

# Understanding Autodesk PLM 360 Classification

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# Your Instructors



**Matt Wegmann**

Electrical Components International (ECI)  
Project Manager & Business Process Analyst

Matt Wegmann is the project manager and leader of launching Autodesk PLM 360 software at Electrical Components International, Inc. (ECI), a global leader in wire-harness manufacturing in multiple markets and regions. In his 6 years at ECI Matt has led multiple process-improvement projects using data analytics and a lean approach to impact quality, quoting, engineering, customer service, planning, sales, and finance.



**Hagay Dvir**

Autodesk  
Sr. Product Manager, PLM 360

Hagay is the Product Manager on the PLM 360 team who is responsible for the BOM and Classification functionality and other functionality. Hagay has been with the PLM 360 team for more than 3 years, and has more than 15 years experience with PLM software solutions in general and for manufacturing companies in particular.

# Other Classes You May Be Interested In

- PL7241-P - Linking Virtual Reality to Actuality
  - Advanced use cases in PLM 360 using QR codes, iframes and other features
  - Thursday 8:00am
- PL6349-P - PLM Safari—Adventures from the Field
  - Autodesk PLM 360 Multilevel Approval
  - Thursday 8:00 am

# Key learning objectives

At the end of this class, you will be able to:

- Understand initial features of classification tool
- Learn how to create a classification schema
- Learn how to use efficient practices for implementation of feature
- Look to the future of classification in Autodesk PLM 360

# Confidentiality

- **Today's discussion is covered under the non-disclosure section of the Autodesk Participation Agreement.**
- **The information we will be sharing is highly confidential, and is to be shared within your company on “need to know basis” and to no one outside your company.**



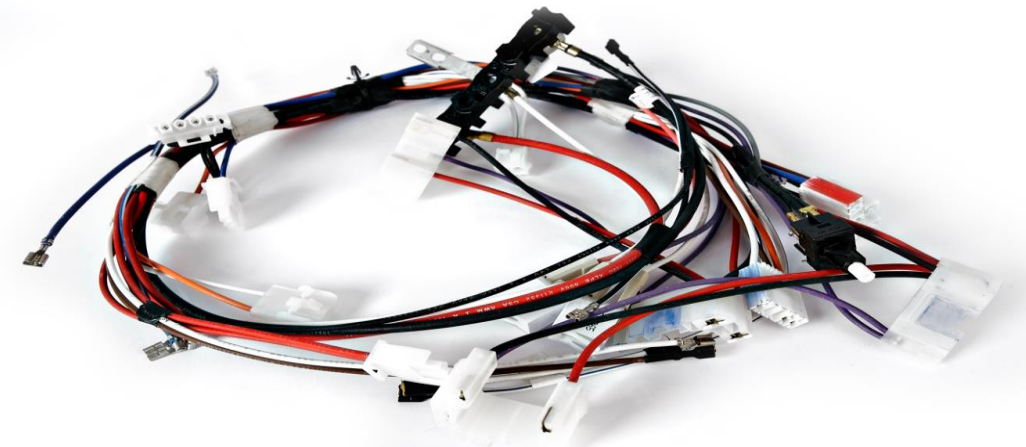
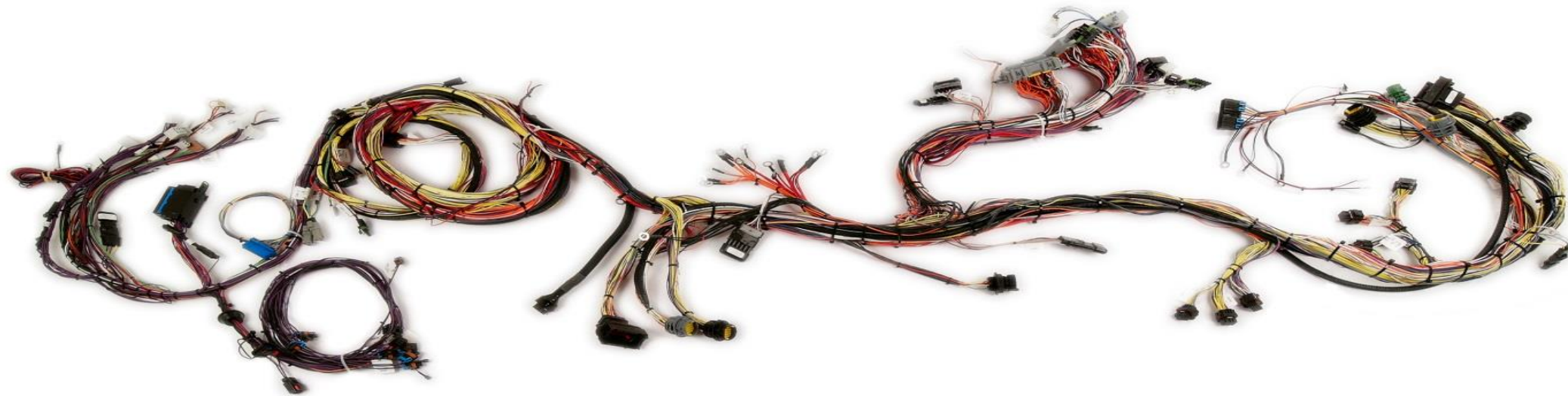
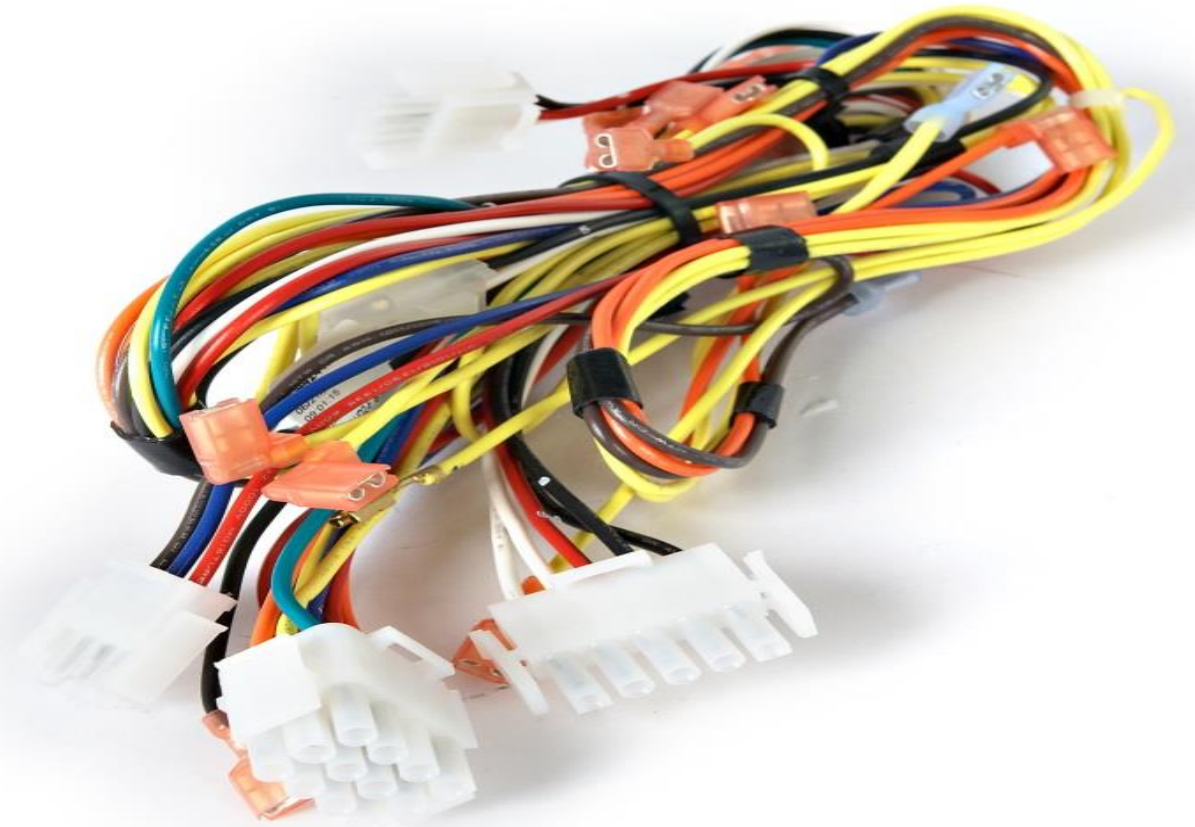
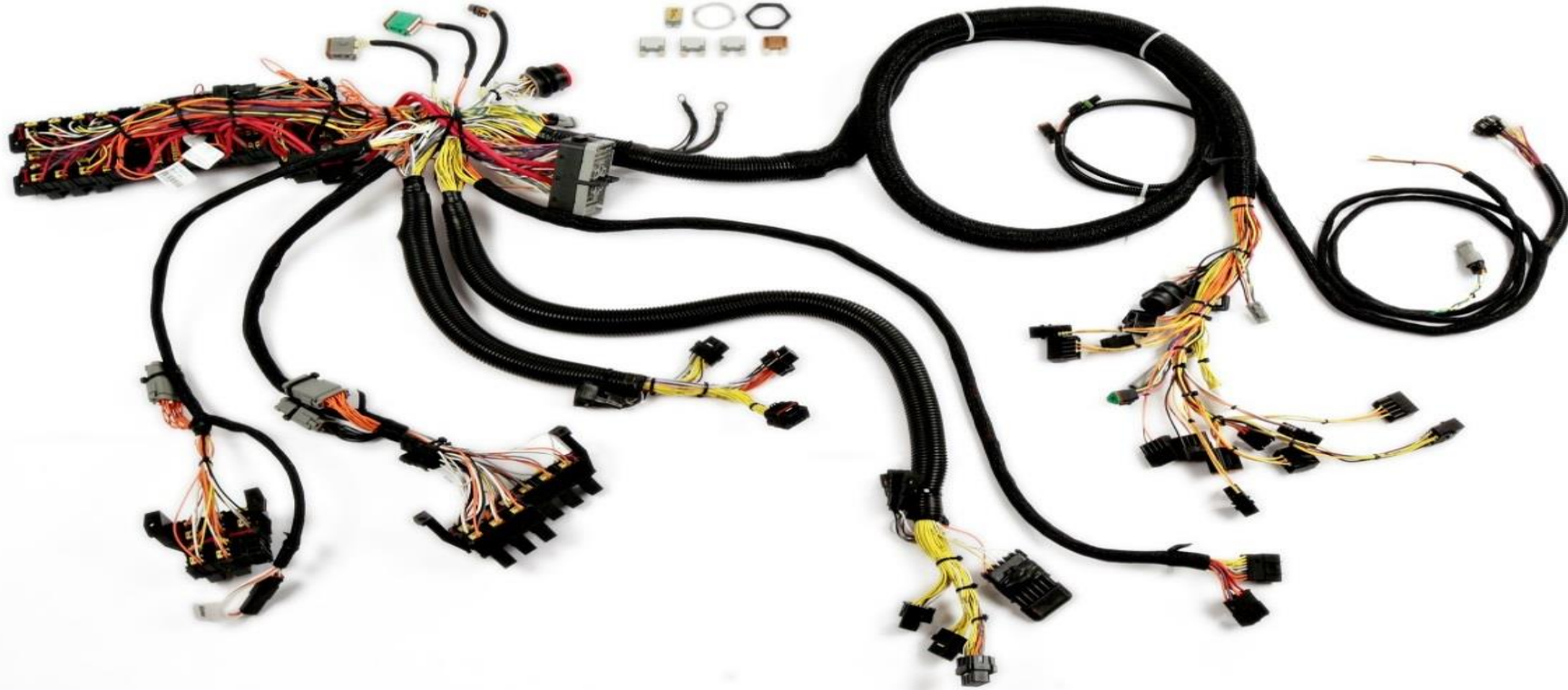
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# ECI Background



Electrical Components  
International  
*Service is Everything!*





# ECI Background



**Electrical Components  
International**  
*Service is Everything!*





# Material Classification & Metadata Management at ECI

## Problem Statement:

- ECI lacks normalized material data on a global scale at a time when our engineering departments are becoming more globally focused.

## Issues:

- 60,000 Raw Materials Globally
- Multiple ERP Systems/Environments
- Multiple Languages
- Multiple Intelligent Part Numbering Schema

# Material Classification & Metadata Management at ECI

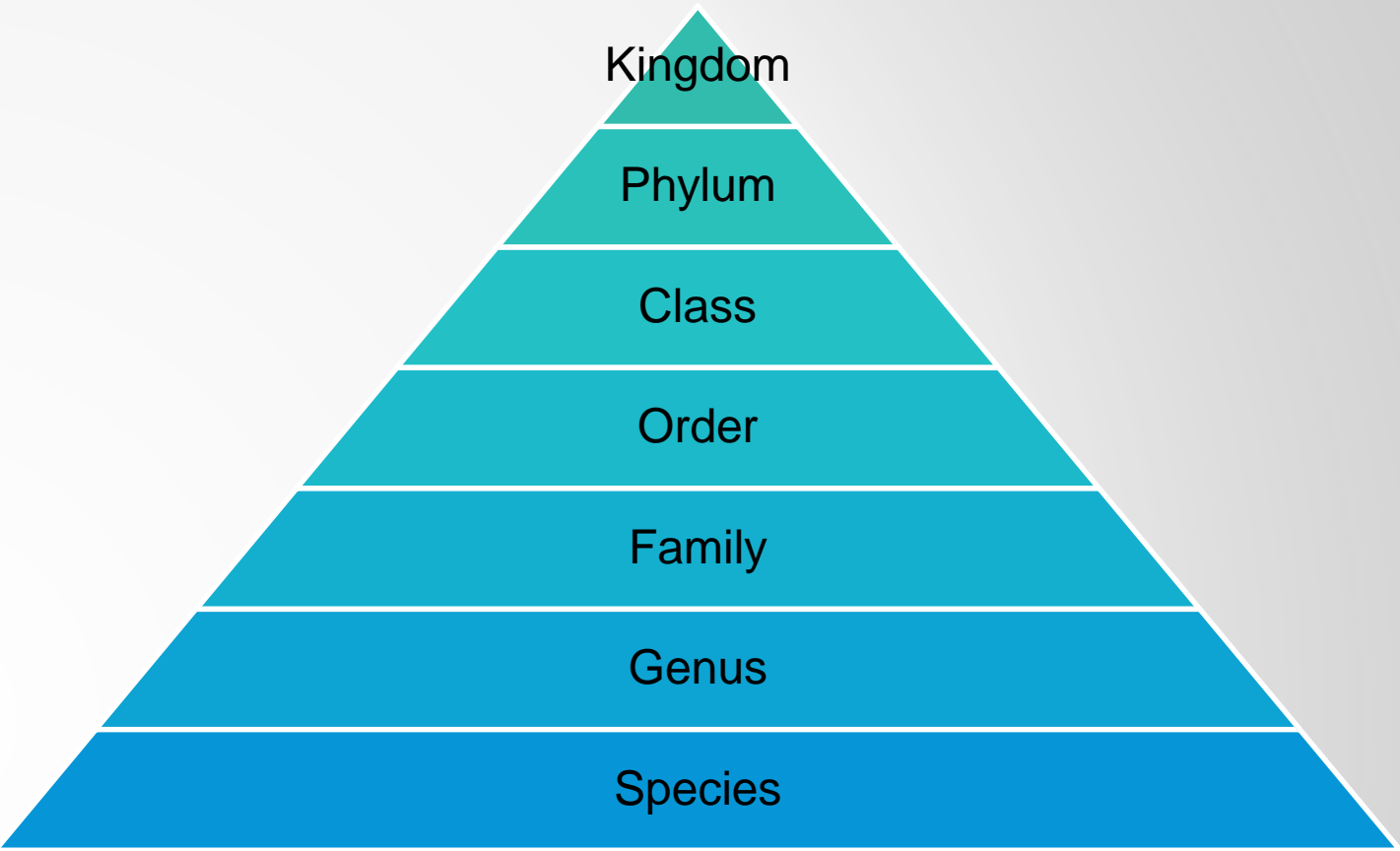
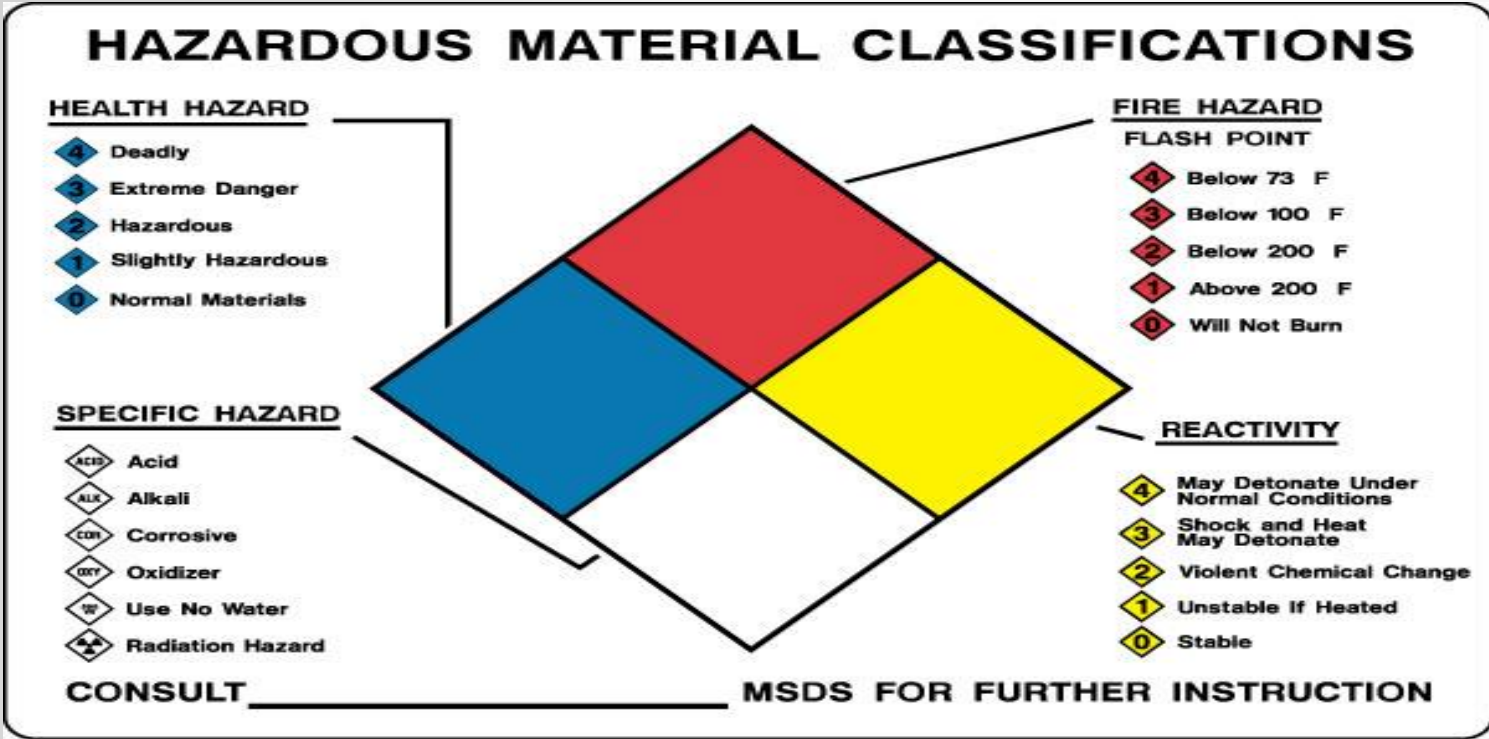
## Current locations of material metadata:

- Part Descriptions & Intelligent Part Numbers
- Individual, Department, or Facility Managed Excel Workbooks
- Supplier Websites & Specification Sheets
- Plant Specific 4 field classification table (Class, SubClass, Data Field, Data)

# Introduction to Classification



# Introduction to Classification



hydrogen 1 H 1.0079																		helium 2 He 4.0026											
lithium 3 Li 6.941		beryllium 4 Be 9.0122																		neon 10 Ne 20.180									
sodium 11 Na 22.990		magnesium 12 Mg 24.305																		argon 18 Ar 39.948									
potassium 19 K 39.098		calcium 20 Ca 40.078																		krypton 36 Kr 83.80									
rubidium 37 Rb 85.468		strontium 38 Sr 87.62																		xenon 54 Xe 131.29									
cesium 55 Cs 132.91		barium 56 Ba 137.33		57-70 ★																		radon 86 Rn [222]							
francium 87 Fr [223]		radium 88 Ra [226]		89-102 ★ ★																									
																		boron 5 B 10.811		carbon 6 C 12.011		nitrogen 7 N 14.007		oxygen 8 O 15.999		fluorine 9 F 18.998		helium 10 Ne 20.180	
																		aluminum 13 Al 26.982		silicon 14 Si 28.086		phosphorus 15 P 30.974		sulfur 16 S 32.065		chlorine 17 Cl 35.453		argon 18 Ar 39.948	
																		gallium 31 Ga 69.723		germanium 32 Ge 72.61		arsenic 33 As 74.922		selenium 34 Se 78.96		bromine 35 Br 79.904		krypton 36 Kr 83.80	
																		indium 49 In 114.82		tin 50 Sn 118.71		antimony 51 Sb 121.76		tellurium 52 Te 127.60		iodine 53 I 126.90		xenon 54 Xe 131.29	
																		thallium 81 Tl 204.38		lead 82 Pb 207.2		bismuth 83 Bi 208.98		polonium 84 Po [209]		astatine 85 At [210]		radon 86 Rn [222]	
																		ununquadium 114 Uuq [289]											

Lanthanide series

Actinide series

lanthanum 57 La 138.91	cerium 58 Ce 140.12	praseodymium 59 Pr 140.91	neodymium 60 Nd 144.24	promethium 61 Pm [145]	samarium 62 Sm 150.36	europium 63 Eu 151.96	gadolinium 64 Gd 157.25	terbium 65 Tb 158.93	dysprosium 66 Dy 162.50	holmium 67 Ho 164.93	erbium 68 Er 167.26	thulium 69 Tm 168.93	ytterbium 70 Yb 173.04
actinium 89 Ac [227]	thorium 90 Th 232.04	protactinium 91 Pa 231.04	uranium 92 U 238.03	neptunium 93 Np [237]	plutonium 94 Pu [244]	americium 95 Am [243]	curium 96 Cm [247]	berkelium 97 Bk [247]	californium 98 Cf [251]	einsteinium 99 Es [252]	fermium 100 Fm [257]	mendelevium 101 Md [258]	nobelium 102 No [259]

THE FUJUITA-PEARSON TORNADO INTENSITY SCALE		
CLASSIFICATION	WIND SPEED	DAMAGE
F0	40–72 mph	Mild
F1	73–112 mph	Moderate
F2	113–157 mph	Significant
F3	158–206 mph	Severe
F4	207–260 mph	Devastating
F5	260–319 mph	Incredible
F6	319–379 mph	Inconceivable



# Introduction to Classification

155-0012-000 - 3/8 X 5/8 in Long, SHCS Drive, [REV:A]

Lifecycle Production Revision Production A Effective 01/02/2013

Item Details Bill of Materials (0) Where Used (2) Attachments (0) Requirements (0) Sourcing (0) Associated Change Orders (1)

Edit

Wire Distinction ( 1 of 7 )(CLASSIFICATIONPREVIEW05)

Details ( 2 of 7 )

Number 155-0012-000

Use Auto Description ☒

Description 3/8 X 5/8 in Long, SHCS Drive,

Unit of Measure Each

Classification ( 3 of 7 )

Classification FASTENERS (Inch)

Level 2 SCREW

Level 3 SOCKET CAP

Class Number 155

Class Description 155 - FASTENERS (Inch) - SCREW - SOCKET CAP

Classification Attributes ( 4 of 7 )

Attribute	Value	Units	Separator
Thread Size	3/8		X
Length	5/8	in	Long,
Drive Type	SHCS		Drive,
Finish			Finish,
Material			
Custom Description			

- Current Option in PLM 360
  - Class Section
    - Filtering Picklist from a Classification Workspace
  - Attribute Section
- Issues:
  - Non Variable # Attributes
  - Limited data validations
  - Does not provide any structure to the class or fields

# Demo

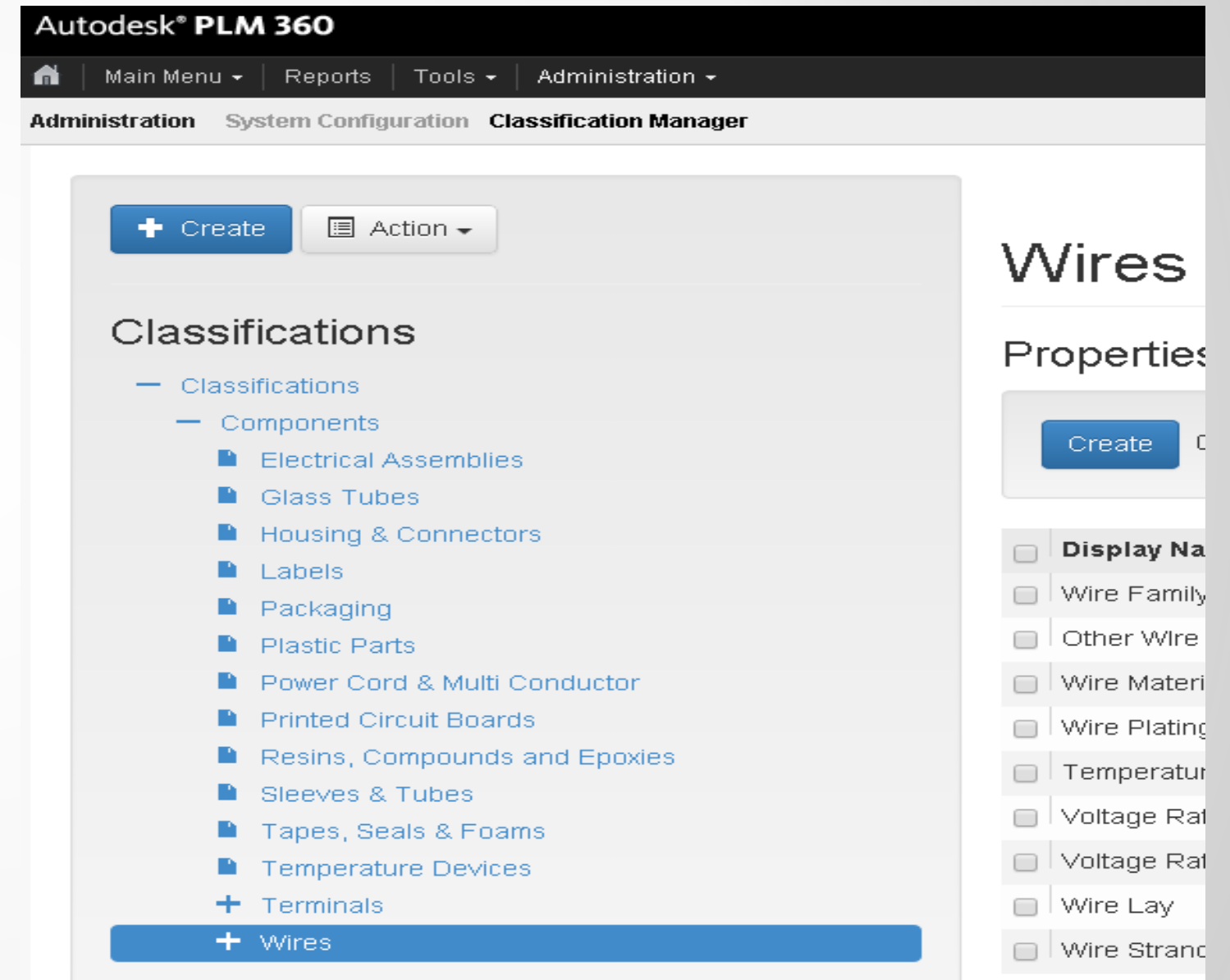
# Create A Classification Structure



# Demo Recap

## Classification Admin Screens

- Create Classification Hierarchy
  - Create a “Root” node
  - Create Classes
  - Fields are inherited



# Demo Recap

## Classification Admin Screens

- Create New Fields
  - Unique System Name
  - Field Types
    - Text, Number, Pick list
  - Set pick list defaults
- Constraints & Overrides
  - Required or Read Only
  - Min, Max & Range value constraints
  - Override feature is inherited

The screenshot shows the 'New Field' dialog box overlaid on the 'Wires' Properties screen. The dialog box contains the following fields:

- Display Name \***: A text input field.
- System Name \***: A text input field.
- Default Value**: A text input field.
- Description**: A text input field.
- Field Type \***: A dropdown menu with 'Select Type' as the current selection.

At the bottom of the dialog box, there is a note: '\* Required Fields'. Below this, there are two buttons: 'Cancel' and 'Create'.

The background screen shows the 'Wires' Properties section with a 'Create' button and a list of properties: Display Name, Wire Family, Other Wire Style, Wire Material, Wire Plating, Temperature - Max, Voltage Rating (AC), Voltage Rating (DC), Wire Lay, and Wire Strands.

# Demo Recap

## Associate Class Root To Workspace Section

- Items in a workspace are classified by adding a Classification Section to the Workspace
- Any level in the classification structure can be used as the root for a workspace
- Items in the workspace can be classified anywhere below that root

The image shows two overlapping dialog boxes from an Autodesk software interface. The top dialog, titled "Editing a Section", has a "Save" button and a "Cancel" button. It contains the following fields:

- Section Name:** "Wire Distinction" (with a tooltip: "The section name that you wish to be displayed on the item details tab")
- Description:** (empty text area with a tooltip: "A description for this section and any notes (optional)")
- Classification:** "CLASSIFICATIONPREVIEW" (with a "Change Root" link and a tooltip: "Choose the root classification for items created in this workspace. The item creator will be able to use this classification or any child of this classification.")
- Workflow:** (checkbox, with a tooltip: "If Workflow Locking is checked, the fields in this section are editable only by those users who have permission to perform a workflow action and the workflow has not reached the lock state")
- Show Advanced Permission Options:** (checkbox, with a tooltip: "Show options for restricting section access to any user group. Use the feature to override normal permission settings.")
- Use:** (checkbox)

The bottom dialog, titled "Select Classification", shows a tree structure of classifications. The "Wire" classification is selected and highlighted in blue. The tree structure is as follows:

- CLASSIFICATIONPREVIEW05
  - Wire (selected)
  - Insulated
  - Non-Insulated
  - Quality RMA
  - Terminal
  - Housings & Connectors
  - Temperature Devices
  - Tapes, Seals, & Foams
  - Resins, Compounds, Epoxies
  - RMA

At the bottom of the "Select Classification" dialog are "Ok" and "Cancel" buttons. A large yellow curved arrow points from the "Change Root" link in the "Editing a Section" dialog to the "Select Classification" dialog.



# Demo Recap

## Associate Class Root To Workspace Section

- Classification section performs similarly to a normal item detail section
  - Name/Description Fields
  - Permission restriction tools

The screenshot shows the 'Editing a Section' dialog box in Autodesk PLM 360. The dialog has a title bar with 'Autodesk® PLM 360' and a navigation bar with 'Main Menu', 'Reports', 'Tools', and 'Administration'. Below the navigation bar are tabs for 'Administration', 'Items and BOMs', and 'Workspace Layout'. The dialog itself has a 'Save' button and a 'Cancel' button at the top right. It contains several fields and sections:

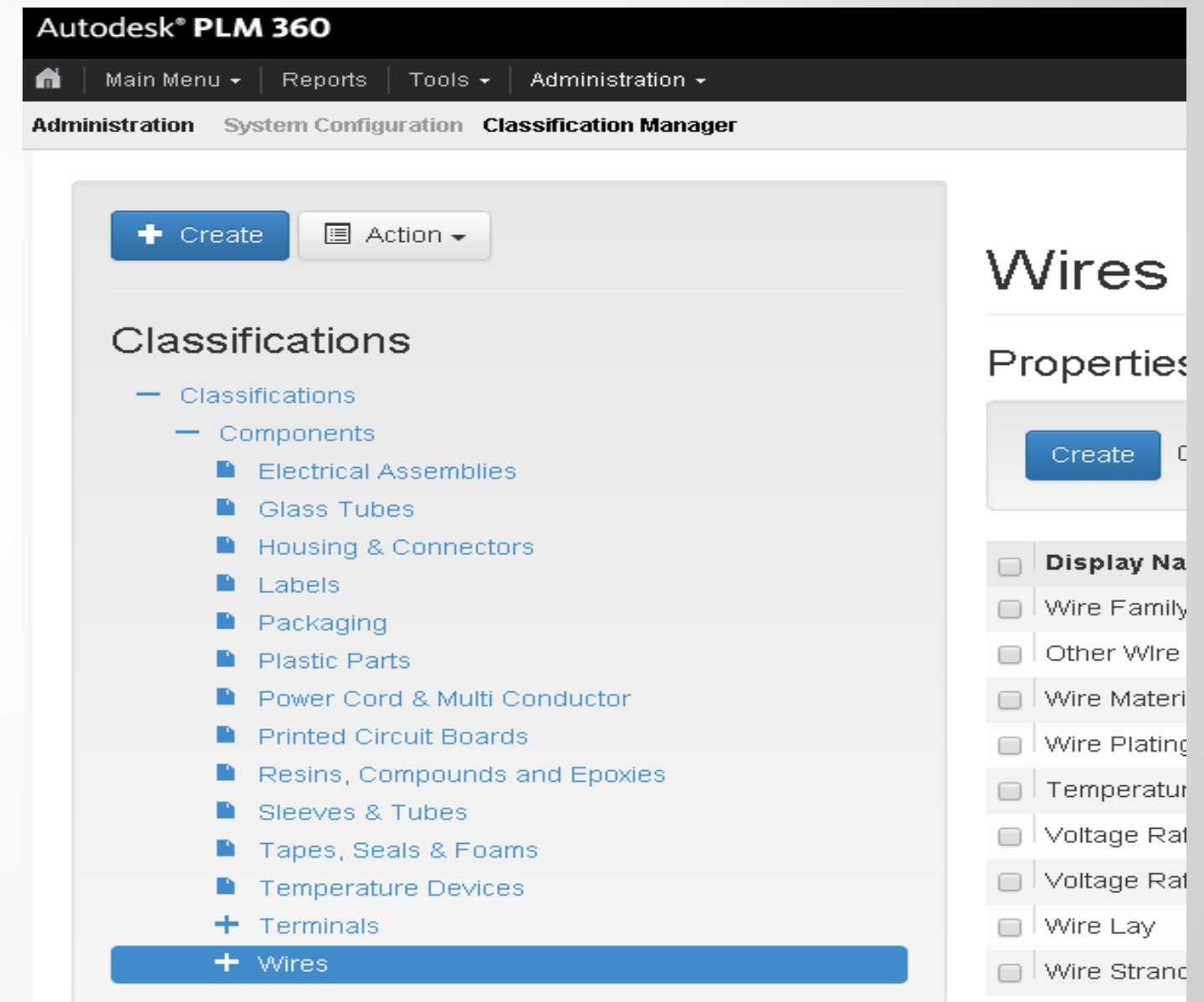
- Section Name:** A text field containing 'Wire Distinction'. A tooltip says: 'The section name that you wish to be displayed on the item details tab'.
- Description:** A large text area. A tooltip says: 'A description for this section and any notes (optional)'.
- Classification:** A dropdown menu showing 'CLASSIFICATIONPREVIEW' and a 'Change Root' link. A tooltip says: 'Choose the root classification for items created in this workspace. The item creator will be able to use this classification or any child of this classification.'.
- Workflow Locking:** A checkbox that is currently unchecked. A tooltip says: 'If Workflow Locking is checked, the fields in this section are editable only by those users who have permission to perform a workflow action and the workflow has not reached the lock state'.
- Show/Hide Advanced Permission Options:** A checkbox that is currently checked. A tooltip says: 'Show options for restricting section access to any user group. Use the feature to override normal permission settings.'.
- Specify restricted user groups:** This section contains two lists of user groups. The 'All Groups' list includes: Admin Group, Administration [SYSTEM], Customers, Engineering, Executive, Legal, Manufacturing, Operations, Procurement, Program & Project Management, Quality, and Sales & Marketing. The 'Restricted Groups: View-only' list is empty. The 'Restricted Groups: Edit' list is also empty. To the right of these lists, a tooltip says: 'To restrict section access to specific user groups: Move the group from the All Groups box to the Restricted Groups box for the level of access you want to grant: View-only or Edit'.
- Note:** A note at the bottom of the 'Specify restricted user groups' section states: 'Note: If you restrict section access to any user group, all other user groups are denied access to the section.'
- Collapse:** A checkbox that is currently unchecked. A tooltip says: 'Collapse this section on item details'.

At the bottom of the dialog are 'Save' and 'Cancel' buttons.

# Demo Recap

## Lessons Learned and Recommended Practices

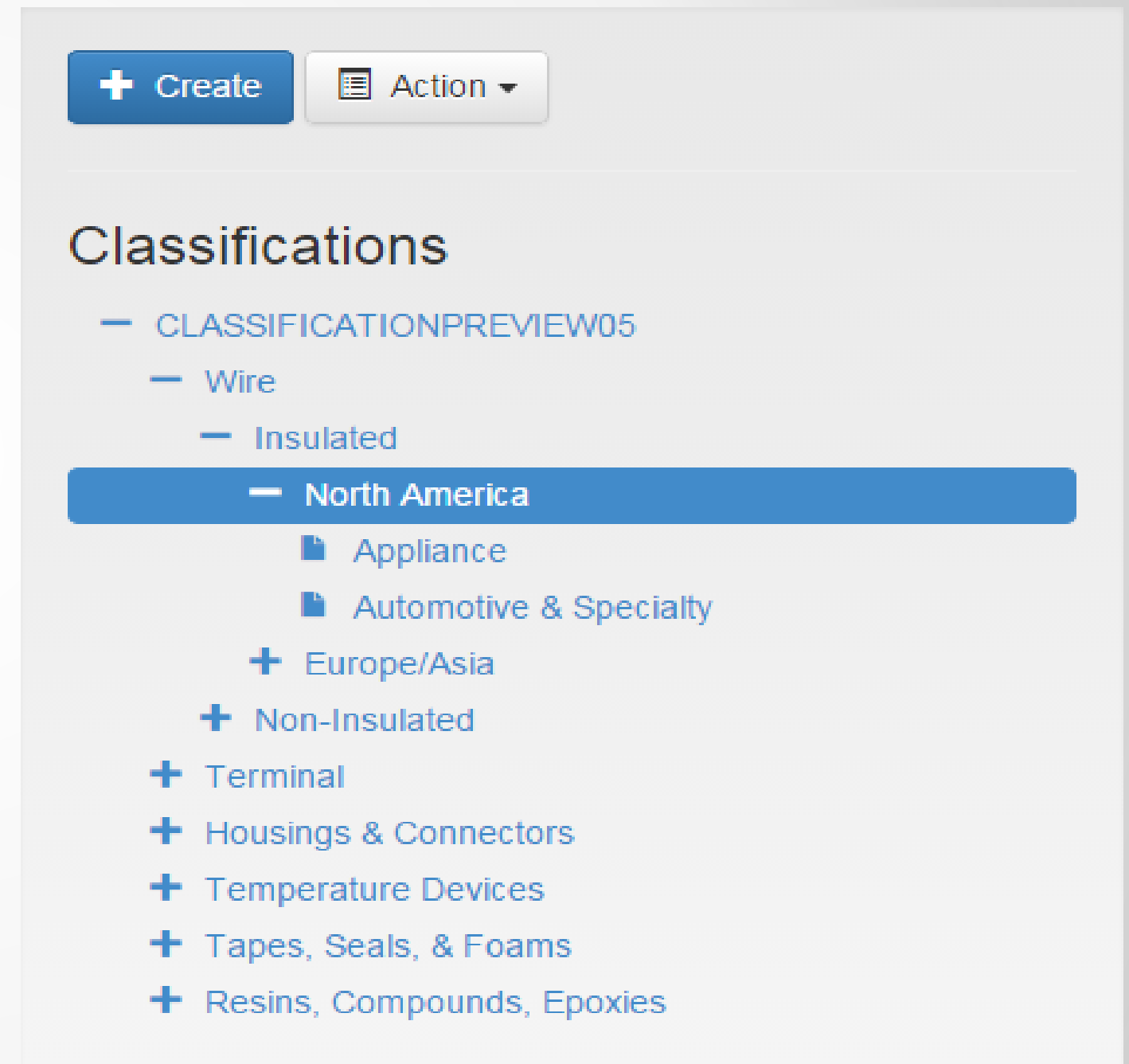
- **Set Root Class Level 0**
  - It creates a Root Node for a workspace to 'anchor' to
  - Separates your mutually exclusive classification hierarchies
  - Examples – Components, RMA, NPD\_Entry
- **Plan Hierarchy**
  - From General to Specific
  - Experimentation and rapid changings will work for small classification trees
  - Larger enterprise wide structures will require advanced planning and testing



# Demo Recap

## Lessons Learned and Recommended Practices

- Tradeoff between Fields and Classes
  - Hierarchy should be guided by metadata captured in the fields
  - No need to add classification level if that class selection does not require additional or unique metadata.
  - Non-field dependent choices can be put in pick list field and scripted into class name/description if desired





# Demo Recap

## Lessons Learned and Recommended Practices

- Use Pick Lists
  - Faster data entry, Consistency in naming, Reduce typing errors
- Class Name as a Field
  - If you need the class name in a script or on screen, make it a Read Only field
- Consistent Tree & System Naming Practices
  - Fields can be shared across the entire classification manager, could lead to confusion.
  - Example - Root level 0 + Field Name or Field Name\_(Code)

The screenshot shows the 'Wires' Properties panel in the background, with a 'New Field' dialog box open in the foreground. The dialog box has a title bar with a close button (X). It contains the following fields:

- Display Name \***: A text input field.
- System Name \***: A text input field.
- Default Value**: A text input field.
- Description**: A text input field.
- Field Type \***: A dropdown menu with 'Select Type' as the current selection.

At the bottom of the dialog box, there are two buttons: 'Cancel' and 'Create'. A note at the bottom left of the dialog box states '\* Required Fields'.

# Demo

## How To Create (Intelligent) Part Numbers And Auto-Description

# Demo Recap

## Intelligent Part Numbers & Auto Descriptions

- Requires
  - Class Specific Prefix
  - Prefix Specific Sequence Number
  - Other Item data
- Common Construction

**[Prefix]-[Sequence]-[version]-[other]**

- Examples
  - AU-554-A27
  - HNBR-60-BE

# Scripting With Classification

- Classification Data
  - `item.classification.property_name`
  - `item.classification['property_name']`
- Sequencers
  - `var seqNameArray = Sequencer.list()`
  - `var seq = new Sequencer(seqName[, start[, step]])`
  - `var next = seq.nextValue()`

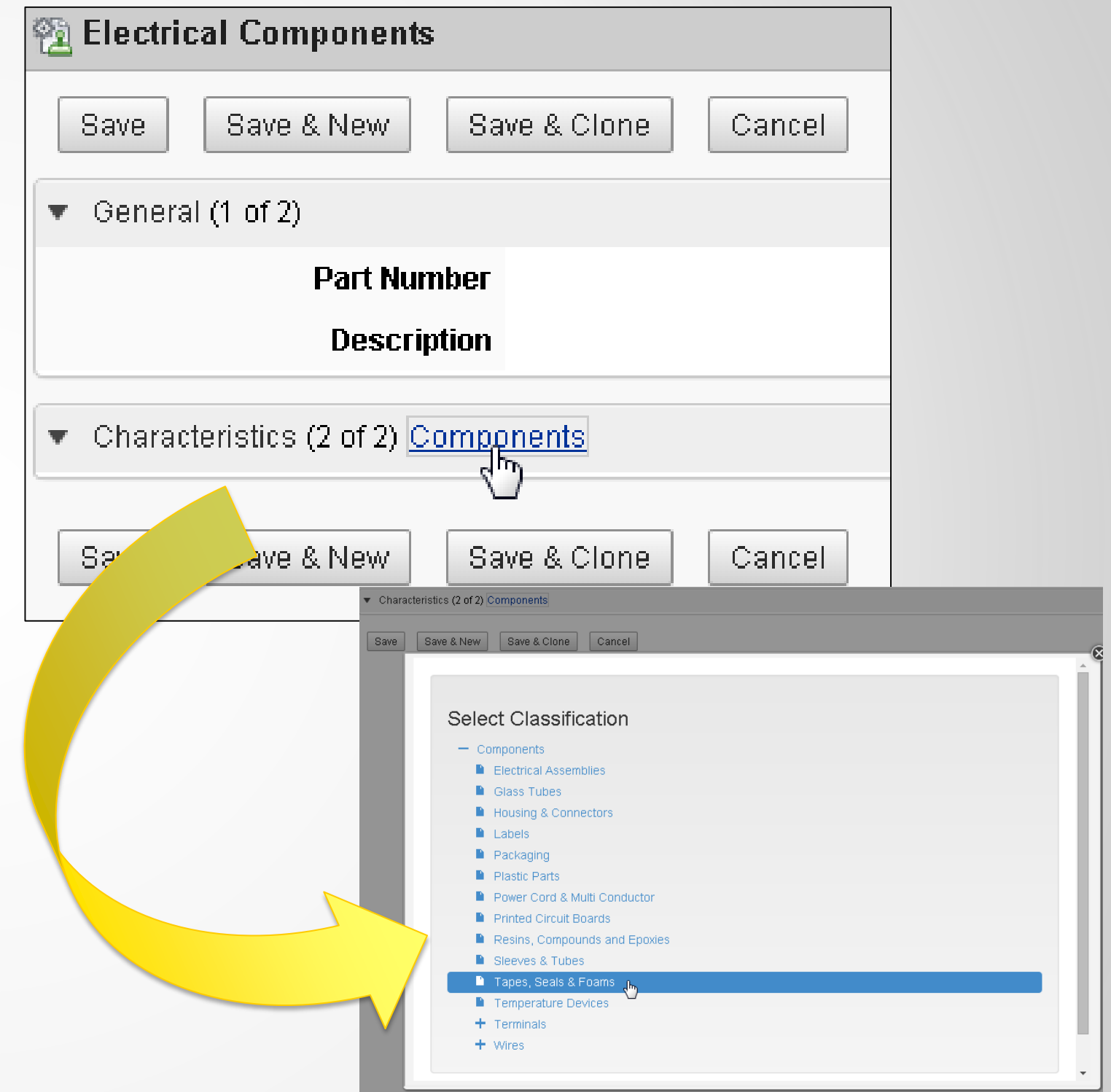


# Demo User Screens

# Demo Recap

## User Screens

- Classification Section has hyperlink
- Clicking on the button opens an in browser pop up
- The user selects the class
- The related fields appear within the classification section
- Reclassification of an item will not lose data.



# Demo Recap

## Lessons Learned and Recommended Practices

- New UX adds value
  - Class dependent fields
  - Field Restrictions and Validations will reduce data entry errors.
  - Item entry is similar to current item details fields, minimal training
- Use description for units of measure notes to users.

The screenshot displays a software interface for defining wire characteristics. The title bar reads 'Characteristics (2 of 2) Appliances'. The form contains the following fields:

- Wire Family
- Other Wire Style
- Wire Material
- Wire Plating
- Temperature - Max (Celsius)
- Voltage Rating (AC, Volts)
- Voltage Rating (DC, Volts)
- Wire Lay
- Wire Strands
- Color Full
- Flammability Rating
- Durometer hardness
- Wire Gauge (English, AWG)
- Strand Size (AWG)
- UL Wire Style 1
- UL Wire Style 2
- Fibrous Covering
- Material Insulation
- Diameter - Insulation

At the bottom of the form, there are four buttons: 'Save', 'Save & New', 'Save & Clone', and 'Cancel'.

# Demo

## Alternative Use Cases



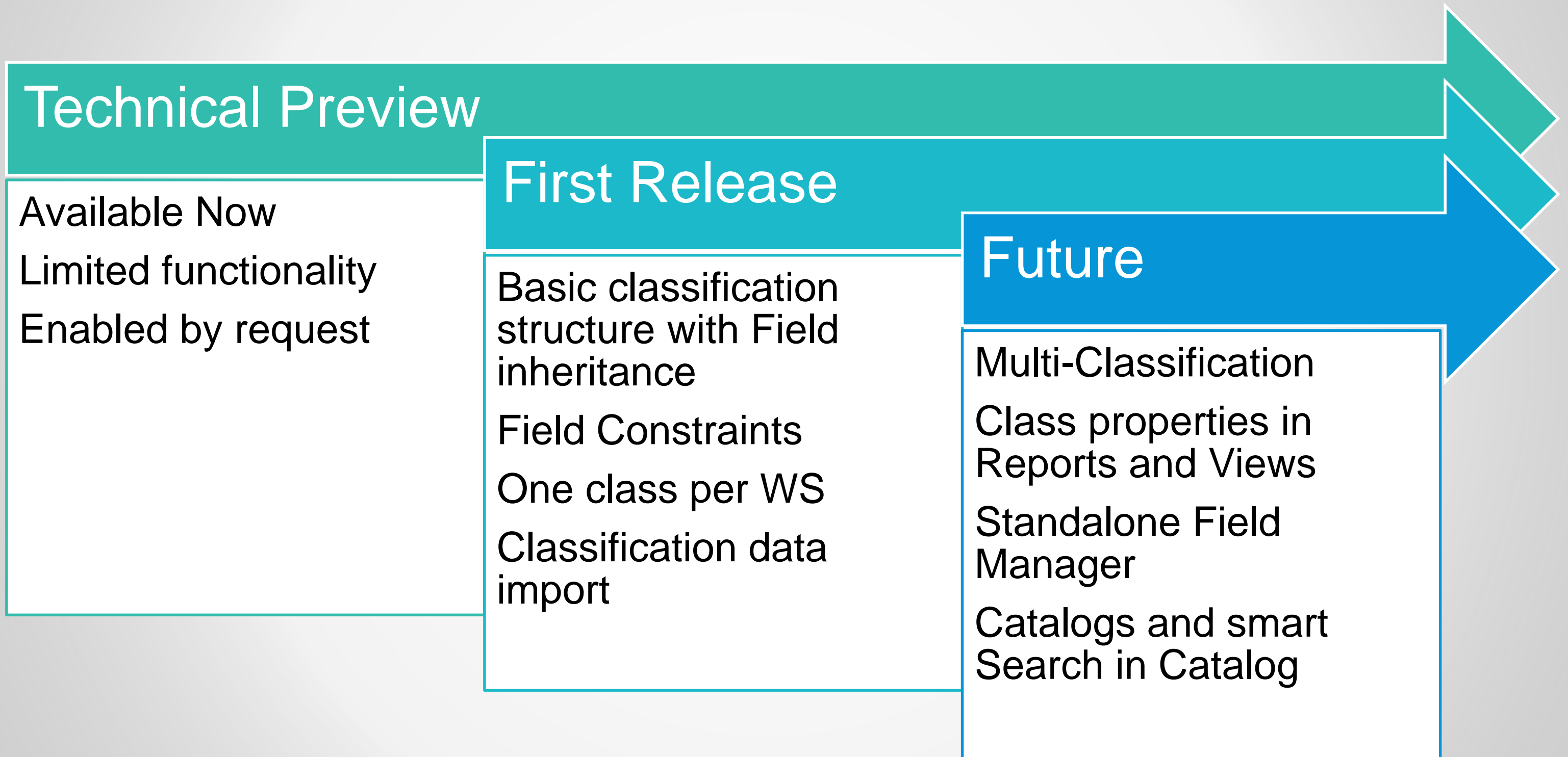
# Demo Recap

## Alternative Uses

- Classification service solves more than traditional classification and material attribute management
- It allows fields to be dependent based on user selections through a logical tree.
- Examples:
  - New Product Development – Multiple Entry Points into same process – Sales/Marketing, Engineering, Quality
  - Quality RMA or 5 Why– Customer or Reason specific fields
  - ECO reason code deep dive – Supplier, Customer, or Internal Change

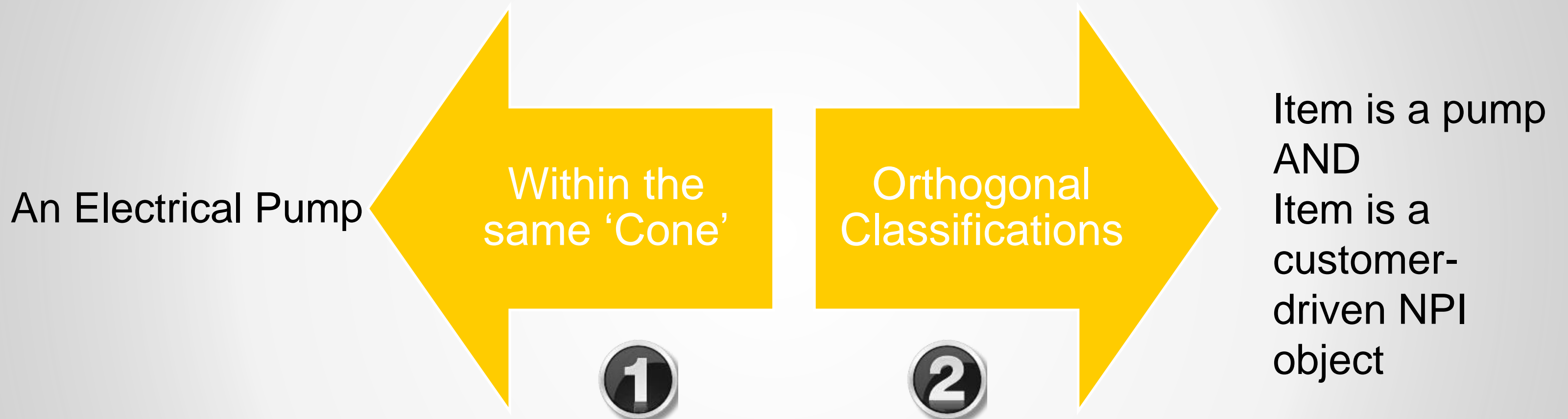
# Feature Road Map

# High Level Roadmap



# Future Plans

## Multi-Classification

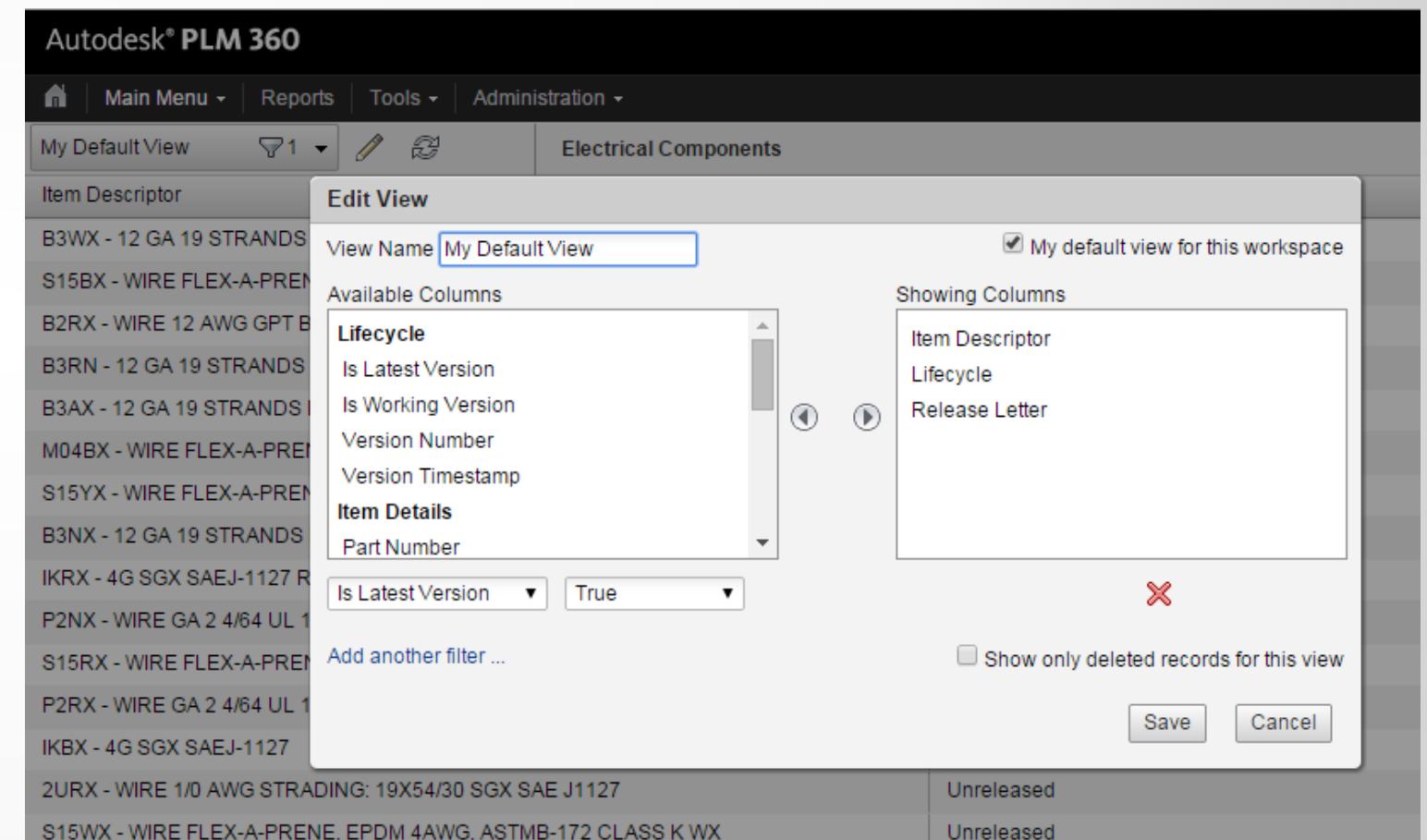




# Future Plans

## Class Properties In Reports And Views

- Workspace Traversal by Class
- Classification Properties in
  - Workspace Views and BOM Views
  - Reports
  - Print Views
  - Advanced Print Views
  - Search



# Future Plans

## Standalone Field Manager

- Share fields across multiple root nodes
- ‘Where Used’ on fields
- Ad-Hoc association of fields to Items

### Properties

Create

0 item(s) selected.

<input type="checkbox"/>	Display Name ^	Type
<input type="checkbox"/>	Color Full	text
<input type="checkbox"/>	Diameter - Insulation	number
<input type="checkbox"/>	Durometer hardness	text
<input type="checkbox"/>	Fibrous Covering	text
<input type="checkbox"/>	Flammability Rating	text
<input type="checkbox"/>	Material Insulation	text
<input type="checkbox"/>	Other Wire Style	text
<input type="checkbox"/>	Temperature - Max (Celsius)	number
<input type="checkbox"/>	Voltage Rating (AC, Volts)	number
<input type="checkbox"/>	Voltage Rating (DC, Volts)	number
<input type="checkbox"/>	Wire Family	text
<input type="checkbox"/>	Wire Lay	text

# Future Plans

## Catalogs and Smart Searches

- Navigate down the structure to define context
- Use class-specific properties to run contextual filters
- Find what you are looking for and add it to your BOM (or do something else with it)

The screenshot shows an Amazon product page for a Garmin Forerunner 220 - Black/Red. The page is annotated with three red boxes and arrows:

- Class:** A red box labeled "Class" points to the breadcrumb trail: "Electronics > GPS & Navigation > Sports & Handheld GPS > Running GPS Units".
- Smart Filters:** A red box labeled "Smart Filters" points to the "Refine by" section, which includes filters for "Eligible for Free Shipping", "Feature Keywords" (Fitness, Water Resistant, Wrist, Waterproof, Wireless, Runner, Calorie), and "Featured Brands" (Garmin, Nike, ProActive, Timex, Generic, PAPAGO, Casio).
- Results:** A red box labeled "Results" points to the product listing for the Garmin Forerunner 220, which includes the price (\$239.99), availability ("Only 7 left in stock"), and a star rating (4.21).

The URL at the bottom of the page is: [www.amazon.com/s/ref=br\\_mpk\\_pck-1\\_img?\\_encoding=UTF8&bbn=219536011&rh=i%3Aags%2Cn%3A172282%2Cn%3A14939](http://www.amazon.com/s/ref=br_mpk_pck-1_img?_encoding=UTF8&bbn=219536011&rh=i%3Aags%2Cn%3A172282%2Cn%3A14939)

# Recap & Questions



# Key learning objectives revisited

- Understand initial features of classification tool
- Learn how to create a classification schema
- Learn how to use efficient practices for implementation of feature
- Look to the future of classification in Autodesk PLM 360

# Questions to ask your Organization

- Where do we start?
- What fields are class specific?
- **What fields are required in each class?**
- What fields can be shared across the Hierarchy?
- Who will perform the **data transformation**, cleaning & structuring tasks?
- Data migration strategies?

# Please Fill Out Your Surveys

Make sure your voice is heard!

Please take the time to complete your survey for this and every class you attend at Autodesk University.

Autodesk uses this information to know what classes to offer in the future.



