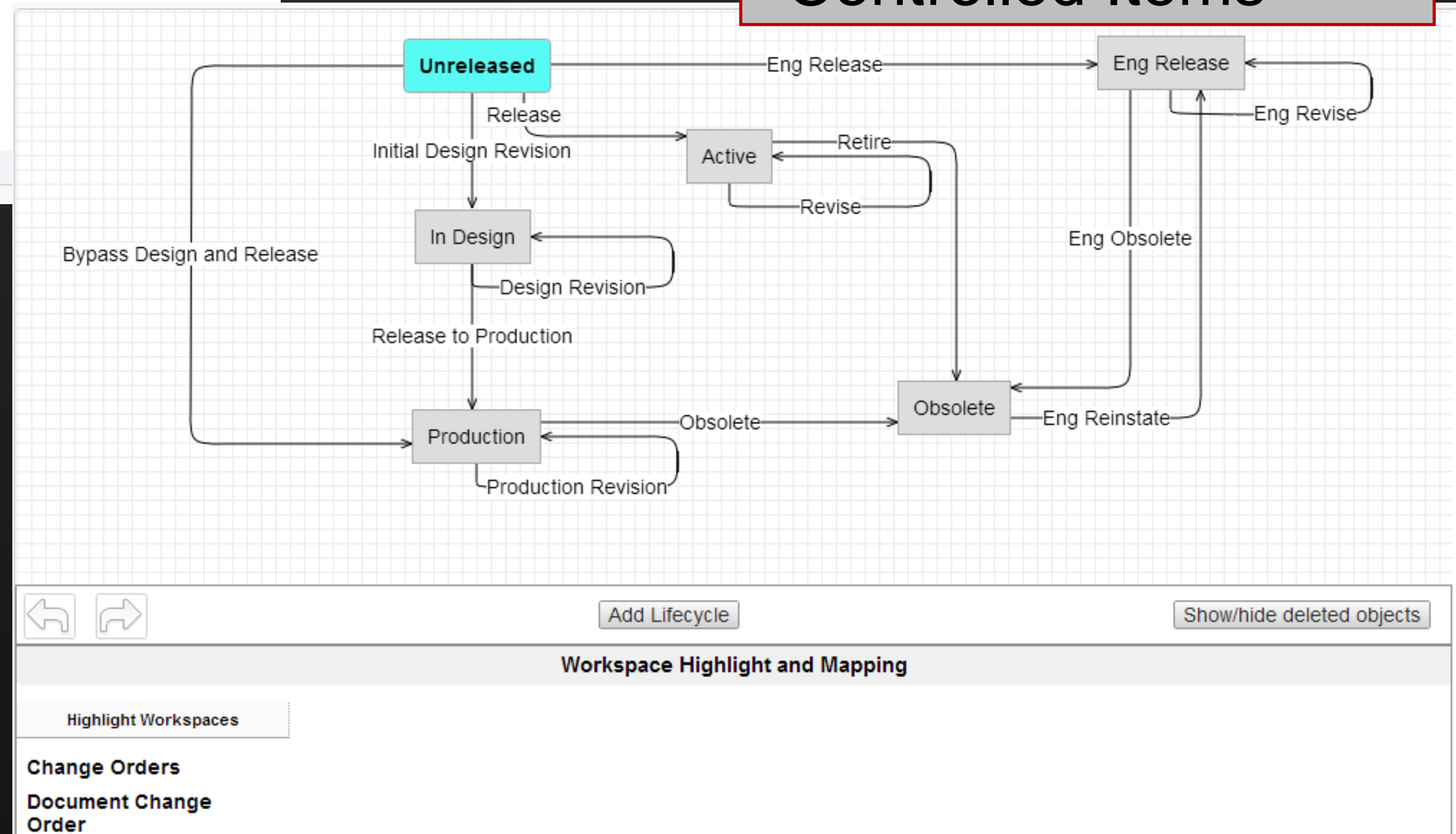
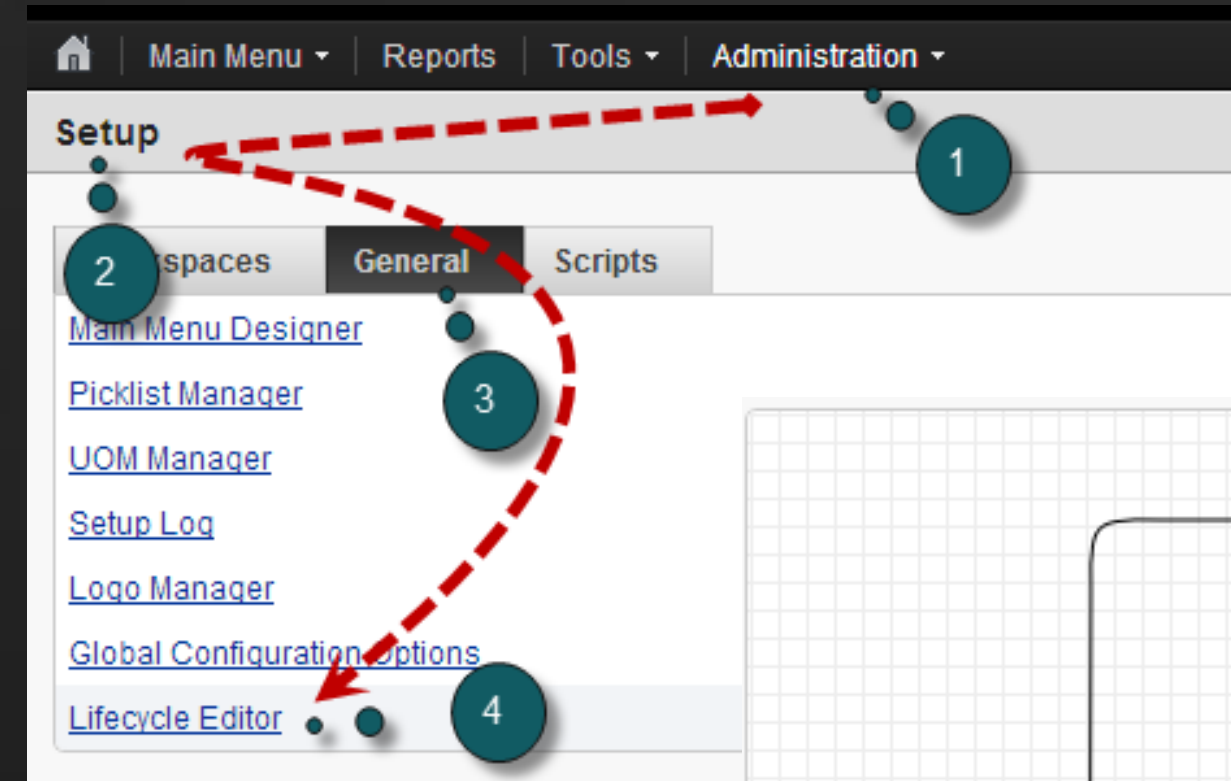
Revisioning

Life Cycle
Management

Setting Up Lifecycle States

Demo Snippet

- Show how to load the Life Cycle editor
- Show how to author states and transitions

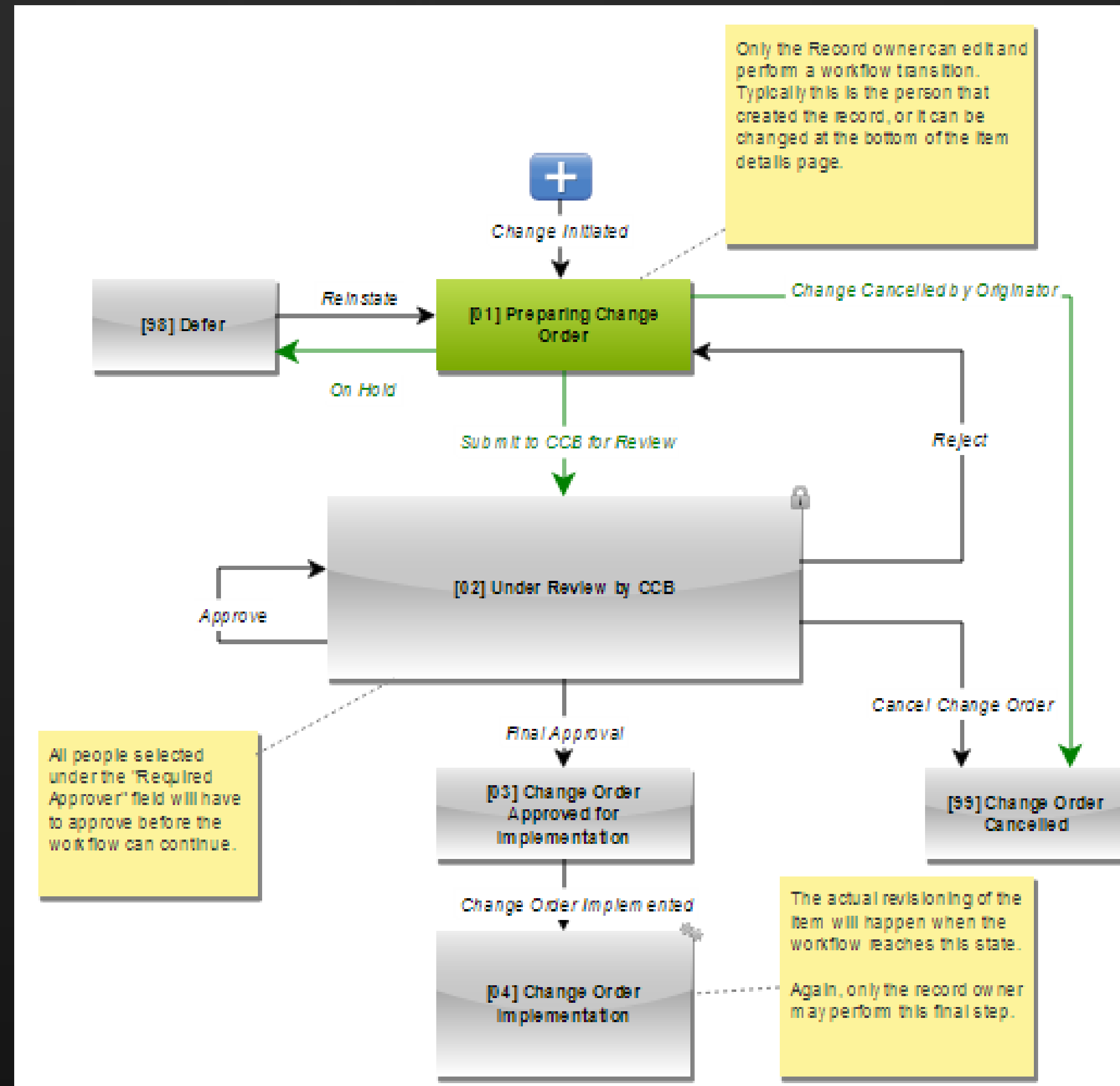


- Revision Controlled items have LC States
- Revisioning items apply the LC States to the Revision Controlled Items

Release Process

Demo Snippet

- Associate a Set of Items to a Change Order
- Configurable Change Order approval process
- Transition the Change Order to completion
- Show the Released Part



Using The BOM

BOM Authoring

Demo Snippet

- Add Parts to a BOM
- Discuss the Working revision
- Discuss Flat BOM vs. Nested BOM

Sourcing

Demo Snippet

- Show how to add Sourcing data
- Demonstrate price rollups

Downstream Uses

Demo Snippet

- Show how to associate to a Part in an inspection process

Summary

What Have We Learned?

- Discussed different types of BOM
- Learned how to map the BOM design to PLM 360
- Experienced some of the built-in abilities of PLM 360 to handle BOM data
 - Hierarchical structure
 - Release process
 - Rollups
- Discussed some downstream implications

What Next?

- *Join me at the Lounge 1:30 to 3:30 PM*

Questions

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&
Requests

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