Take the Reins on Model Quality with ModelCHECK and Gatekeeper

Abstract:
Model quality and consistency has been an issue for us due to the diverse experience level and imaginative modeling techniques of our users. Fortunately, setting up ModelCHECK and Gatekeeper to enforce our best practices has helped greatly, but it wasn’t easy. There were many challenges associated with setting up ModelCHECK and Gatekeeper including: limited documentation, restrictions within ModelCHECK, and resistance from end users. However, we consider ours a success story. In this presentation we will describe how we overcame these obstacles and present some of the details of how we configured them to work for us.

Takeaways:
The attendee will understand the roles and capabilities of ModelCHECK and Gatekeeper.
The attendee will learn how we configured ModelCHECK to perform checks based on file type.
The attendee will learn how we manage the configuration of ModelCHECK.
Take the Reins on Model Quality with ModelCHECK and Gatekeeper
The Engineering Services Contract (ESC) at Kennedy Space Center provides services to NASA for the design and development of flight and ground systems in support of manned space flight. The ESC process support team provides for efficient optimized design and development processes through development, configuration, and implementation of software tools, training, documentation and standards. The team of 7 people supports over 200 engineers and design specialists using Windchill, Pro-E, NX, AutoCAD, and other design and analysis tools.
Agenda

- Issues
- Solutions
  - ModelCHECK
  - Gatekeeper
- Interaction
- Configuration
- Results
Incomplete Information
Wrong Config
Extra/Missing References
Geom. Checks
External References
Circle References
ModelCHECK

- Evaluates models to a company's modeling standards and best practices
- Updates Model Parameters based on Results
- Allows User Interaction to correct Errors and Warnings
Gatekeeper

- Validates Requirements
- Requirements Pass - Check-In Allowed
- Requirements Fail - Check-In Fails
Tool Interaction
Necessary ModelCHECK Configurations

Defined in CONFIG_INIT.MC

- 'MC_ENABLE Y'
- 'RUN_MODE Y'
- 'ADD_DATE_PARAM Y'
- 'ADD_ERR_PARM Y'
- 'ADD_CONFIG_PARM Y'
- 'UPDATE_MC_PARAMS Y'
- 'DATE_PARAM_GMT_FORMAT Y'
- 'ADD_MODE_PARM Y'
  - Note: PDMLink 9.1 M030.
- 'ADD_VERIFIED_PARAM Y'
  - Note: Wildfire 4.0 M100 in conjunction PDMLink 9.1 M030.
Windchill Attribute Configuration

- **MC_CONFIG**
  Data Type: String
  Logical Identifier: MC_CONFIG

- **MC_ERRORS**
  Data Type: Integer Number
  Logical Identifier: MC_ERRORS

- **MC_MODE**
  Data Type: String
  Logical Identifier: MC_CONFIG

- **MC_VERIFIED**
  Data Type: Boolean
  Logical Identifier: MC_CONFIG

- **MODEL_CHECK**
  Data Type: String
  Logical Identifier: MODEL_CHECK

For more info on configuring IBAs see Handout A.
Configuring the ModelCHECK Condition file

- Edit condition.mcc to specify the desired set of configuration files to apply against all objects in Windchill.

- Configuration files may be assigned in condition.mcc according to a parameter in the model, including the lifecycle of the CAD Document as shown.

  IF (PTC_WM_LIFECYCLE EQ Default) config=(check/default_checks.mch)(start/nostart.mcs)(constant/inch.mcn)(status/review_status.mcq)
  IF (PTC_WM_LIFECYCLE EQ Basic) config=(check/basic_check.mch)(start/basic_start.mcs)(constant/inch.mcn)(status/basic_status.mcq)
  IF (PTC_WM_LIFECYCLE EQ Approval) config=(check/approval_check.mch)(start/approval_start.mcs)(constant/inch.mcn)(status/approval_status.mcq)
  IF (PTC_WM_LIFECYCLE EQ Review) config=(check/review_check.mch)(start/review_start.mcs)(constant/inch.mcn)(status/review_status.mcq)
  ELSE config=(check/basic_check.mch)(start/basic_start.mcs)(constant/inch.mcn)(status/basic_status.mcq)

Note:
- The condition.mcc and the path to the configuration files do not support spaces.
- Each IF or ELSE statement should begin a new line.
- The ELSE statement should align to the lifecycle defined in the CAD Document Object Initialization Rules (OIR).
- Lifecycle names are available from the Lifecycle Administrator or from the model parameter PTC_WM_LIFECYCLE in the Pro/ENGINEER files.
- Currently ModelCHECK cannot apply configuration files per lifecycle state: In work, Prototype, Released, Obsolete, etc.
- Currently ModelCHECK Gatekeeper is only configured at the site level and cannot apply different configuration files per container: Site, Organization, Product, Library, Project.
Setting Preferences

- Preferences set on each Context
- [Windchill Workgroup Manager] [Server] [Checkin]
  - ModelCHECK Validation
  - ModelCHECK Configuration
  - ModelCHECK Mode
  - ModelCHECK Number of Errors
  - ModelCHECK Number of Hours
ModelCHECK Validation

**Set Preference**

**Name:** ModelCHECK Validation

**Description:** Specifies whether ModelCHECK validation is performed at Check In. The default is false.

**Context:** Product - ML SLS Pneumatic Delivery Product

**Value:**
- Yes
- No

**Locked:**
- No

* Indicates required fields.

[Revert to Default] [OK] [Cancel]
# ModelCHECK Validation

## ModelCHECK Validation Site Setting Options

<table>
<thead>
<tr>
<th>Value</th>
<th>Lock</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>No</td>
<td>Yes</td>
<td>Default settings – Disables ModelCHECK Gatekeeper at all contexts</td>
</tr>
<tr>
<td>Yes</td>
<td>Yes</td>
<td>Enables ModelCHECK Gatekeeper for all contexts. Only checks against preferences set at the site context</td>
</tr>
<tr>
<td>No</td>
<td>No</td>
<td>Disables ModelCHECK Gatekeeper at the site level but allows Gatekeeper to be set at different contexts</td>
</tr>
<tr>
<td>Yes</td>
<td>No</td>
<td>Enables ModelCHECK Gatekeeper for all contexts. Checks against preferences set at each context</td>
</tr>
</tbody>
</table>

![Diagram of ModelCHECK Validation Site Setting Options](image-url)
ModelCHECK Configuration

**Set Preference**

- **Name**: ModelCHECK Configuration
- **Description**: Specifies ModelCHECK Configuration files to be used for validation for each LifeCycle names in a specific syntax (e.g., .., ..., ...). Configuration specified by "Default" LifeCycle name is default behavior.
- **Context**: Product - SLS ML CAA Product
- **Value**: Enter the directory path for the configuration files.
- **Locked**: Check to lock the preference.

* Indicates required fields.

- **Revert to Default**
- **OK**
- **Cancel**
ModelCHECK Configuration

- `<Lifecycle_1>`:<mch_file1>,<mcs_file1>,<mcn_file1>
- `<Lifecycle_2>`:<mch_file2>,<mcs_file2>,<mcn_file2>
- For example:

  Default:check/default_checks.mch,start/nostart.mcs,constant/inch.mcn,status/review_status.mcq  
  Basic:check/basic_checks.mch,start/basic_start.mcs,constant/inch.mcn,status/review_status.mcq  
  Release:check/release_checks.mch,start/release_start.mcs,constant/inch.mcn,status/review_status.mcq  
  Approval:check/approval_checks.mch,start/approval_start.mcs,constant/inch.mcn,status/review_status.mcq  
  Review:check/review_checks.mch,start/review_start.mcs,constant/inch.mcn,status/review_status.mcq

- Notes:
  - Each line of the ModelCHECK Configuration value is a separate lifecycle configuration.
  - Spaces are not supported in the value of ModelCHECK Configuration.
  - Clearing the value of ModelCHECK Configuration should skip validation of the configuration files.
ModelCHECK Mode

Set Preference - Windows Internet Explorer

- Name: ModelCHECK Mode
- Description: Specifies ModelCHECK Mode allowed for Model to be validated. Default is Interactive.
- Context: Organization - 22264
- Value: Interactive
- Locked: 

Value:
- Interactive
- Disabled
- Interactive
- Regenerate Explicit
- Regenerate Implicit
- Regenerate Always
- Save
- Batch

Set Preference

Revert to Default  OK  Cancel
ModelCHECK Number of Errors

- Name: ModelCHECK Number of Errors
- Description: Specifies the maximum number of ModelCHECK errors allowed. The default is 0.
- Context: Product - SLS ML CAA Product
- Value: 0
- Locked: 

* Indicates required fields.

[Buttons: Revert to Default, OK, Cancel]
ModelCHECK Number of Hours

Notes:
Pro/ENGINEER Wildfire 4.0 M100 and Windchill PDMLink 9.1 M030 change the behavior of ModelCHECK Gatekeeper and mark files as out of date with ModelCHECK based on the Workspace status, not a time increment. The status is stored in the MC_VERIFIED parameter/IBA when available. ModelCHECK Number of Hours is still required for any software combination where at least one component is using an older date code.
Checkin Results

- Started upload of documents.
- Upload succeeded.
- Started checkin of documents. Associated parts will also be checked in...
- Checkin failed. See event manager for more details.

Events (18 of 18 total objects)

<table>
<thead>
<tr>
<th>Name</th>
<th>Status</th>
<th>Start Date</th>
<th>End Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Checkin</td>
<td>Failed</td>
<td>2012-04-27 18:00</td>
<td>2012-04-27 18:00</td>
</tr>
<tr>
<td>Upload</td>
<td>Succeeded with War</td>
<td>2012-04-27 18:00</td>
<td>2012-04-27 18:00</td>
</tr>
<tr>
<td>Save</td>
<td>Succeeded</td>
<td>2012-04-27 18:00</td>
<td>2012-04-27 18:00</td>
</tr>
<tr>
<td>Add</td>
<td>Succeeded with Add</td>
<td>2012-04-27 18:00</td>
<td>2012-04-27 18:00</td>
</tr>
<tr>
<td>Auto Number</td>
<td>Succeeded</td>
<td>2012-04-26 12:02</td>
<td>2012-04-26 12:02</td>
</tr>
<tr>
<td>Auto Number</td>
<td>Succeeded</td>
<td>2012-04-26 12:02</td>
<td>2012-04-26 12:02</td>
</tr>
<tr>
<td>Auto Number</td>
<td>Succeeded</td>
<td>2012-04-26 12:02</td>
<td>2012-04-26 12:02</td>
</tr>
<tr>
<td>Download</td>
<td>Succeeded</td>
<td>2012-04-25 09:55</td>
<td>2012-04-25 09:55</td>
</tr>
<tr>
<td>Auto Number</td>
<td>Succeeded</td>
<td>2012-04-25 09:55</td>
<td>2012-04-25 09:55</td>
</tr>
<tr>
<td>Auto Number</td>
<td>Succeeded</td>
<td>2012-04-25 09:55</td>
<td>2012-04-25 09:55</td>
</tr>
</tbody>
</table>

(0 objects selected)
Example Conflicts

![Conflict Manager Window](image)

<table>
<thead>
<tr>
<th>Retry Options</th>
<th>Name</th>
<th>Retry Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>FRAME</td>
<td></td>
<td>ModelCHECK failed on model(s) in the context &quot;NE Example Product&quot;.</td>
</tr>
<tr>
<td></td>
<td>FRAME</td>
<td></td>
<td>ModelCHECK was not performed after modification on model(s) in the context &quot;NE Example Product&quot;.</td>
</tr>
</tbody>
</table>

ModelCHECK was not performed after modification on model(s) in the context "NE Example Product".
Example Conflicts

Conflict Manager

Conflicts (2 of 2 total objects)

<table>
<thead>
<tr>
<th>Retry Options</th>
<th>Name</th>
<th>Retry Option</th>
<th>Description</th>
<th>Number</th>
<th>File Name</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>FRAME</td>
<td></td>
<td>ModelCHECK failed on model(s) in the context &quot;NE Example Product&quot;</td>
<td>K0000058332</td>
<td>k0000058332.asm</td>
</tr>
<tr>
<td></td>
<td>FRAME</td>
<td></td>
<td>Number of model errors greater than the permissible value of &quot;0&quot; in the context &quot;NE Example Product&quot;</td>
<td>K0000058332</td>
<td>k0000058332.asm</td>
</tr>
</tbody>
</table>

(0 objects selected)

Conflict Description:

Number of model errors greater than the permissible value of "0" in the context "NE Example Product".
Success

Images accredited to NASA