Take the Reins on Model Quality with ModelCHECK and Gatekeeper

Abstract:

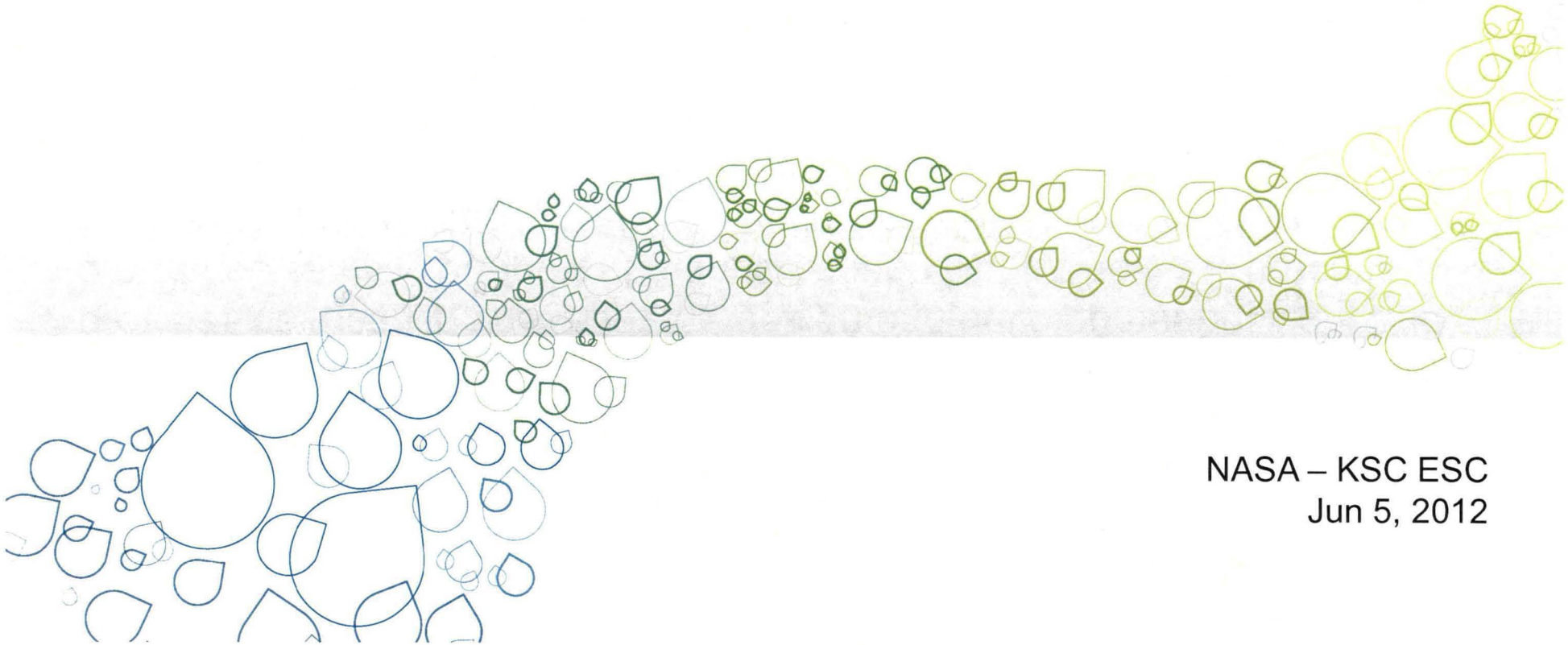
Model quality and consistency has been an issue for us due to the diverse experience level and imaginative modeling techniques of our users. Fortunately, setting up ModelCHECK and Gatekeeper to enforce our best practices has helped greatly, but it wasn't easy. There were many challenges associated with 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.

planetPTC LIVE

Take the Reins on Model Quality with ModelCHECK and Gatekeeper



NASA – KSC ESC
Jun 5, 2012

ESC Design Development Process Support Team

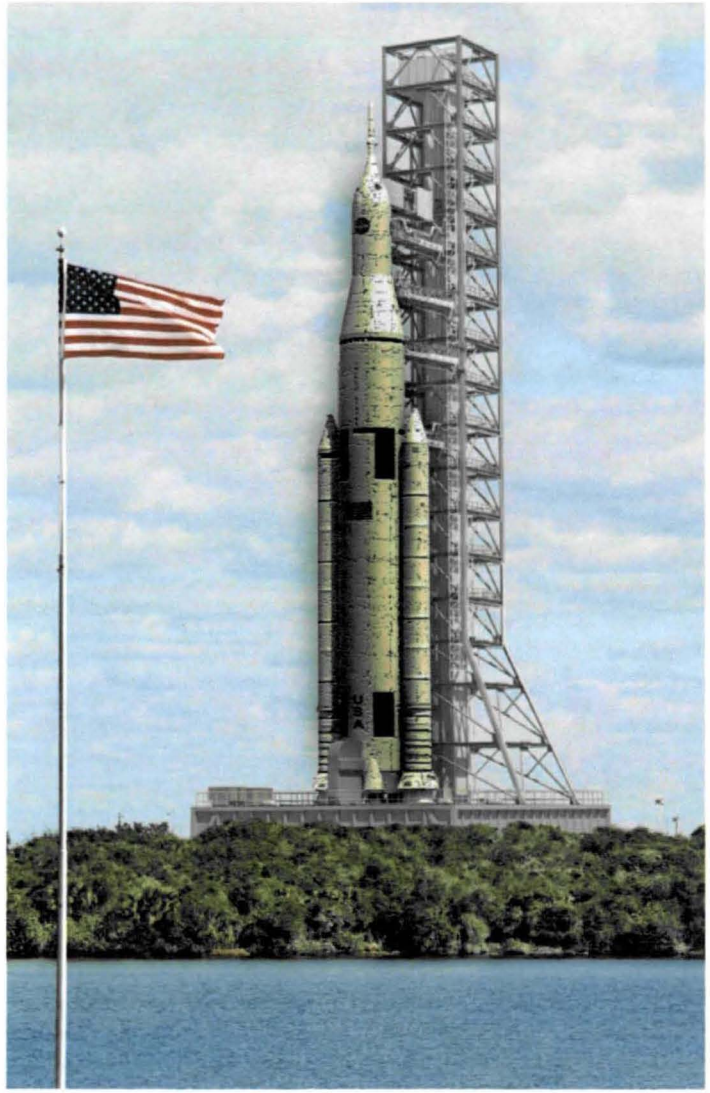
The Engineering Services Contract (ESC) at Kennedy Space Center provides services to NASA for the design and development of flight and ground systems in support of manned space flight. The ESC process support team provides for efficient optimized design and development processes through development, 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.

ESC Engineering Services Contract

Partnering To Engineer the Future

Agenda

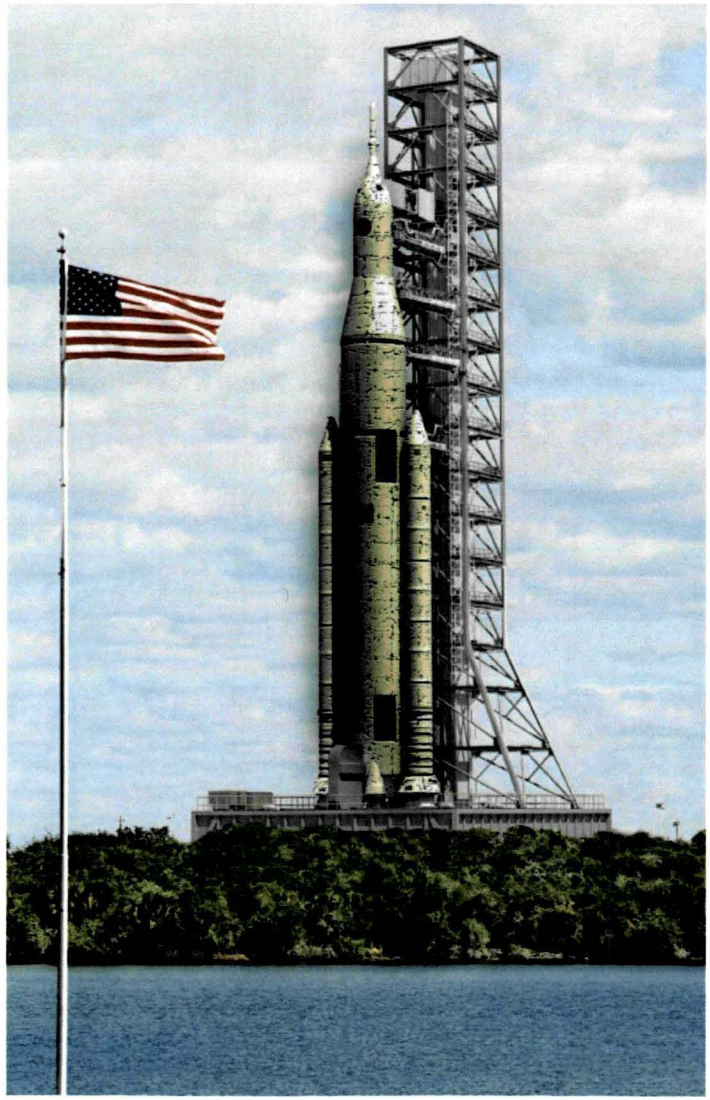
- Issues
- Solutions
  - ModelCHECK
  - Gatekeeper
- Interaction
- Configuration
- Results



Incomplete Information

Wrong Config

Extra/Missing References



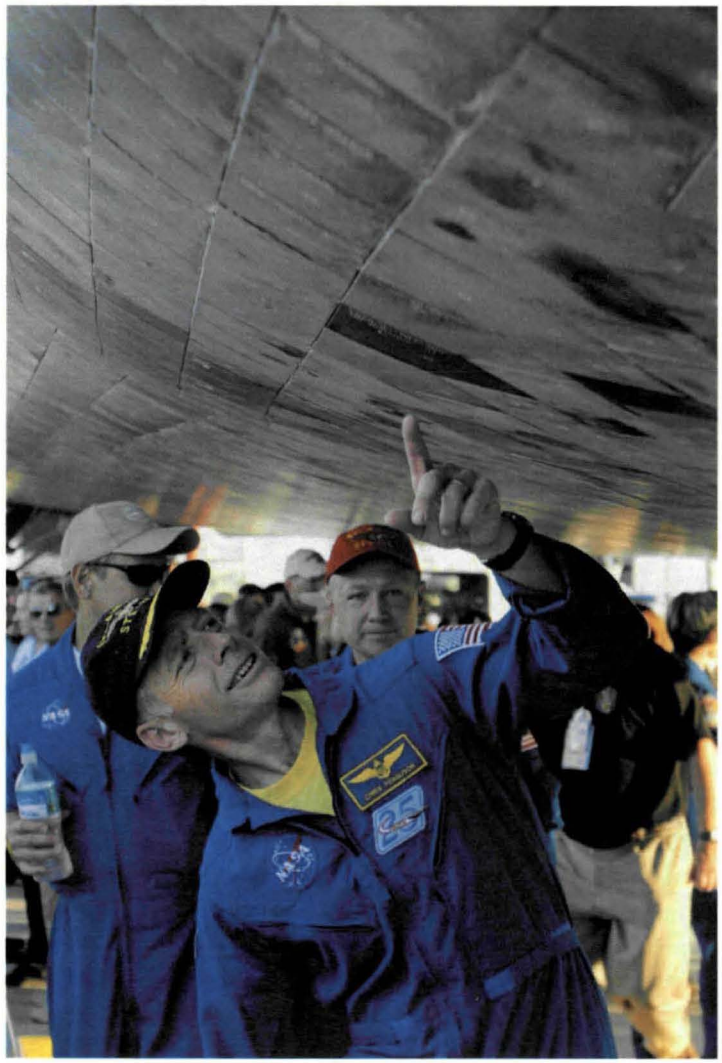
Geom. Checks

External References

Circle References

ModelCHECK

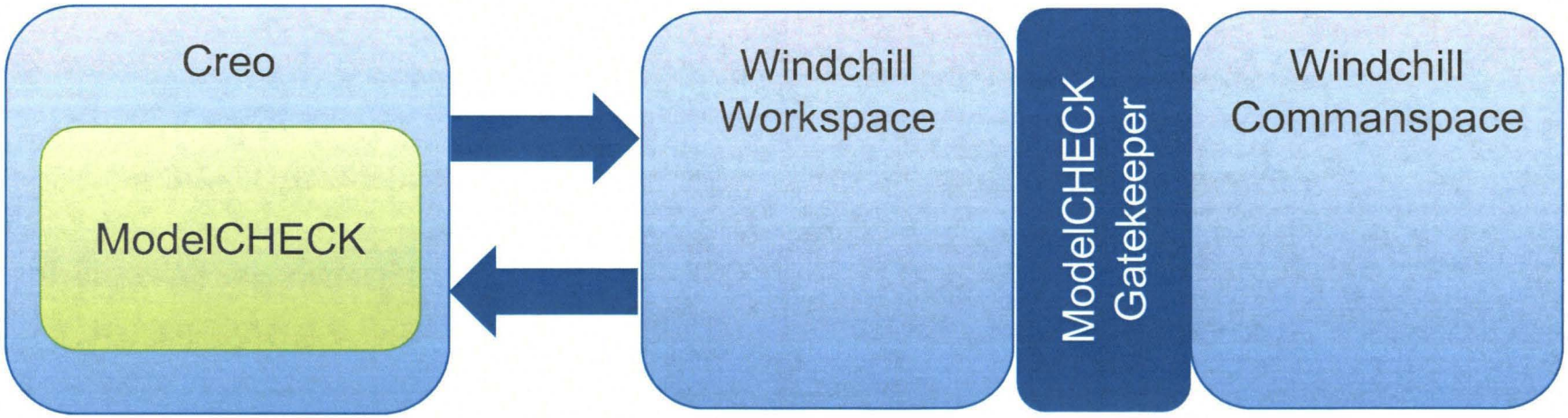
- Evaluates models to a company's modeling standards and best practices
- Updates Model Parameters based on Results
- Allows User Interaction to correct Errors and Warnings



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.

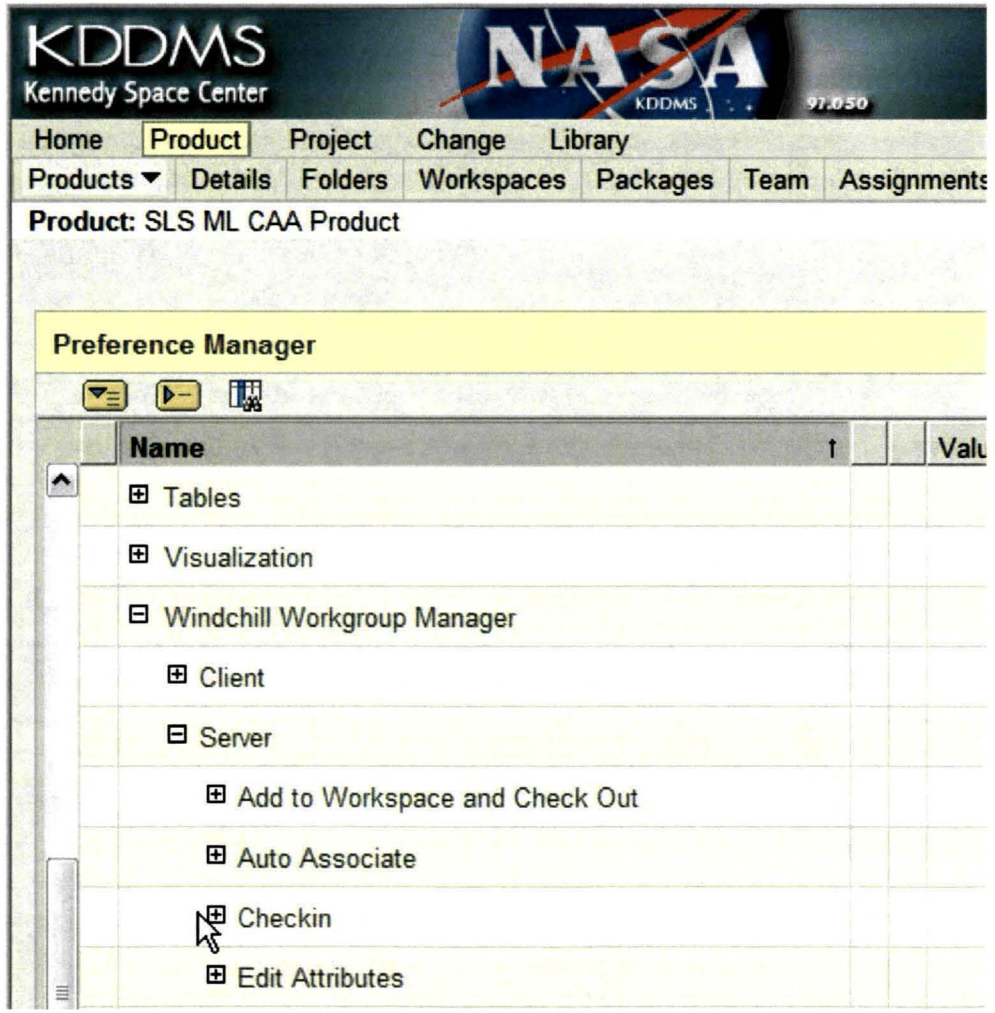
```
IF (PTC_WM_LIFECYCLE EQ Default) config=(check/default_checks.mch)(start/nostart.mcs)(constant/inch.mcn)(status/review_status.mcq)
IF (PTC_WM_LIFECYCLE EQ Basic) config=(check/basic_check.mch)(start/basic_start.mcs)(constant/inch.mcn)(status/basic_status.mcq)
IF (PTC_WM_LIFECYCLE EQ Release) config=(check/release_check.mch)(start/release_start.mcs)(constant/inch.mcn)(status/release_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:

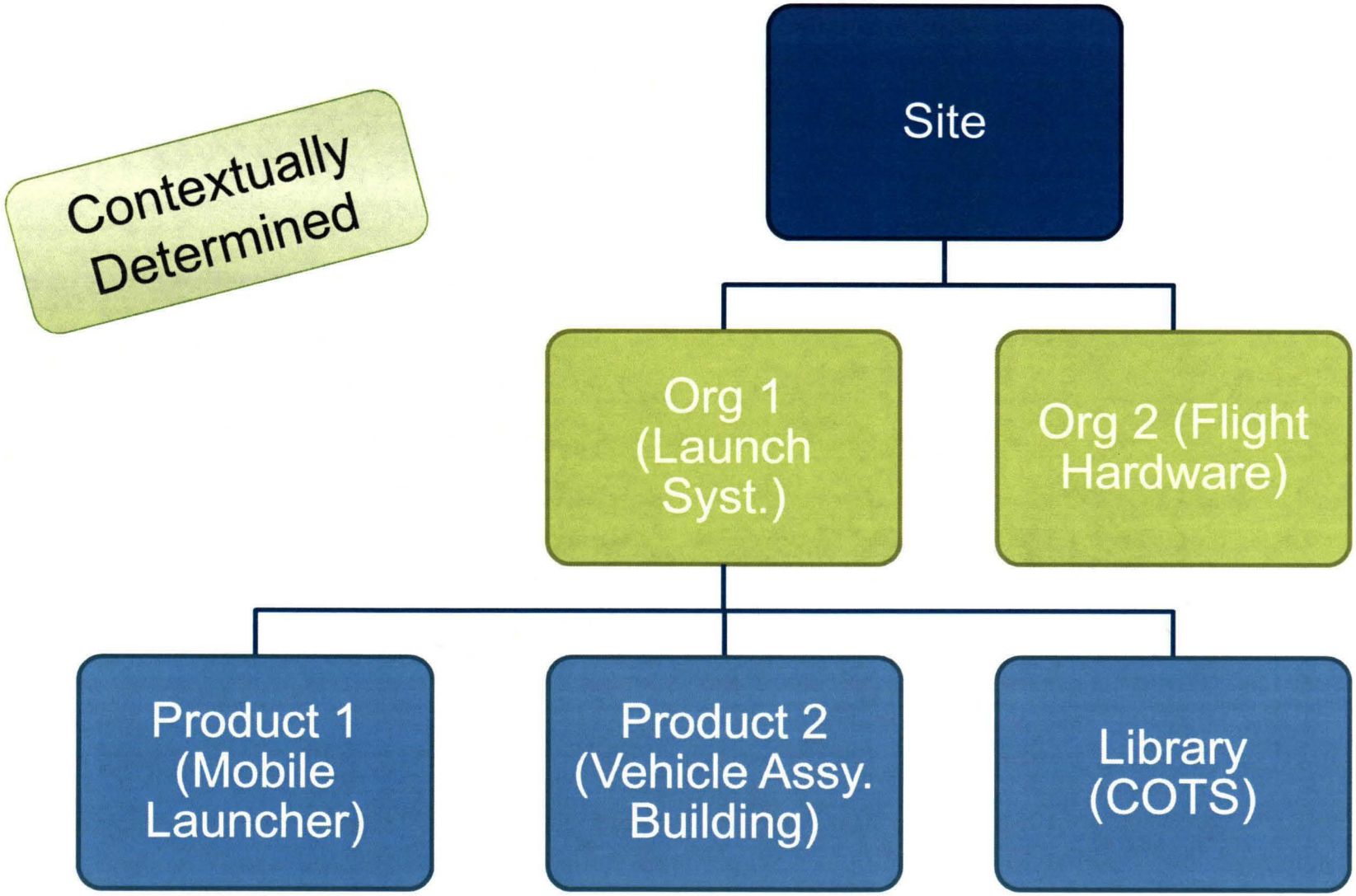
- The condition.mcc and the path to the configuration files do not support spaces.
- Each IF or ELSE statement should begin a new line.
- The ELSE statement should align to the lifecycle defined in the CAD Document Object Initialization Rules (OIR).
- Lifecycle names are available from the Lifecycle 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

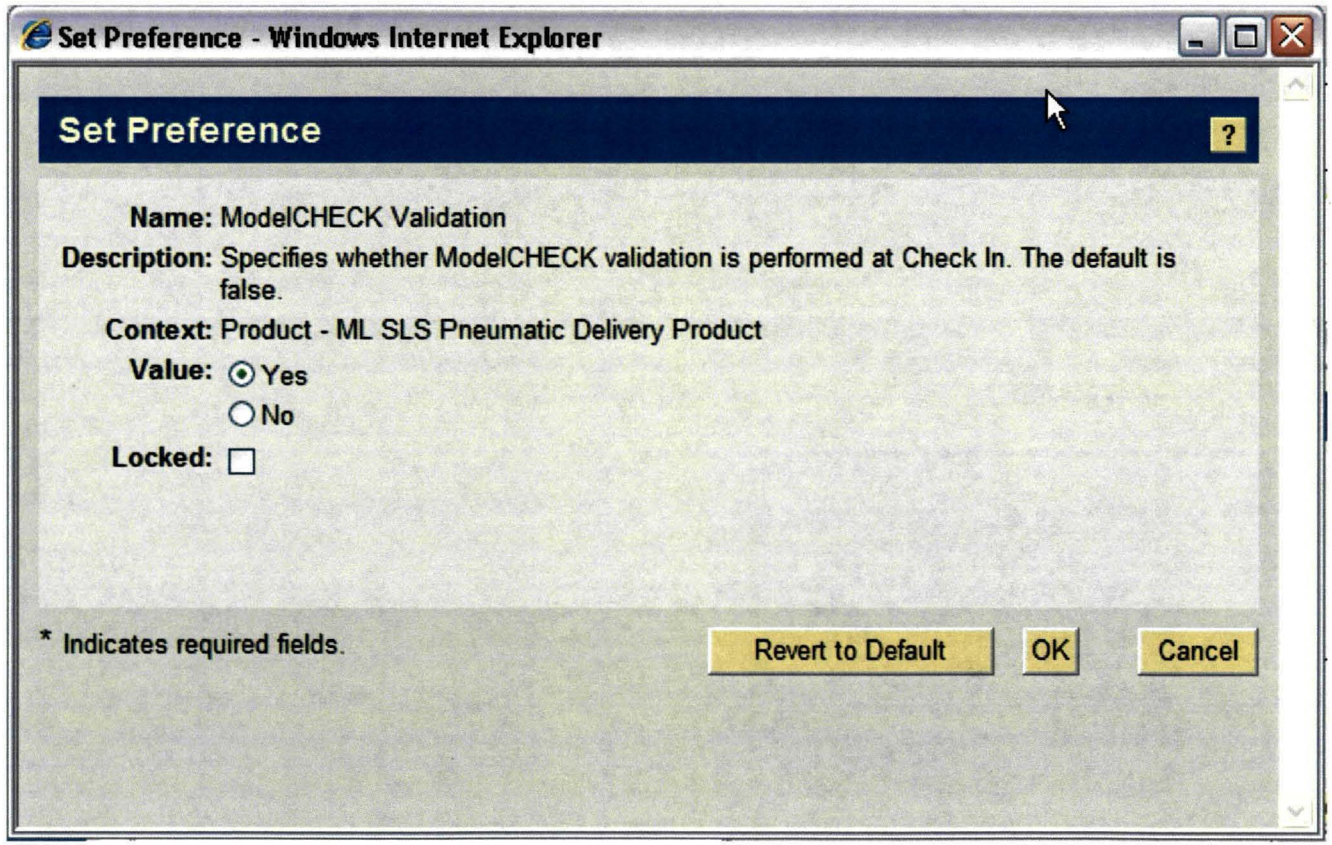
- Preferences set on each Context
- [Windchill Workgroup Manager] [Server] [Checkin]
  - ModelCHECK Validation
  - ModelCHECK Configuration
  - ModelCHECK Mode
  - ModelCHECK Number of Errors
  - ModelCHECK Number of Hours



Hierarchy

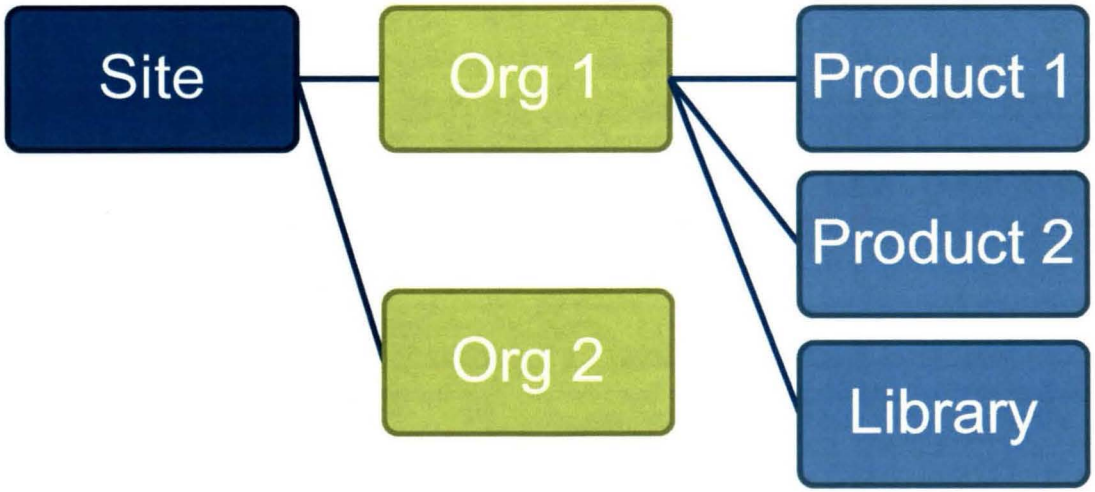

Contextually Determined
Site
Org 1 (Launch Syst.)
Org 2 (Flight Hardware)
Product 1 (Mobile Launcher)
Product 2 (Vehicle Assy. Building)
Library (COTS)

ModelCHECK Validation

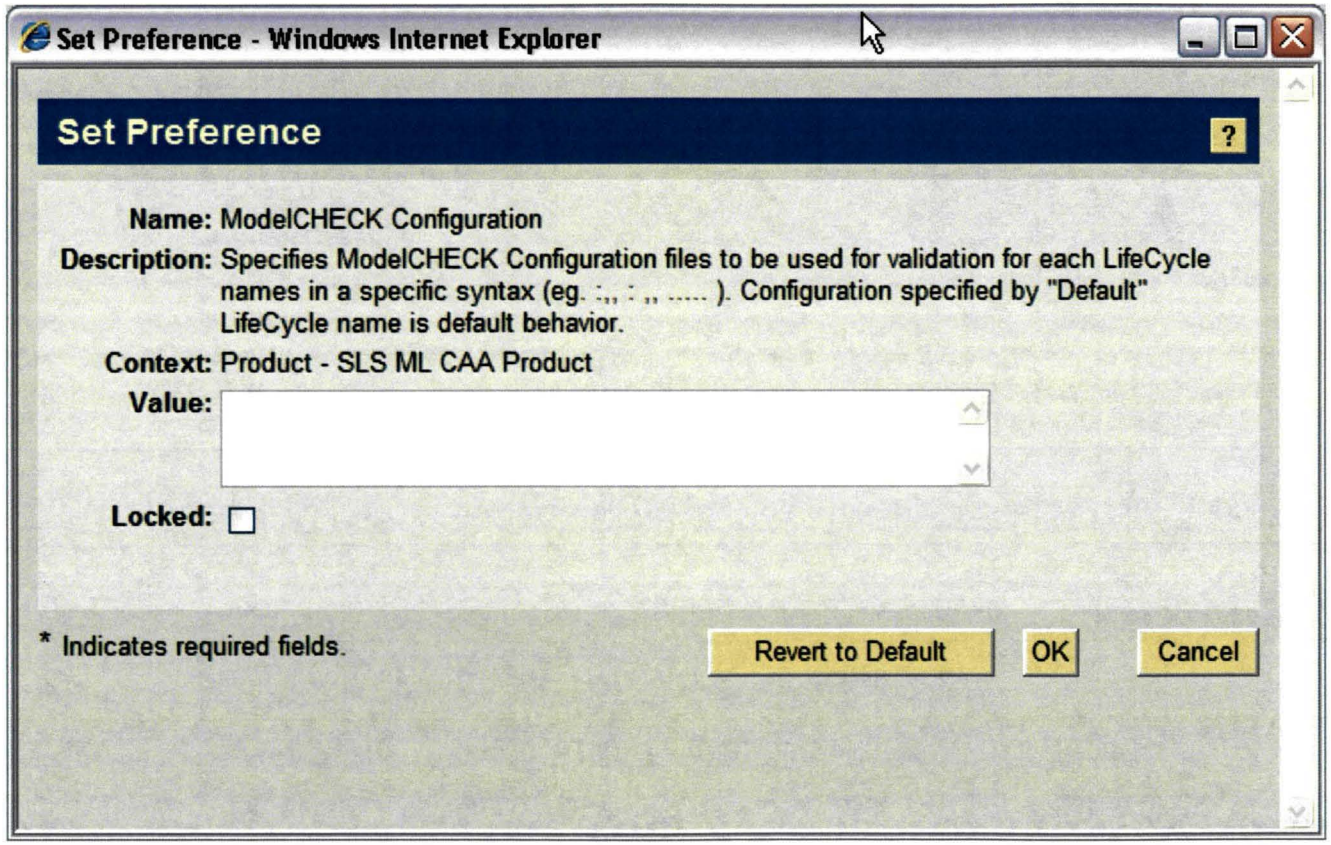


ModelCHECK Validation

ModelCHECK Validation Site Setting Options		
Value	Lock	Description
No	Yes	Default settings – Disables ModelCHECK Gatekeeper at all contexts
Yes	Yes	Enables ModelCHECK Gatekeeper for all contexts. Only checks against preferences set at the site context
No	No	Disables ModelCHECK Gatekeeper at the site level but allows Gatekeeper to be set at different contexts
Yes	No	Enables ModelCHECK Gatekeeper for all contexts. Checks against preferences set at each context



ModelCHECK Configuration



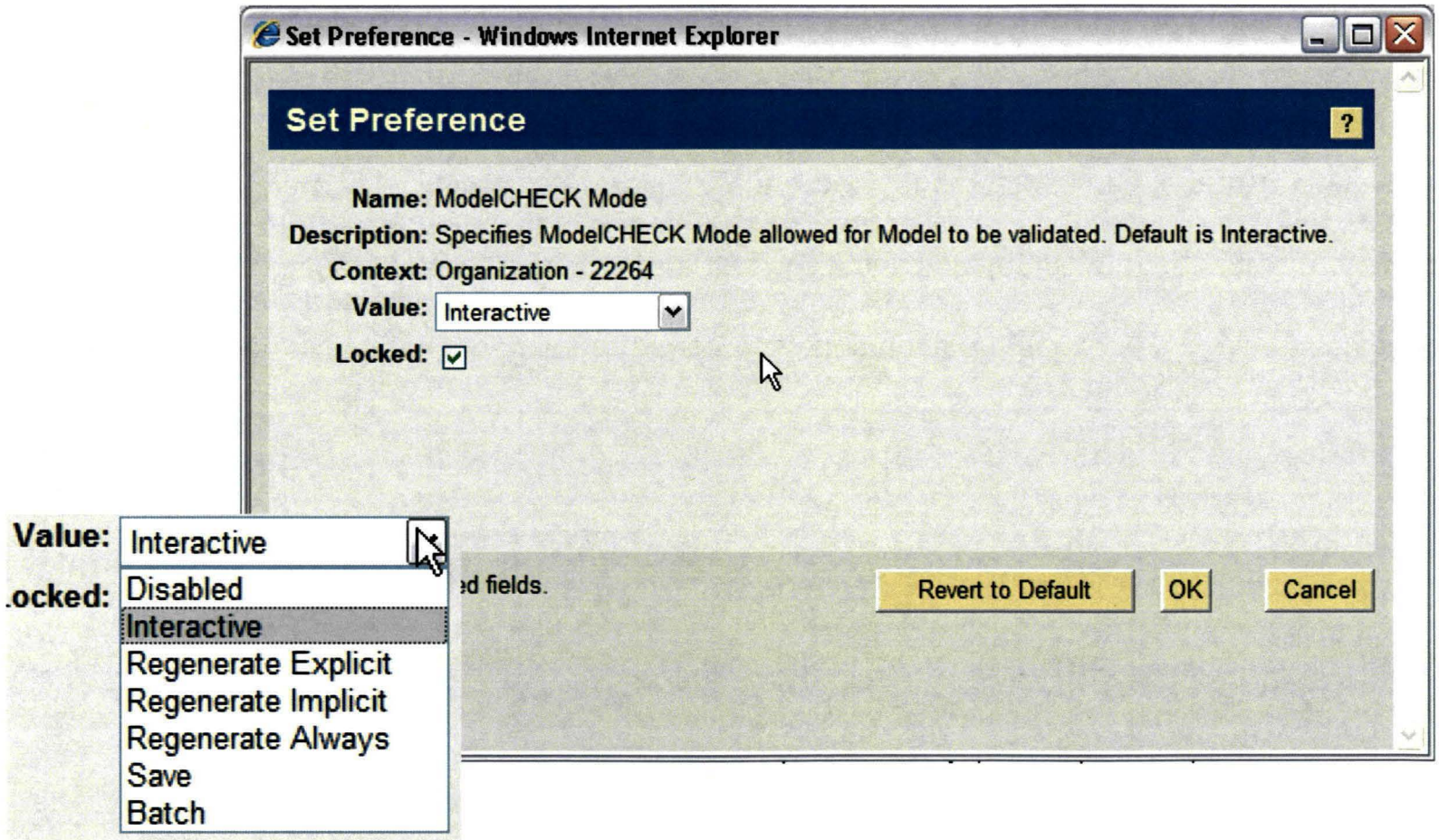
ModelCHECK Configuration

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

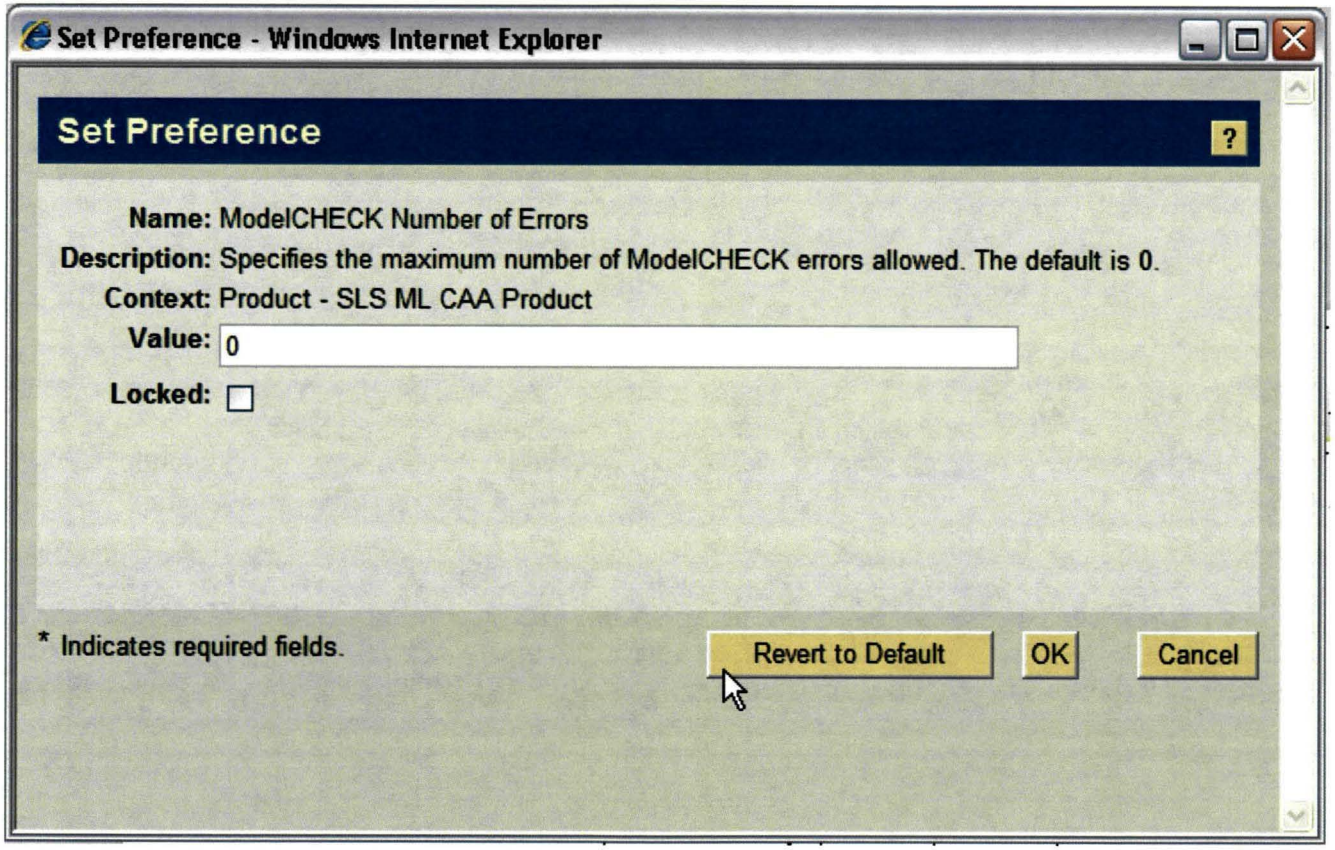
Default:check/default_checks.mch,start/nostart.mcs,constant/inch.mcn,status/review_status.mcq
Basic:check/basic_checks.mch,start/basic_start.mcs,constant/inch.mcn,status/review_status.mcq
Release:check/release_checks.mch,start/release_start.mcs,constant/inch.mcn,status/review_status.mcq
Approval:check/approval_checks.mch,start/approval_start.mcs,constant/inch.mc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

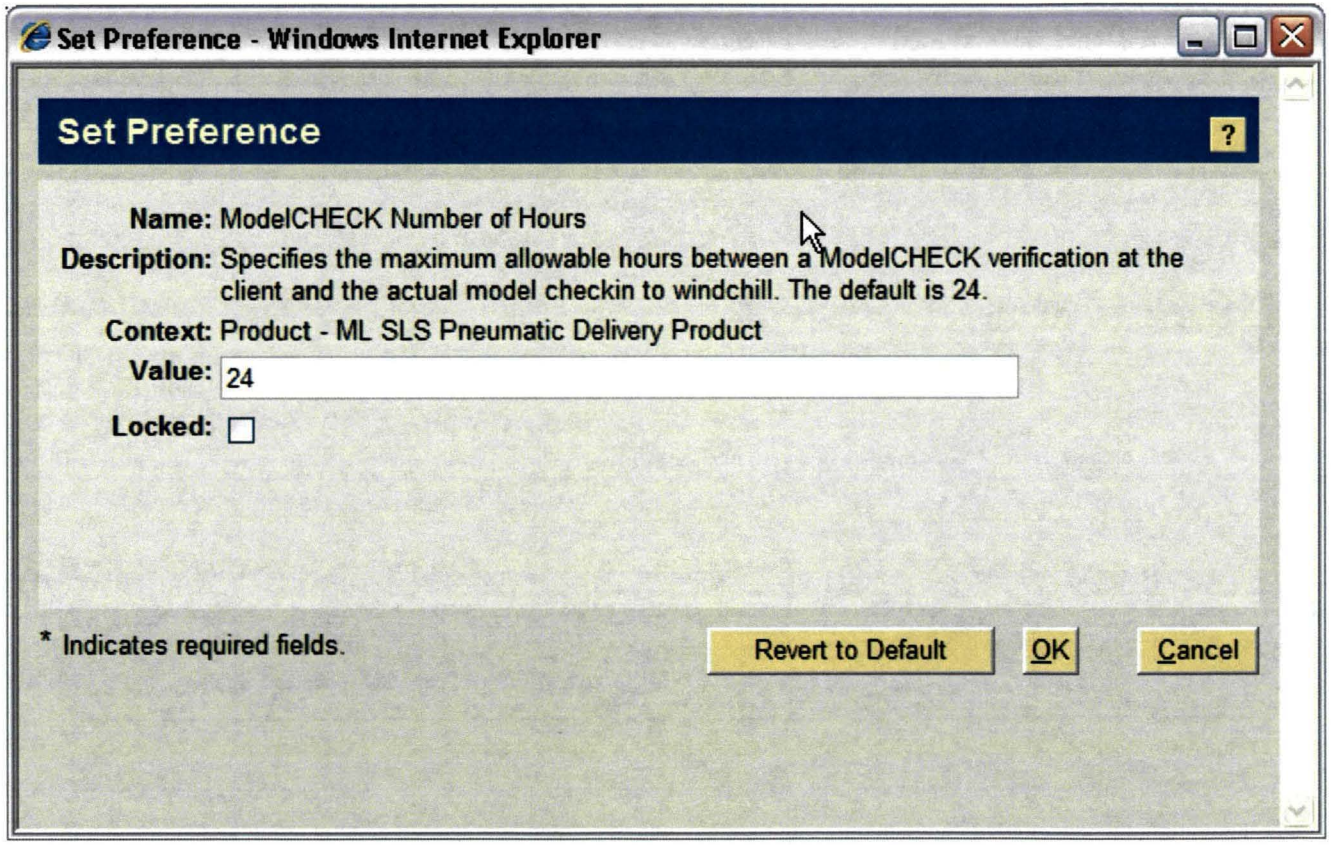
ModelCHECK Mode



ModelCHECK Number of Errors

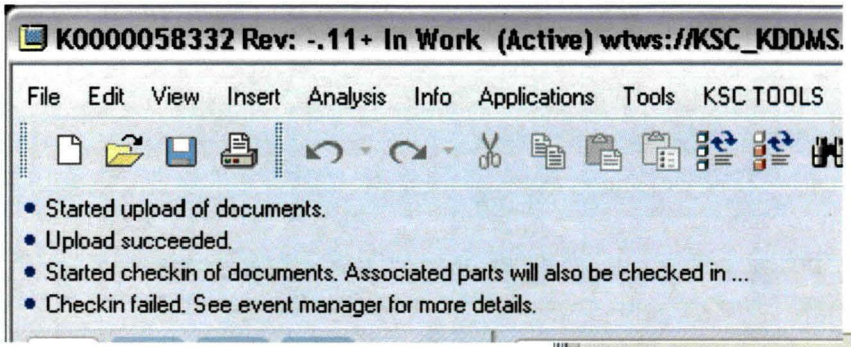


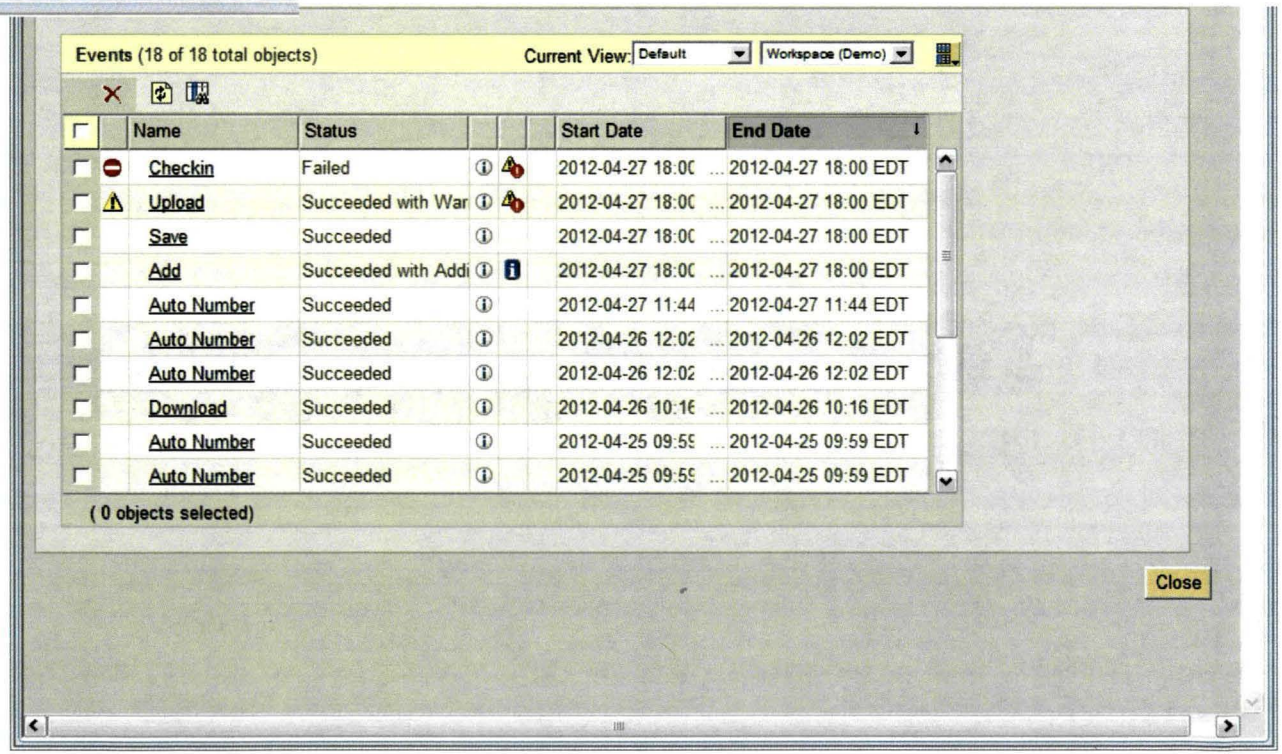
ModelCHECK Number of Hours



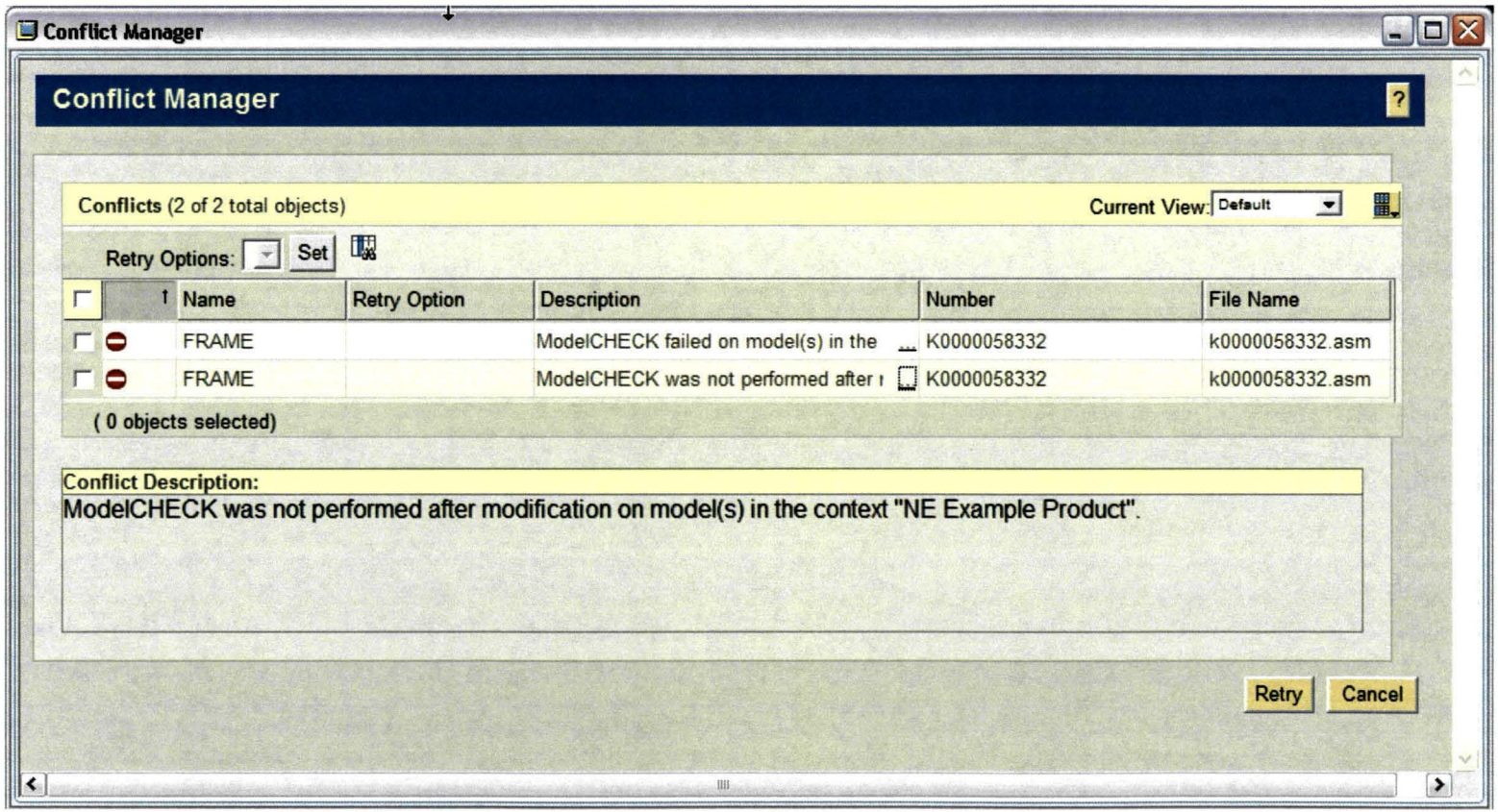
Notes:
Pro/ENGINEER Wildfire 4.0 M100 and Windchill PDMLink 9.1 M030 change the behavior of ModelCHECK Gatekeeper and mark files as out of date with ModelCHECK based on the Workspace status, not a time increment. The status is stored in the MC_VERIFIED parameter/IBA when available. ModelCHECK Number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

Checkin Results

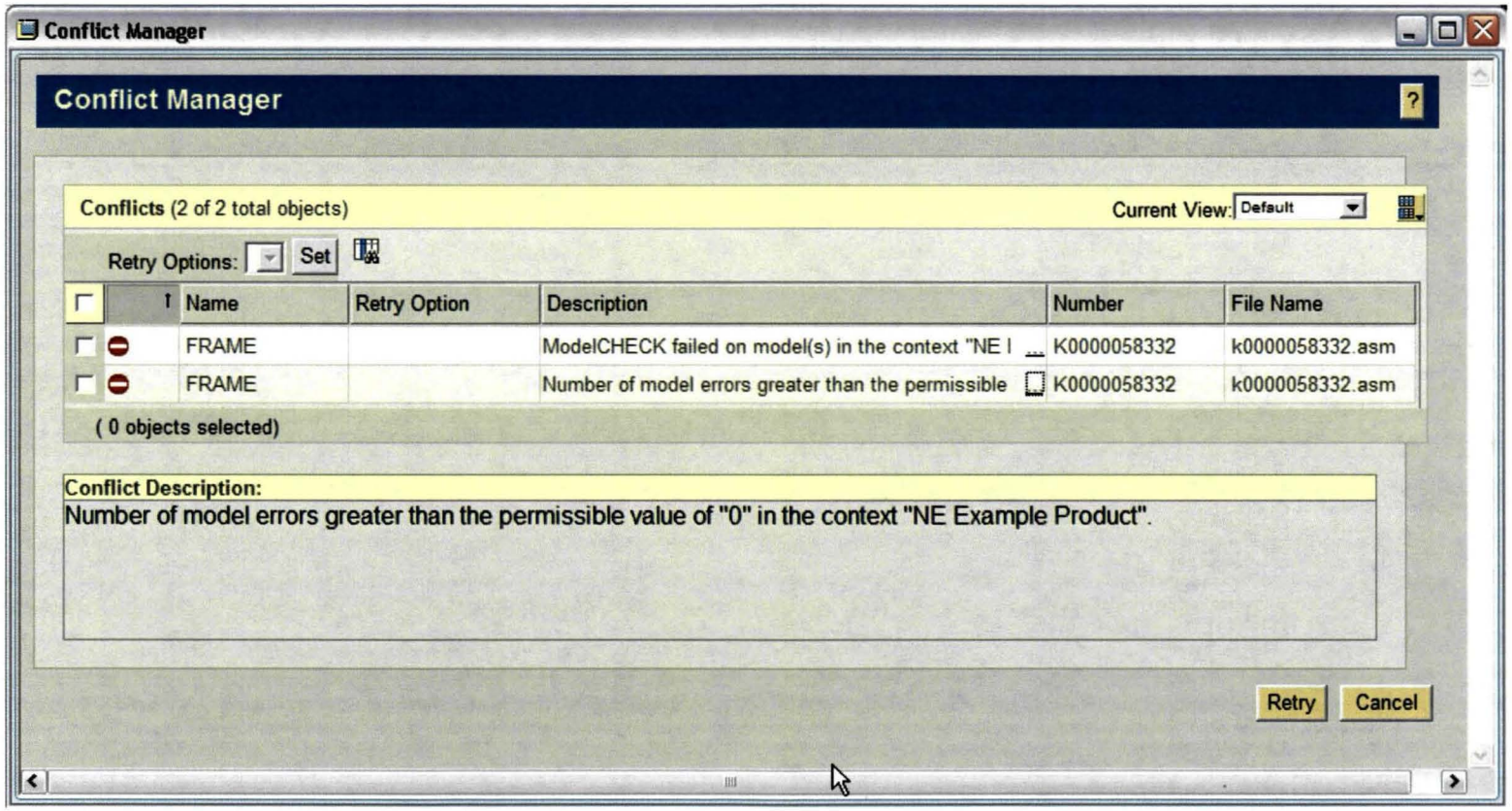




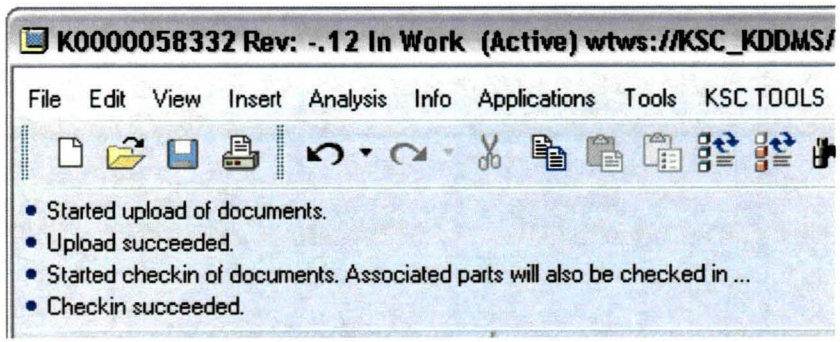
Example Conflicts

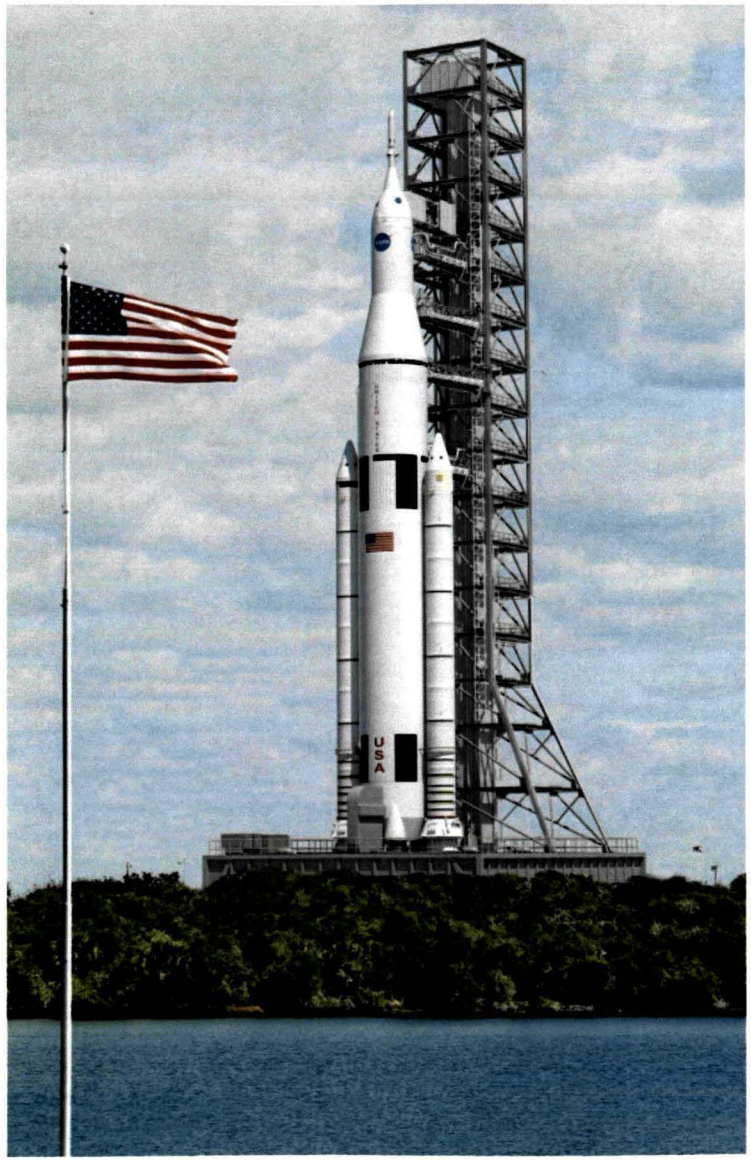


Example Conflicts



Success





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