



Basic Content Management





Project Structure and Data Organization

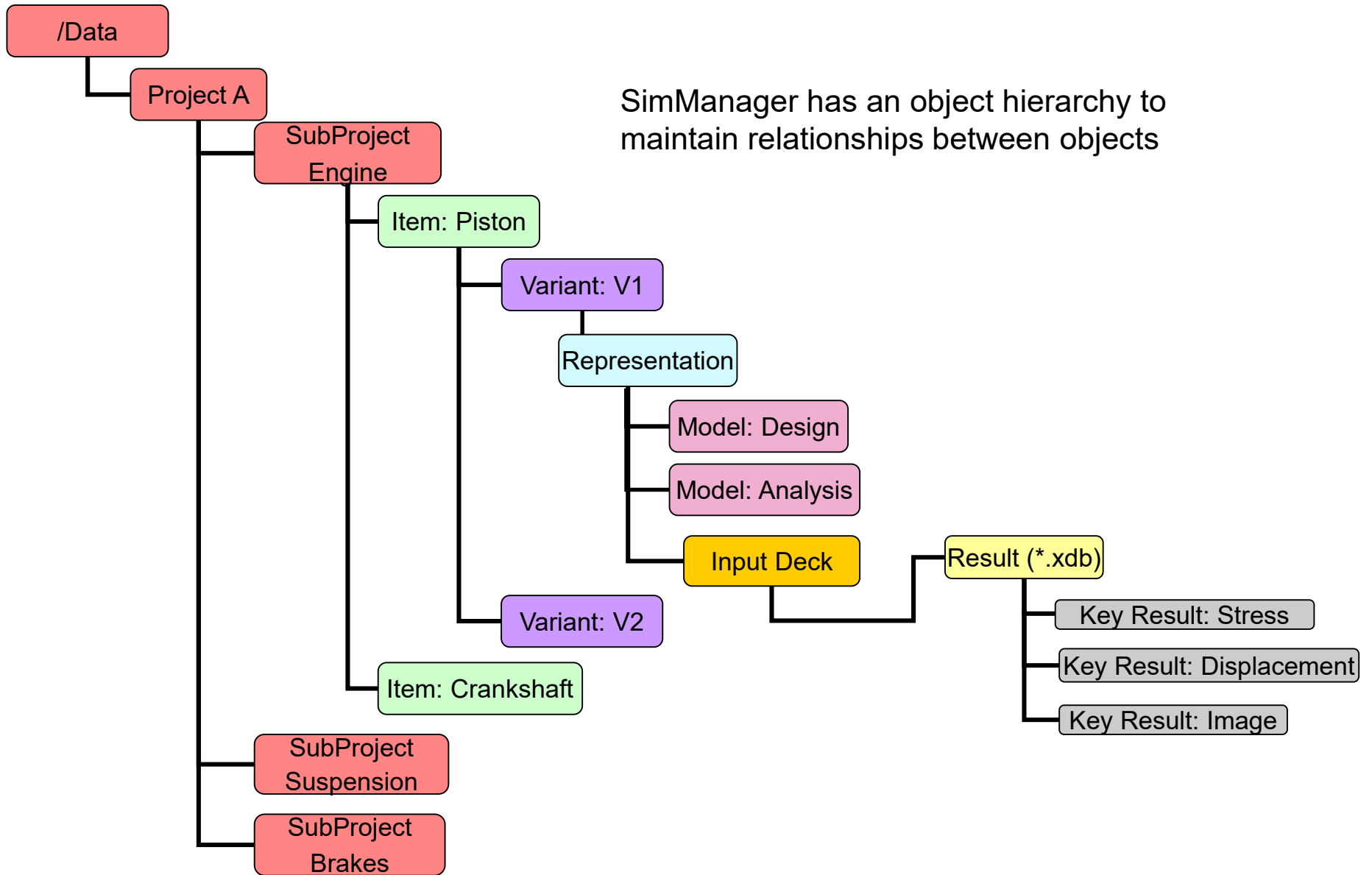
Project Structure

- SimManager 2018 provides the capability to establish a Project hierarchy.
 - The central (core) organizational structure for data objects.
 - Project structure should reflect your organization's structure for executing simulation projects.
 - Projects can be created by users with manager privileges.
- Each Project has its own security and access controls:
 - Access to the data
 - Privileges to execute simulations and other associated actions
- All data (model, results, etc.) are created in the context of a Project.
- For more on Projects, see Section 6.

Data Organization

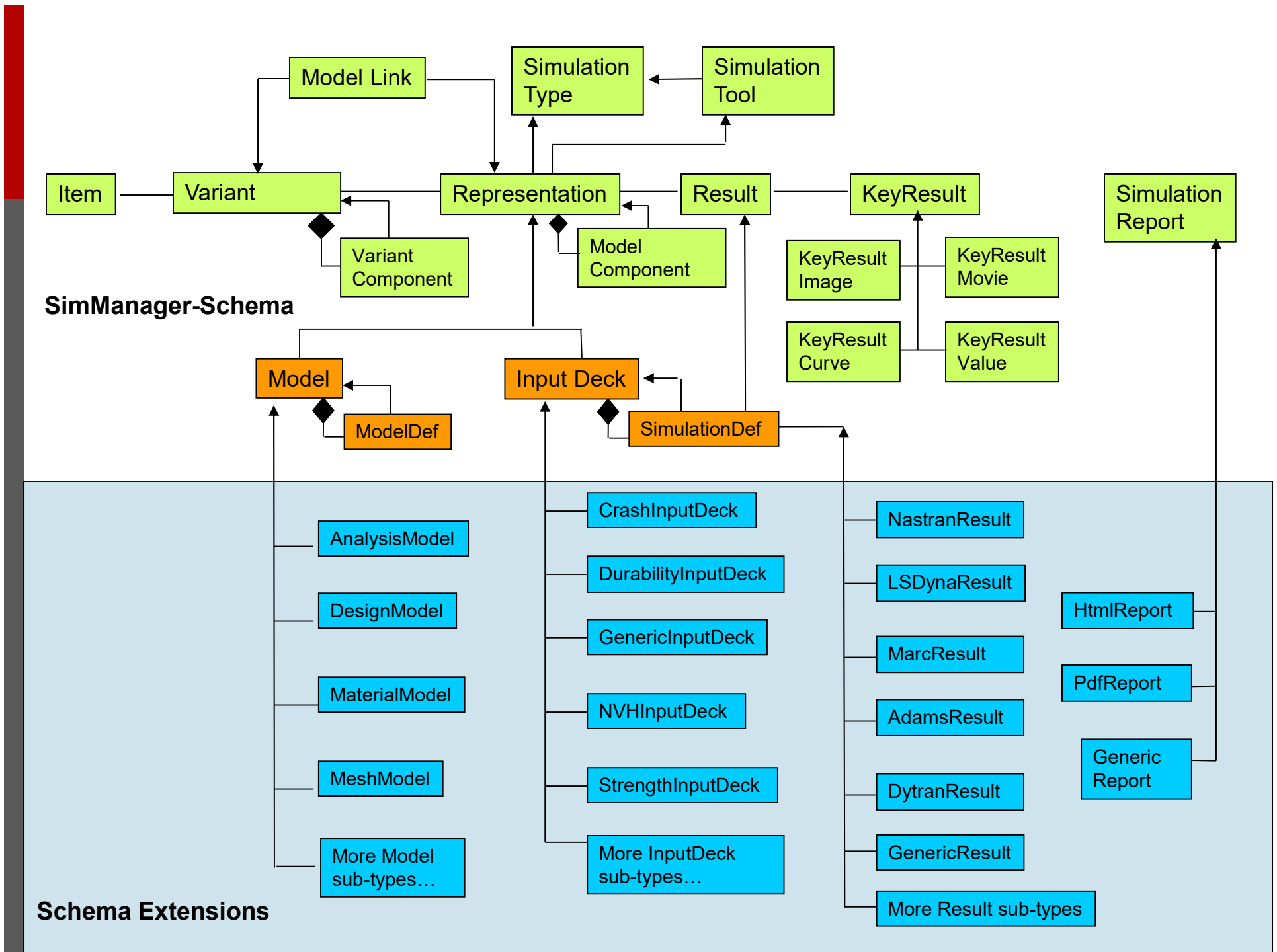
- **Project:** organization by product line and/or discipline
- **Item:** A product, part or subsystem
- **Variant:** A distinct design for an item
 - For example: different shape, materials or manufacturing process. Often correspond to design revisions as tracked by a PDM system
- **Model:** Idealizations of a given variant
 - For example: CAD model, Analysis models: structural, fatigue, CFD, dynamic, etc.
- **Input Deck:** A run ready analysis model file. It is typically a formatted text file that is specific to a particular solver such as Nastran, Adams, and so on.
- **Result:** Result of a model run (output file)
- **KeyResult:** Special representation of result
 - For example: Value, image, movie, etc.

Data Organization (Cont.)



Data Organization (Cont.)

- Refer to the SimManager Schema diagram on the next page
- Shows the SimManager Object types and sub-types
 - For example Model has sub-types: Design Model, Analysis Model, etc.
- Parent-child relationships
 - For example, Variant is child of Item and is parent of Model
- Associations to Simulation Types and Tools
 - For example a Model can be associated to Simulation Type: Structural and Simulation Tool: Nastran





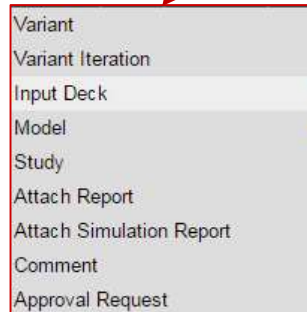
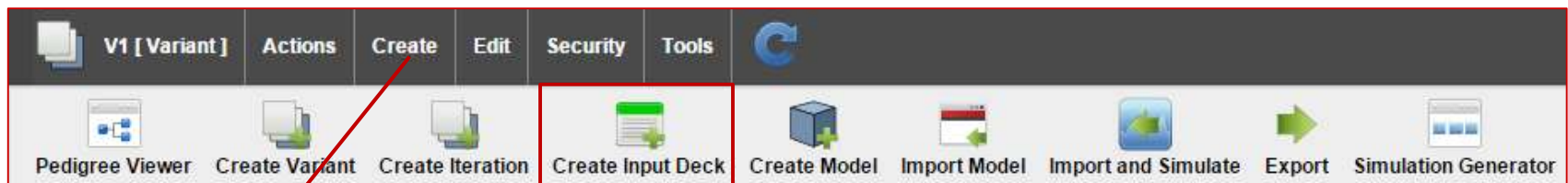
Web UI Publishing

Publish Data

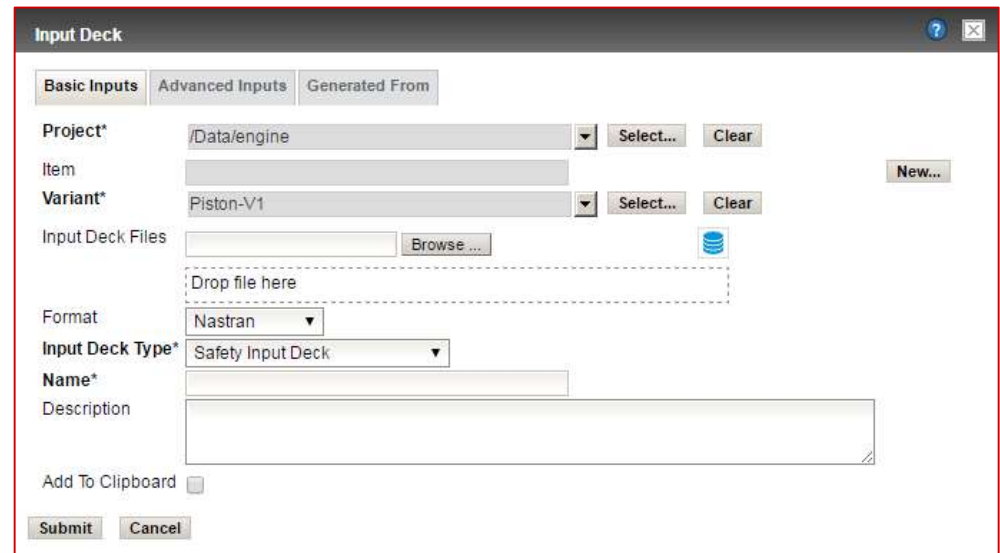
- The web interface of SimManager 2018 can be used to store (publish) design and analysis information that is created from applications (for example, SimXpert).
- Data such as
 - CAD models
 - Mesh models
 - Solver input decks
 - Solver results
 - Post processing data
 - Key results

Publish Data (Cont.)

- The publish actions are “Create...” procedures found in **Create** menu on parent’s single object display (SOD).
 - For example, if you navigate to a **Variant** SOD then you can use **Create** menu to publish a **Variant**, **Variant Iteration**, **Model**, **Input deck**, **Study**, etc.



Common actions, such as **Create Input Deck**, can also be found on the toolbar.

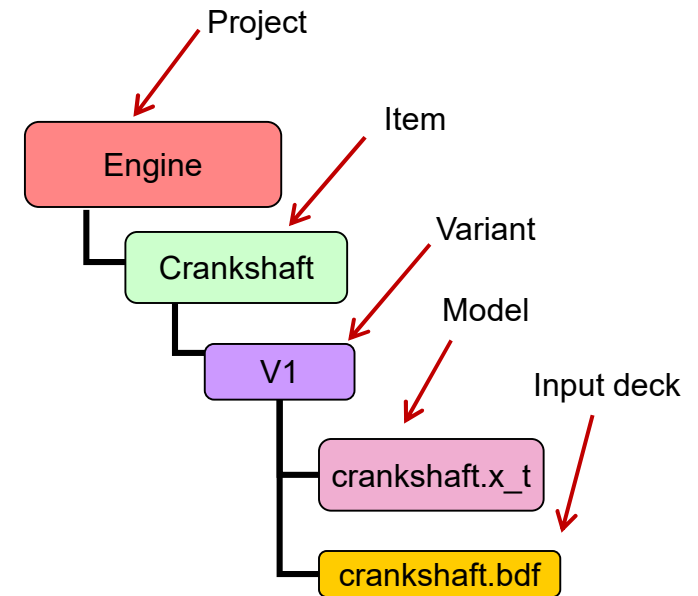


Publish Data (Cont.)

- Data is published in the context of a container (Project) and parent object (e.g. Item / Variant)
- The Project must be created first.
- Several different object types can be published.
- Once published, the object can be edited or revised.
- The following sections discuss publishing these objects within the context of an initial design study:
 - New Item/Variant
 - New Model
 - New Result
 - New Key Result

Item / Variant

- Item
 - A product, part or subsystem of interest to an organization.
 - Multiple Variants are typically created for an Item to evaluate alternative designs.
 - May have multiple design targets and simulation procedures associated with it.
- Variant
 - A means to identify a variation of an Item
 - Can be corresponded to a version from PDM.
- Models and Results must be published in the context of an Item / Variant.

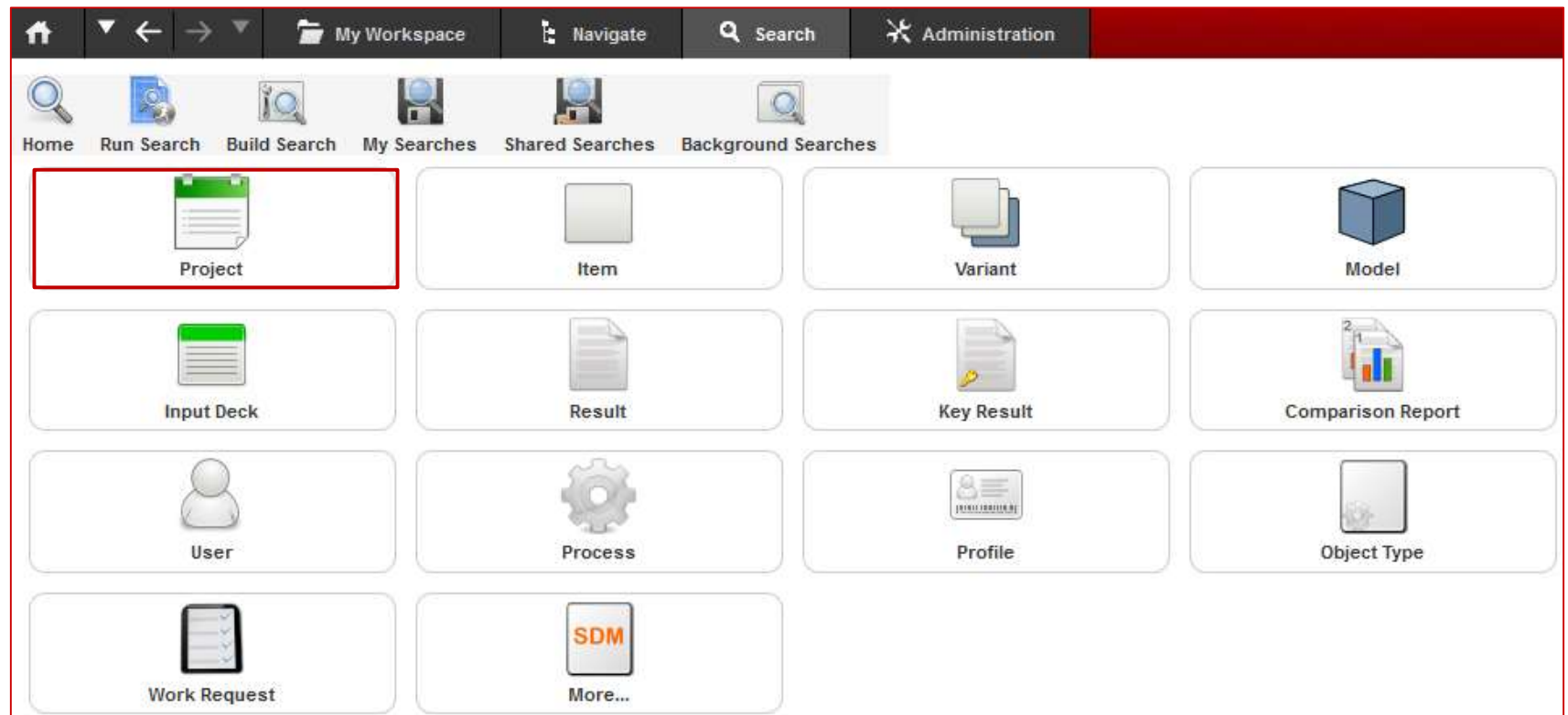


Case Study: Initial Design Study

- In this Case Study, a design team is starting the initial concept design for an engine assembly.
- The manager has already set up the **Engines** Project and given access to all the team members.
 1. A designer creates an Item and initial Variant for the crankshaft.
 2. The designer creates the initial design of the crankshaft in CAD software and publishes the design model to SimManager.
 3. An analysis engineer obtains a copy of the CAD model, meshes it, and adds boundary conditions to create a finite element model.
 4. The analysis engineer publishes the analysis model to SimManager.
 5. After running a simulation, the analysis engineer publishes the Input Deck.
 6. A Results file from the simulation is then published.
 7. Key Results, such as values and images, can then be extracted & published.

Step 1. Create a New Item / Variant

- A designer creates a new Item and Variant.
 - Navigate to the **Project** SOD, this can be done using the **Search** tab, and then selecting **Project**.
 - A list of projects will appear, select the appropriate project from the list and that will direct you to the **Project** SOD.



Step 1. Create a New Item / Variant (Cont.)

- Once you are on the **Project SOD**, select **Create > Item**, or select the **Create Item** icon on the Toolbar.
 - Note, the baseline design Variant will be created at the same time.
- Fill out **Item Inputs** tab
 - These are attributes that will apply to the Item (and all Variants)

The screenshot displays the software interface for creating a new item. The top toolbar shows the 'Create Item' button, which is highlighted with a red box and an arrow pointing to the 'Item Inputs' dialog box. The dialog box has four tabs: 'Item Inputs', 'Variant Inputs', 'Advanced Item Inputs', and 'Advanced Variant Inputs'. The 'Item Inputs' tab is active and contains the following fields:

- Item Definition**: A dropdown menu with a 'Select...' button and a 'Clear' button.
- Item Type***: A dropdown menu with 'Item' selected.
- Parent**: A dropdown menu with a 'Select...' button and a 'Clear' button.
- Item Name***: A text field containing 'crankshaft'.
- Description**: A large text area.
- Project***: A dropdown menu with '/Data/engine' selected, a 'Select...' button, and a 'Clear' button.
- Auto Release**: A checked checkbox.
- Create Item Only**: An unchecked checkbox.
- Submit** and **Cancel** buttons at the bottom.

Step 1. Create a New Item / Variant (Cont.)

- Fill out the **Variant Inputs** tab
 - Attributes that apply only to this design Variant.
 - Multiple Variant Types can be configured. If that is the case, you will need to select the Variant Type.
 - The design **Variant Name** is generated automatically as V1.
 - Enter **Description** (optional).
 - Select **Project Phase**.
 - Add an image (optional).

A different Variant Naming convention can be configured

The screenshot shows a software window titled 'Item' with a tabbed interface. The 'Variant Inputs' tab is selected and highlighted with a red box. The tabbed interface includes 'Item Inputs', 'Variant Inputs', 'Advanced Item Inputs', and 'Advanced Variant Inputs'. The 'Variant Inputs' tab contains the following fields:

- Variant Definition**: A dropdown menu with '--Select--' selected.
- Variant Type***: A dropdown menu with 'Variant' selected.
- Variant Name***: A text field containing 'V1'.
- Description**: A large, empty text area.
- Project Phase***: A dropdown menu with 'Default' selected.
- Variant Overview Image File**: A section containing a 'Browse...' button, the text 'No file selected.', a small globe icon, and a dashed box labeled 'Drop file here'.

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

Step 1. Create a New Item / Variant (Cont.)

- Fill out the **Advanced Item Inputs** tab (optional)
 - *Text, real, or Number attributes.*
 - Use **Add** buttons to create attributes, and check box to select.
 - Applicable to this Item and all Variants

Item

Item Inputs Variant Inputs **Advanced Item Inputs** Advanced Variant Inputs

Additional Files

Text Attributes

	Name	Value
☒	ReleaseDate	15OCT2018

Real Attributes

	Name	Value
☐	MassAllocation (Kg)	4.2

Number Attributes

Step 1. Create a New Item / Variant (Cont.)

- Fill out the **Advanced Variant Inputs** tab.
 - **Text, Real, or Number attributes**
 - Use **Add** buttons to create attributes.
 - Applicable to this initial Variant only.
- Click **“Submit”** to create the Item and initial Variant

The screenshot shows a software window titled 'Item' with a tabbed interface. The 'Advanced Variant Inputs' tab is selected and highlighted with a red border. It contains three sections: 'Text Attributes', 'Real Attributes', and 'Number Attributes'. The 'Text Attributes' section has a table with columns 'Name' and 'Value'. The first row is 'Material' with the value 'cast iron', highlighted by a yellow box. Below this table are 'Add', 'Delete', and 'Copy' buttons. The 'Real Attributes' section has a similar table with 'Mass (Kg)' and the value '4.5', also with 'Add', 'Delete', and 'Copy' buttons. The 'Number Attributes' section has an 'Add' button. At the bottom of the window are 'Submit' and 'Cancel' buttons.

Name	Value
Material	cast iron

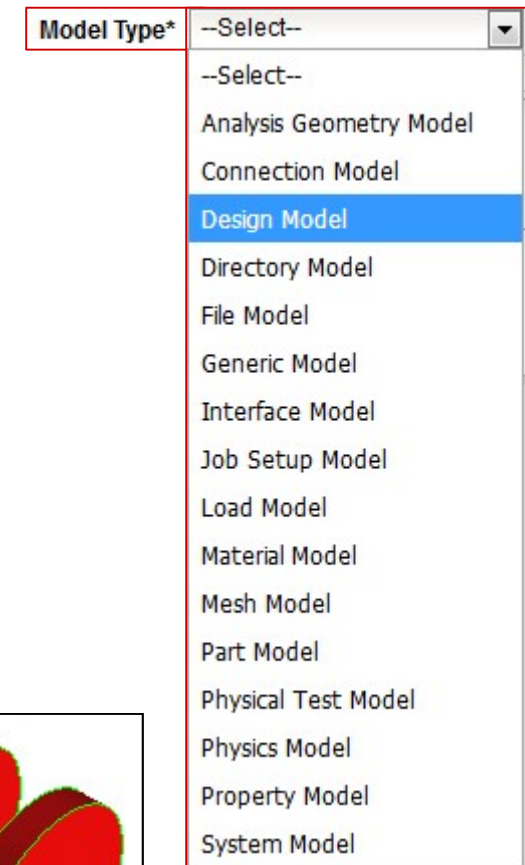
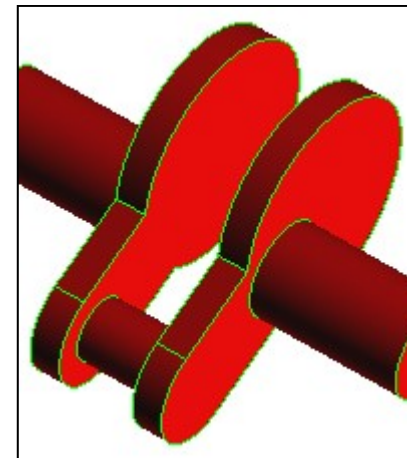
Name	Value
Mass (Kg)	4.5

Related Actions for Item / Variant

- New Child Item
 - Lets you create nested items under a parent, for assemblies.
- New Variant
 - After running initial variant, create additional variants under an Item.
- New Variant Iteration
 - Lets you create a Variant under another Variant in SimManager.
 - Organize design iterations in “branches” of related designs.
 - The Variant Iteration is given a name such as V2_1, where V2 is the parent Variant. (unless otherwise configured)
 - When working in the context of a Study, use **New Variant Iteration** action to auto-assign a new iteration to the Study.
- Edit Item / Edit Variant
 - To make changes to an existing Item or Variant.

Step 2. Publish a Design Model

- A model is an idealization of a Variant for a particular purpose.
- By default SimManager supports a number of Model Types:
 - Design Model, Analysis Model, Mesh Model, etc.
- A **Design Model** is a geometry design idealization of the Variant.
- A Design Model can be further specified with the Format attribute:
 - Adams, Catia, Nastran, SimXpert, etc.

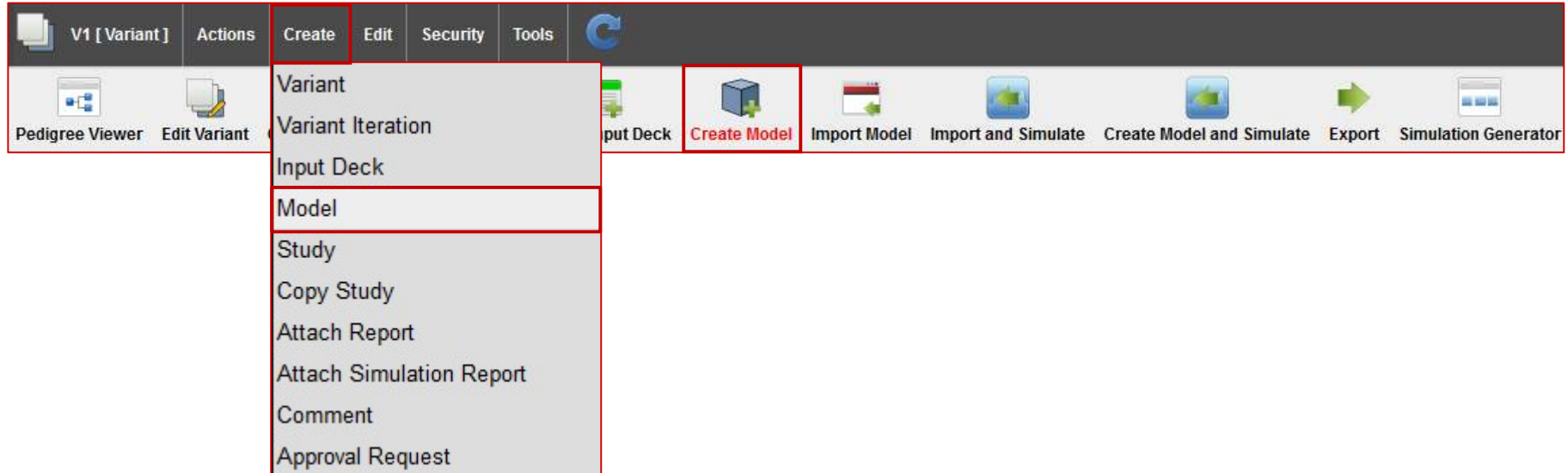


Step 2. Publish a Design Model

- After creating a CAD model of a concept design, the designer publishes it to SimManager.
 - First navigate to the **Variant** SOD that the model is associated with.
 - Use the **Search** tab to find the Variant and open the Variant SOD.



- Then select **Model** from the toolbar (or **Model** from **Create** menu) of **Variant SOD**.



슬라이드 21

BP1 Rename "New Model" to "Model"
Bipin Pawar, 2017-08-11

DR1 Agreed,
David Raj, 2017-08-23

Step 2. Publish a Design Model (Cont.)

- **Basic Inputs** tab:
 - Select the **Model Files** to be uploaded from local directory (or previously uploaded file).
 - Select **DesignModel** for **Model Type**.
 - **Model Name** gets populated based on file name, but can be changed.
 - Select **Format**. (Adams, Catia, etc.)
 - Enter **Model Description** as required (optional).
 - **Project**, **Item**, and **Variant** fields are pre-populated from the context.

The top screenshot shows the 'Model' dialog box with the 'Basic Inputs' tab selected. The 'Model Files' field is highlighted with a red box, and the 'Browse...' button is visible. The 'Format' dropdown is set to '--Select--'.

The bottom screenshot shows the 'Model' dialog box after clicking 'Browse...'. The 'Model Files' field now displays a table of files:

Subdirectory	Name	Role	Size
Relative directory path	crankshaft_x_t	model	18 kB
Files : 1			18 kB

The 'Format' dropdown is highlighted with a red box, and a red arrow points to a list of available formats on the right:

- Select--
- Adams
- Catia
- CSV
- Easy5
- Excel
- Generic Text**
- Marc
- Mentat
- Nastran
- Patran
- PhysicalTest
- ProEngineer
- SimDesigner
- SimXpert
- Unigraphics

Step 2. Publish a Design Model (Cont.)

- **Advanced Inputs** tab:
 - Here additional files and attributes can be defined. (All are optional)
 - **Derived From Models**
 - **Generated From Models**
 - An **Image File** to be published with the Model.
 - Additional **Model Files** to be published with the Model
 - Add **Text, Real, or Number attributes**
 - For meta data that are specific to your organization.
 - Click **Submit** to create new **Model**.

The screenshot shows a window titled "Model" with three tabs: "Basic Inputs", "Advanced Inputs" (which is selected), and "Generated From". In the "Advanced Inputs" tab, there are three main sections: "Image File", "Text Attributes", and "Real Attributes". The "Image File" section includes a "Browse..." button, the text "No file selected.", a globe icon, and a dashed box labeled "Drop file here". Below this, there are three rows: "Text Attributes" with an "Add" button, "Real Attributes" with an "Add" button, and "Number Attributes" with an "Add" button. At the bottom of the dialog are "Submit" and "Cancel" buttons.

Step 3. Obtain the Published Design Model

- An analysis engineer wishes to obtain a previously published CAD model.
 - Navigate to **Project SOD**.
 - From **Project SOD**, select the desired model, crankshaft.
 - Alternatively you could use **Search** to find the Model.

The screenshot displays the DMS interface for the 'engine' project. The top navigation bar includes 'Data', 'engine', and tabs for 'Actions', 'Create', 'Edit', 'Security', and 'Tools'. Below this is a toolbar with icons for 'Create Item', 'Import Model', 'Create Model and Simulate', 'Import and Simulate', 'Create Work Request', and 'Work Request Overview'. The main area features a 'Tree' view on the left showing the project hierarchy: 'Data' > 'engine' > 'engine_3L' > 'excavator' > 'hood'. The 'Items' table is displayed in the center, showing a single row for the 'crankshaft' item. The table has columns for 'RL', 'Name', 'Label', 'Type', 'Containing Item', 'Definition', 'Project', 'Count of Variants', 'Created By', 'Owner', 'Created At', and 'Domain Context'.

RL	Name	Label	Type	Containing Item	Definition	Project	Count of Variants	Created By	Owner	Created At	Domain Context
1	crankshaft	crankshaft	Item			/Data/engine	1	Andrew Analyst	Andrew Analyst	06/17/18; 21:27	Default

Step 3. Obtain the Published Design Model

- Obtain previously published CAD model, continued..
 - The SOD of the model will then be shown.
 - Click the link in the **Files** section to download the file.
 - After downloading the file, it can be imported into SimXpert or similar CAE software to create a F.E. model.

Data > engine > crankshaft > V1 > crankshaft

crankshaft [Design Model] Actions Create Edit Security Tools

Pedigree Viewer Edit Model Revise Model Copy Model Import Model To PreProcessor Generate Report Export Model Simulate Models

Tree Default Components Revisions Related Pedigree

Description
parasolid model of crankshaft

Info

Name	crankshaft
Format	Generic Text
Type	Design Model
Definition	
Project	/Data/engine
Variant	V1
Project Phase	Default
Owner	Molly Manager
Created At	06/17/18; 21:42
Is Active	true

Status

RL	0
Status	Done
Revision No.	1
Auto Delete	

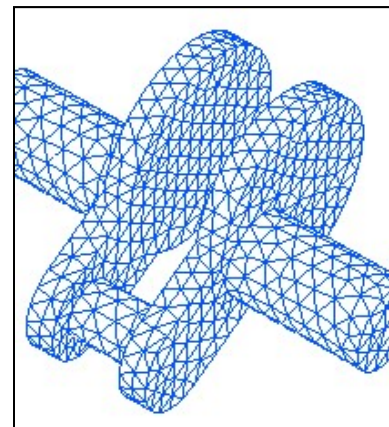
Comments

Files

Role	Name	Size
model	crankshaft.x_t	18 kB

Step 4. Publish a New Analysis Model

- Using the downloaded file, the analysis engineer can then mesh the CAD model and create an analysis model that can then be published in SimManager.
- For publishing in SimManager, this type of F.E. model is defined as an Analysis Geometry Model.
- An Analysis Geometry Model is sub-type of “Model”
 - It is a model prepared in software such as SimXpert or SimDesigner for a particular type of simulation.
 - It contains both F.E.A. and geometry data.
 - Like for a Design Model, use Format to indicate the software associated with the model:
 - Adams, Catia, Nastran, SimXpert, etc.



Step 4. Publish a New Analysis Model (Cont.)

- To publish the new analysis model:
 - Invoke the **Create Model** action from a **Variant SOD** (see previous section).
 - **Basic Inputs** tab:
 - Similar to Design Model
 - Except be sure to select the correct **Model Type**

The screenshot displays the MSC Software interface. The top menu bar includes 'V1 [Variant]', 'Actions', 'Create', 'Edit', 'Security', and 'Tools'. The 'Create' menu is open, showing options: 'Variant', 'Variant Iteration', 'Input Deck', 'Model', 'Study', 'Copy Study', 'Attach Report', 'Attach Simulation Report', 'Comment', and 'Approval Request'. The 'Model' option is selected. The 'Create Model' button in the toolbar is highlighted. The 'Model' dialog box is open, showing the 'Basic Inputs' tab. The 'Project*' field is set to '/Data/engine', 'Item' is 'crankshaft', and 'Variant*' is 'crankshaft-V1'. The 'Model Files' section shows 'No files selected.' and a 'Drop file here' area. The 'Format' is set to 'SimXpert'. The 'Model Type*' dropdown is set to 'Analysis Geometry Model', which is highlighted by a red arrow. The 'Model Name*' is 'crank' and the 'Model Description' is empty. The 'Add To Clipboard' checkbox is unchecked. The 'Submit' and 'Cancel' buttons are at the bottom.

Model Type* dropdown menu options:

- Select--
- Analysis Geometry Model
- Connection Model
- Design Model
- Directory Model
- File Model
- Generic Model
- Interface Model
- Job Setup Model
- Load Model
- Material Model
- Mesh Model
- Part Model
- Physical Test Model
- Physics Model
- Property Model
- System Model

Step 4. Publish a New Analysis Model (Cont.)

- Fill in the **Generated From** tab
 - Add **Derived Form Models**, if there is a previous revision from another variant
 - Since the Analysis Model has been generated from the CAD model, select the CAD model as the **Generated Form** model.
 - Add an optional **Image file**
 - Add any auxiliary files that go along with the analysis model file.
 - Add optional attributes as desired.
 - Click **Submit** to publish the Analysis Model in SimManager.

The screenshot shows the 'Model' dialog box with the 'Generated From' tab selected. The dialog has three tabs: 'Basic Inputs', 'Advanced Inputs', and 'Generated From'. The 'Generated From' tab contains four sections, each with a 'Label' dropdown, a 'No Records Selected' message, and a 'Select...' button. The 'Generated From' section is highlighted with a red box, and its 'Select...' button is also highlighted with a red box. Below these sections are 'Submit' and 'Cancel' buttons.

Section	Label	Status	Buttons
Derived From Models	Label ▾	No Records Selected	Select... Remove Clear
Generated From	Label ▾	No Records Selected	Select... Remove Clear
Generated From Result	Label ▾	No Records Selected	Select... Remove Clear
Generated From Object	Label ▾	No Records Selected	Select... Remove Clear

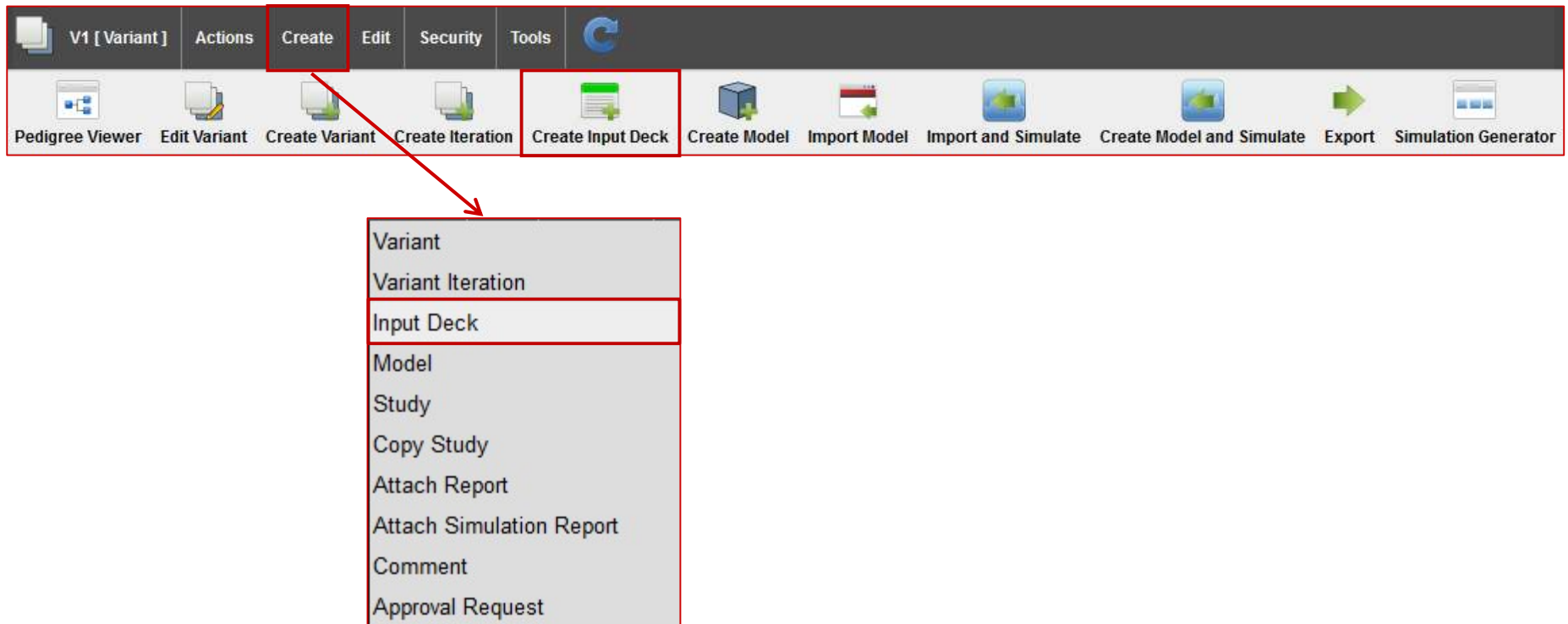
Submit Cancel

Step 5. Publish a New Input Deck

- An Input Deck is a run-ready analysis model file.
 - It is typically a formatted text file that is specific to a solver and set up to run a particular load case (or cases).
 - It represents a specific Variant.
 - It may be derived from a Model.
 - It is associated with a:
 - Simulation Type: for example, Structures, NVH, Acoustics, etc.
 - Simulation Def: Used in automated simulation as a template for the simulation.
 - After running the Input Deck through a solver, a Results file is outputted.

Step 5. Publish a New Input Deck (Cont.)

- After running a simulation, the analysis engineer publishes an Input Deck.
 - To do this navigate to the **Variant** SOD that is associated with the New Input Deck.
 - Then use the toolbar icon (or *Create* menu) and select **New Input Deck**.



Step 5. Publish a New Input Deck (Cont.)

- The **New Input Deck** dialog box is similar to New Model.
 - The **Project**, **Item** and **Variant** fields will be automatically populated.
 - For **Input Deck file** field, choose file and select the input deck that the analysis engineer produced.
 - Select **Input Deck Type** and **Format**.
 - Click **Advance Inputs** tab or **Generated From** tab for any additional inputs.

Input Deck

Basic Inputs **Advanced Inputs** Generated From

Project* /Data/engine Select... Clear

Item crankshaft

Variant* crankshaft-V1 Select... Clear

Input Deck Files Browse... No files selected.

Format Nastran

Input Deck Type* Durability Input Deck

Name* SolidCrank

Description

Add To Clipboard

Submit Cancel

--Select--
Analysis Model
Durability Input Deck
Generic Input Deck
Physical Test Input Deck
Safety Input Deck
Vehicle Dynamics Input Deck
Vibration Input Deck

Input Deck

Basic Inputs **Advanced Inputs** Generated From

Image File Browse... No file selected.

Drop file here

Text Attributes Add

Real Attributes Add

Number Attributes Add

Submit Cancel

Input Deck

Basic Inputs Advanced Inputs **Generated From**

Derived From InputDecks Label No Records Selected Select... Remove Clear

Generated From Label No Records Selected Select... Remove Clear

Generated From Result Label No Records Selected Select... Remove Clear

Generated From Object Label No Records Selected Select... Remove Clear

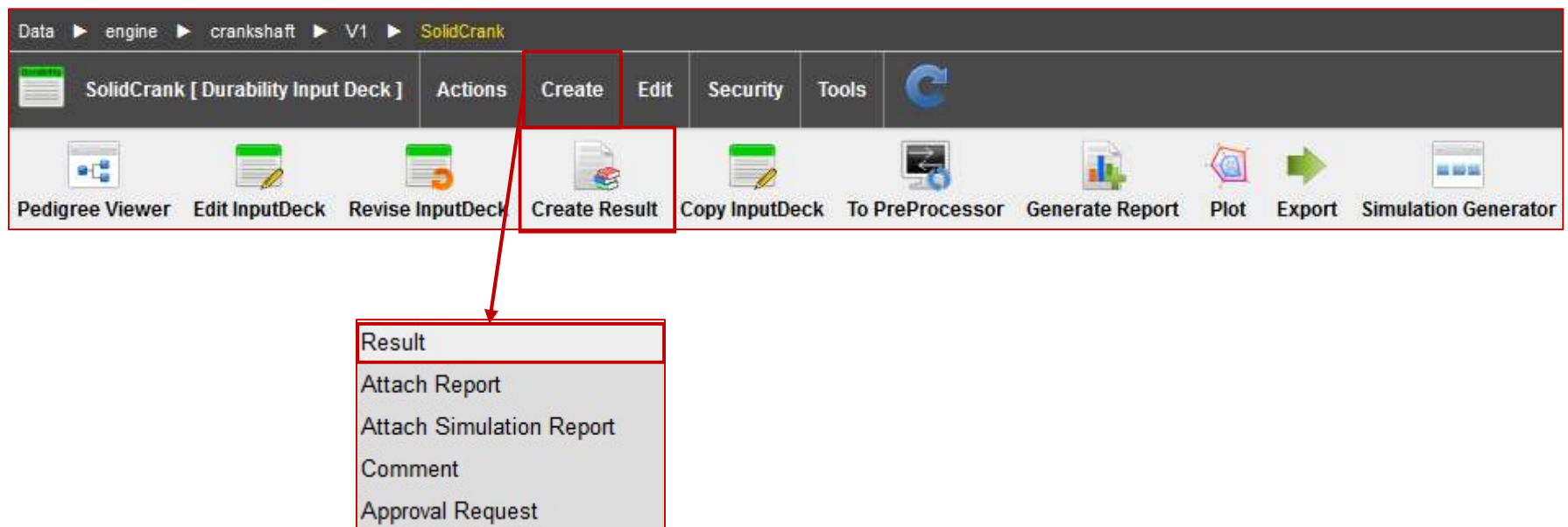
Submit Cancel

Step 6. Publish the Result File

- A Result File contains the results of a simulation run from a model representing a particular Variant under some condition.
 - It is usually the output of submitting an Input Deck to a solver for execution.
 - A Result is typically a large binary or text file containing all the requested outputs from a simulation.
 - It may be associated with a particular Scenario in a Study.
 - A post-processing step may be needed to extract meaningful Key Results from a Result object.

Step 6. Publish the Result File (Cont.)

- An analysis engineer has a Results File (output file from a solver run) to publish.
 - Navigate to the **Model** or **Input Deck** SOD
 - From the toolbar use **New Result** icon (also on **Create** menu) to publish a result file in SimManager.
 - Here the Input Deck would be most appropriate as the parent.



Step 6. Publish the Result File (Cont.)

- **New Result** dialog box:
 - Browse to locate the **Result File** to be published
 - Click **Add** for **Additional Result Files** (optional)
 - **Result Type** and **Result Name** pre-populated from file. (Change as needed.)
 - Add **Description** (optional)
 - Input Deck is pre-populated from context.
 - Add Attributes (optional)
 - Click **Submit** to publish Result to SimManager.

Result

Result Files

Browse... No files selected.

Drop file here

Subdirectory	Name	Role	Size
Relative directory path	crankshaft.xdb	result	2520 kB

Files : 1 2520 kB

Result Type* Nastran Result

Result Name* crankshaft

Result Description

InputDeck* crankshaft-V1-SolidCrank Select... Clear

Generated From Results

Label Select... Remove Clear

No Records Selected

Text Attributes Add

Real Attributes Add

Number Attributes Add

Add To Clipboard

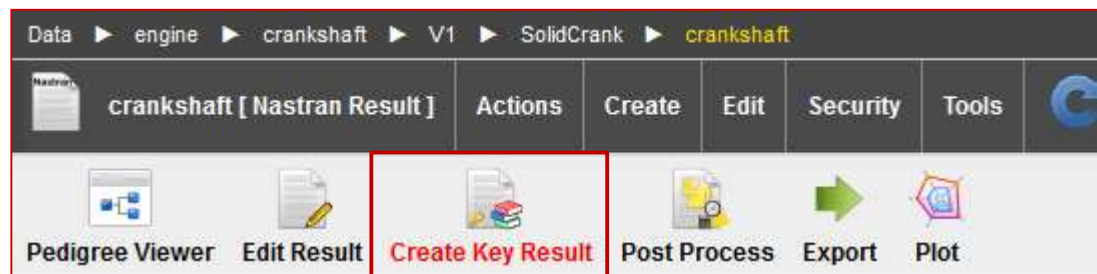
Submit Cancel

Step 7. Publish New Key Results

- A Key Result is an object which is extracted by a post-processing step from a Result object.
- Basic subtypes include:
 - Key Result Curve
 - Key Result Image
 - Key Result Movie
 - Key Result Value (stress, time, temperature, etc.)
- Custom types can be created using “New Key Result Quantity”
 - Custom types are associated to a Scenario and Study.

Step 7. Publish New Key Results

- An analysis engineer has extracted some Key Results from the Result File, and wishes to publish them.
- Select “**Create Key Result**” on the toolbar of a **Result SOD**
- **New Key Result** dialog box:
 - **Result Name** field is pre-populated based on the context
 - Multiple Key Results may be added at once
 - Click **Add** to create a Key Result



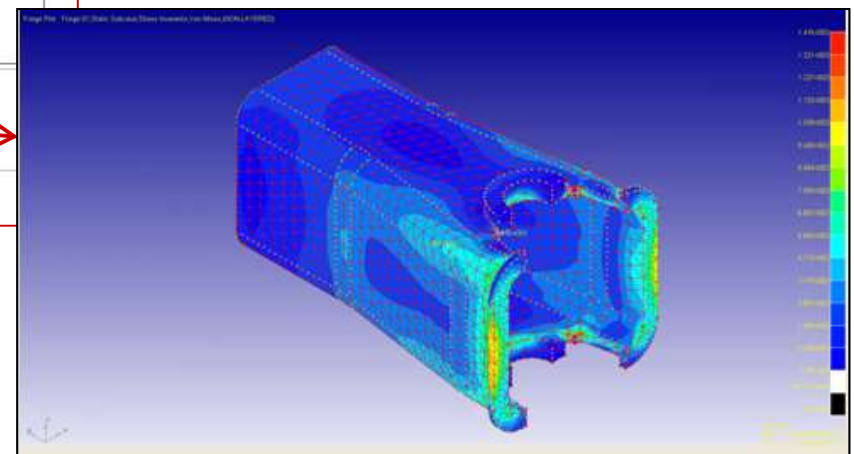
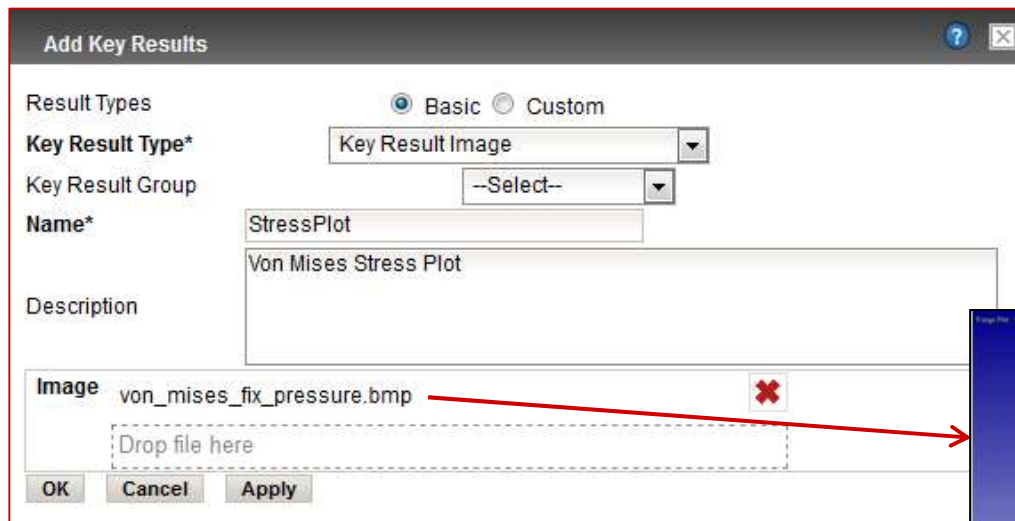
Step 7. Publish New Key Results (Cont.)

- The **Add Key Results** dialog box:
 - Select **Result Type**:
 - **Basic**: configured types out-of-the-box
 - **Custom**: customer-defined types
 - Select a **Key Result Type** from the drop-down list
 - Available types depend on whether Basic or Custom Type is selected.
 - Enter **Name**
 - Enter **Description** (optional).
 - For **key Result Type** set to **KeyResultValue**:
 - Enter the numerical **Value**.
 - Select a **Quantity Type** from the entire list of pre-configured types (frequency, stress, velocity, etc.)
 - Select **Unit**.

The screenshot shows the 'Add Key Results' dialog box. The 'Result Types' section has 'Basic' selected. The 'Key Result Type*' dropdown is set to 'Key Result Value'. The 'Key Result Group' is set to '--Select--'. The 'Name*' field contains 'Ring1Temp' and the 'Description' field contains 'Steady State temp at ring 1'. The 'Value' field contains '775'. The 'Quantity Type*' dropdown is set to 'Temperature' and the 'Unit' dropdown is set to '°C'. A red arrow points from the 'Quantity Type*' dropdown to a list of quantity types on the right. The list includes: Specific Heat, Specific Volume, Strain, Strain Rate, Strength, Stress, Stress Intensity Factor, Stress Intensity Factor Range, Surface Charge Density, Surface Resistivity, Surface Tension, **Temperature** (highlighted), Tenacity, Tension, Thermal Conductivity, Time, Torque, Torsional Stiffness, Tows, and Twist.

Step 7. Publish New Key Results (Cont.)

- **Add Key Result** dialog box (cont.):
 - For certain **Key Result Type** such as...
 - KeyResultCurve
 - KeyResultImage
 - KeyResultMovie
 - You will need to Browse and select a corresponding **File**.



Step 7. Publish New Key Results (Cont.)

- **Add Key Result** dialog box (cont.):
 - For **Custom Result Type**:
 - The **Result Quantity** list will consist of all Key Result Quantities that have been created in the Project.
 - Enter **Value**, **Unit**, **Name**, and **Description** (optional) as discussed for **Basic types**.
 - Additional optional fields allow the results to be reported to a study dashboard.
 - Study
 - Scenario
 - Click **Apply** to keep dialog open & add more Key Results.
 - Click **OK** to add key result and close the add key results dialog box.

The screenshot shows the 'Add Key Results' dialog box with the 'Custom' radio button selected and highlighted by a red rectangle. The 'Result Types' section has 'Basic' and 'Custom' radio buttons. The 'Key Result Group' is set to '--Select--'. The 'Result Quantity*' is set to 'EnergyAbsorption', with 'Select...' and 'Clear' buttons. The 'Study' and 'Scenario' are set to '--Select--'. The 'Name*' field contains 'EnergyAbsorption', and the 'Description' field contains 'total energy absorbed'. The 'Value' field contains '800', and there are fields for 'Min Value' and 'Max Value'. The 'Quantity Type*' is set to 'Energy', and the 'Unit' is set to 'KJ'. At the bottom are 'OK', 'Cancel', and 'Apply' buttons.

Step 7. Publish New Key Results (Cont.)

- **Create Key Result** dialog box
 - After closing **Add Key Results** dialog box, all the new Key Results associated to the selected Result are listed in the table.
 - Use **Edit** and **Remove** buttons as needed to modify the table.
 - Finally, click **Submit** to publish and close the **Create Key Result** dialog box.

Key Result ?

Result Name

Key Results*

Name ↕	Result Quantity / Quantity Type ↕	Type ↕	Scenario ↕	
Ring1Temp	Temperature	Key Result Value	---	Add...
StressPlot	---	Key Result Image	---	Edit...
EnergyAbsorption	EnergyAbsorption	Key Result Value	---	Remove

Add To Clipboard ☐

Pedigree Viewer

- Parent /child relationships between data types are maintained in SimManager
 - Select **Pedigree Viewer** icon in any object's Single Object Display (SOD) to see relationships

The screenshot displays the Pedigree Viewer interface. At the top, a breadcrumb trail shows the path: Data > engine > crankshaft > V1. Below this is a toolbar with icons for various actions. The 'Pedigree Viewer' icon is highlighted with a red box and a red arrow pointing to the main view area.

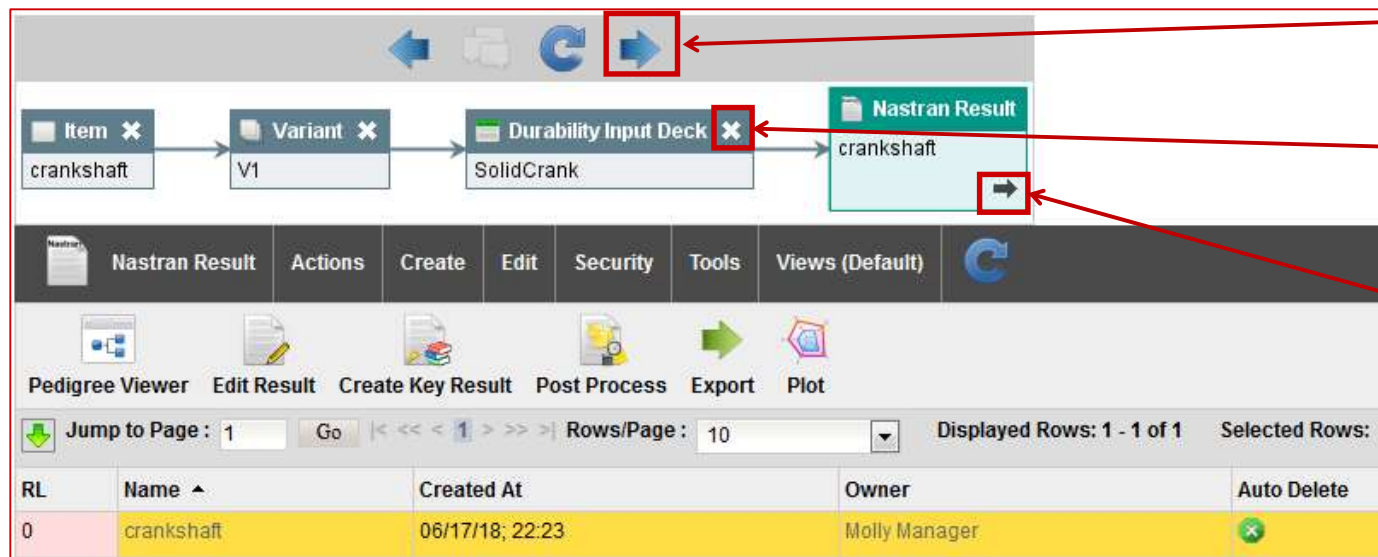
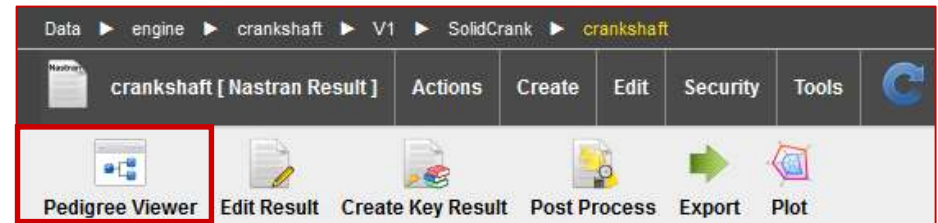
The main view area shows a flow diagram of the data relationships. It starts with an 'Item' box labeled 'crankshaft', which points to a 'Variant' box labeled 'V1'. From 'V1', an arrow points to a 'Representation' box. This box contains a list of items: 'All (3)', 'Analysis Geometry Model (1)', 'Design Model (1)', and 'Durability Input Deck (1)'. An arrow from the 'Representation' box points to a 'Nastran Result' box labeled 'crankshaft'. Finally, an arrow from the 'Nastran Result' box points to a 'Key Result' box. This box contains a list of items: 'All (3)', 'Key Result Image (1)', and 'Key Result Value (2)'.

Below the flow diagram is another toolbar with icons for various actions. At the bottom, there is a table with 12 columns: RL, Label, Description, Derived From, Phase, Type, Definition, variantOverview, Project, Created By, Owner, Created At, and Domain Context. The table contains one row of data.

RL	Label	Description	Derived From	Phase	Type	Definition	variantOverview	Project	Created By	Owner	Created At	Domain Context
1	crankshaft-V1			Default	Variant			/Data/engine	Andrew Analyst	Andrew Analyst	06/17/18; 21:27	Default

Pedigree Viewer (Cont.)

- Pedigree Viewer icon of SOD shows parent / child relationships
 - Opens in separate workspace tab
 - Selected object in the middle
 - Parent objects are to the left
 - Child objects are to the right
 - Hyperlink in each box to that object or list of objects



Click large blue arrow to expand all objects to the next level

Click X in each box to remove that object from the display

Click black arrow in each box to expand only that object to the next level

Exercise

- Perform Workshop 2, “**Publishing Data**”