

# Implementation of a Data-Driven Conditional User Interface

**IBM Pulse 2011**

**Mark Graham, Technical Lead  
Sandia National Laboratories**

**Keith Pittman  
IBM GBS**

**March 1, 2011**

**SAND Number: TBD**

Sandia is a multi-program laboratory operated by Sandia Corporation, a Lockheed Martin Company, or the United States Department of Energy's National Nuclear Security Administration under contract DE-AC04-94AL85000.





# Agenda

- Sandia National Laboratories
- Conditional UI Process / Implementation
- Scenarios
  - Hide an attribute until needed
  - Prevent display of obsolete domain values
  - Display domain values based upon record data
  - Grant editing capability on record-by-record basis based upon Craft membership
  - Selected editable attributes on record-by-record based upon Craft membership, other attributes are read-only
  - Prevent related record addition based upon MAINRECORD data
- Questions



# Sandia National Laboratories



Sandia National Laboratories is a multi-program laboratory operated by Sandia Corporation, a Lockheed Martin Company, for the United States Department of Energy's National Nuclear Security Administration. The Core purpose for Sandia is to help our nation secure a peaceful and free world through technology. Sandia serves many U.S. Government agencies including Homeland Security, Energy, Military, Nonproliferation, and Security. Sandia is also a low-volume manufacturer of advanced components.



# Conditional UI Process

- Identify requirement defining desired change
  - The condition that will trigger the change
  - Define the change when condition is met
- A Conditional Expression (SQL statement or class file) must be created to allow Maximo to determine if the condition exists (TRUE or FALSE)



# Conditional UI Implementation

- Global Restrictions
  - Object
  - Attribute
- Security Group Data Restrictions
  - Object, Attribute, Collection
- Control
  - Tab, Section, Table, Textbox, ...
  - Set by:
    - Signature Option
    - Security Group
    - Condition
    - Property
- Domain Data



# Scenario

- Hide an attribute except when needed
- This case
  - Add an attribute to the synonym domain that is only applicable to one domain
  - Hide the new attribute for all other domains



# Requirement

- Add new attribute “Include On Cert”
  - Work Log table
  - Synonym Domain table
  - Domain application
- Synonym Domain
  - Only display when DOMAINID = LOGTYPE

# Database Changes

## SynonymDomain Table

Attribute: SNLCCINCLUDEONCERT	Title: *Include On Cert	
Description: *Include on Certificate Flag for Work Log	Class:	
Type: YORN	Domain:	
Length: 1	Default Value: 0	
Scale: 0	Alias: SNLCCINCLUDEONCERT	
Required? <input checked="" type="checkbox"/>	Status:	
<b>Advanced</b>		
Entity: SYNONYMDOM	Persistent? <input checked="" type="checkbox"/>	Audit Enabled? <input checked="" type="checkbox"/>
Column: SNLCCINCLUDEC	Must Be? <input type="checkbox"/>	Multilanguage Supported? <input type="checkbox"/>
Same as Object:	Positive? <input type="checkbox"/>	Multilanguage in Use? <input type="checkbox"/>
Same as Attribute:	User Defined? <input checked="" type="checkbox"/>	E-signature Enabled? <input type="checkbox"/>
Autonumber:	Can Autonumber? <input type="checkbox"/>	Primary Column:
Search Type: EXACT	Long Description Owner? <input type="checkbox"/>	Attribute #: 10
Localizable? <input type="checkbox"/>	Sequence Name:	Next Sequence Number:
Text Direction:	Type of Complex Expression:	

## WorkLog Table

Attribute: SNLCCERTIFICATE	Title: *Include on Cert	
Description: *Should this log entry be included on the certific	Class:	
Type: YORN	Domain:	
Length: 1	Default Value: 0	
Scale: 0	Alias: SNLCCERTIFICATE	
Required? <input checked="" type="checkbox"/>	Status:	
<b>Advanced</b>		
Entity: WORKLOG	Persistent? <input checked="" type="checkbox"/>	Audit Enabled? <input type="checkbox"/>
Column: SNLCCERTIFICA	Must Be? <input type="checkbox"/>	Multilanguage Supported? <input type="checkbox"/>
Same as Object:	Positive? <input type="checkbox"/>	Multilanguage in Use? <input type="checkbox"/>
Same as Attribute:	User Defined? <input checked="" type="checkbox"/>	E-signature Enabled? <input type="checkbox"/>
Autonumber:	Can Autonumber? <input type="checkbox"/>	Primary Column:
Search Type: EXACT	Long Description Owner? <input type="checkbox"/>	Attribute #: 17
Localizable? <input type="checkbox"/>	Sequence Name:	Next Sequence Number:
Text Direction:	Type of Complex Expression:	



# Set Up Conditions

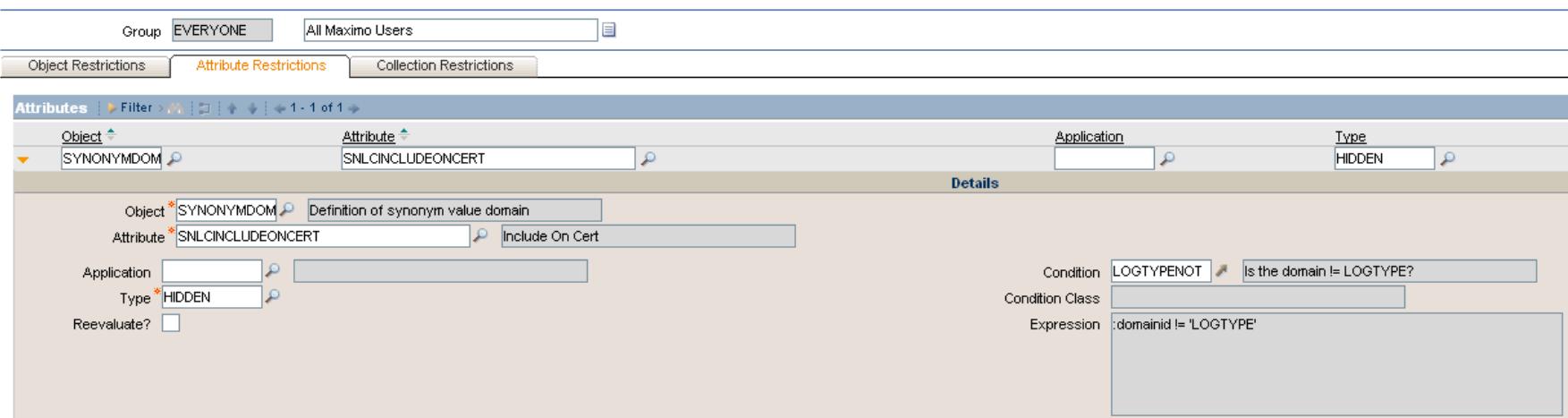
- Define different conditions based upon implementation type
- Domain = LOGTYPE
- Domain != LOGTYPE

Condition	LOGTYPEDMAIL	Is the domain = LOGTYPE?
Type	EXPRESSION	
Expression	:domainid = 'LOGTYPE'	
Class		
Always Evaluate?	<input type="checkbox"/>	
Reference Count	2	

Condition	LOGTYPENOT	Is the domain != LOGTYPE?
Type	EXPRESSION	
Expression	:domainid != 'LOGTYPE'	
Class		
Always Evaluate?	<input type="checkbox"/>	
Reference Count	1	

# Security Group Data Restriction

- Least Overhead of Conditional UI Methods
- Data Restriction Types:
  - Hidden: hides data, not the control
  - Qualified: only at Object level
  - Required: only at Attribute level
  - Read Only



The screenshot shows a Maximo application interface for managing security group data restrictions. The top navigation bar includes 'Group' (set to 'EVERYONE'), 'All Maximo Users', and tabs for 'Object Restrictions', 'Attribute Restrictions' (which is selected), and 'Collection Restrictions'. The main content area is titled 'Attributes' and shows a single record: 'SYNONYMDOM' (Object) with attribute 'SNLCINCLUDEONCERT' (Attribute). The 'Details' section for this record includes fields for 'Application' (empty), 'Type' (set to 'HIDDEN'), and a 'Condition' field containing the expression 'LOGTYPENOT Is the domain != LOGTYPE?'. The 'Condition Class' and 'Expression' fields are also visible but empty.

# Effect of Hidden

Domain: LOGICALOPERATOR      Logical Operator: AND

Domain Type: SYNONYM      Length: 25

SYNONYM Domain | Filter | Download | ? | = | 1 - 2 of 2

Active	Display Order	Internal Value	Value	Description	Include On Cert	Default Organization	Site
<input type="checkbox"/>	1	AND	AND	Logical AND	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	2	OR	OR	Logical OR	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>

Internal Value: AND  
Value: AND  
Description: Logical AND  
Include on Cert:

Default?   
Organization:   
Site:   
Active?   
Display Order:

---

Domain: LOGTYPE      LOGTYPE: AND

Domain Type: SYNONYM      Length: 16

SYNONYM Domain | Filter | Download | ? | = | 1 - 10 of 20

Active	Display Order	Internal Value	Value	Description	Include On Cert	Default Organization	Site
<input type="checkbox"/>	1	CLIENTNOTE	CLIENTNOTE	Client Note	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	2	UPDATE	RQMTS CHANGE	Requirements Change(s)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	3	UPDATE	ES&H COMMENT	ES&H Comment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	4	UPDATE	UPDATE	Update	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	5	WORK	LIMITATIONS	Limitations	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	6	WORK	REPAIR	Repair Documentation	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	7	WORK	DCDCALNOTE	DCD Note	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	8	WORK	AMENDMENT REASON	Amendment Reason	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	9	WORK	UNCERTAINTY	Uncertainty Statement	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	10	WORK	SHELF LIFE EXCEEDED	Storage Shelf Life Exceeded	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Internal Value: WORK  
Value: LIMITATIONS  
Description: Limitations  
Include on Cert:

Default?   
Organization:   
Site:   
Active?   
Display Order:



# Application Restriction

- More Overhead than Security Group Restriction
- More Control
- Requires Signature Option
- Signature Option Grant in Security Groups Application

# Domain Application

- Signature Option
- Configure Properties for Two Controls

Configure Conditional Properties

Signature Option **VINCLUDEONCE** View the Include on Cert Attribute on Synonym

Security Groups

Name	Description	Sequence
EVERYONE	All Maximo Users	10

Conditions for Security Group EVERYONE

Name	Description	Reevaluate	Sequence
LOGTYPEDMAIN	Is the domain = LOGTYPE?	<input checked="" type="checkbox"/>	10

Property Values for Condition

Property values when condition LOGTYPEDMAIN is true		Property values when condition LOGTYPEDMAIN is false	
Property	Value	Property	Value
display	true	display	false

Add/Modify Signature Options

Option	Description
vinc	
VINCLUDEONCE	View the Include on Cert Attribute on Synonym

Option: **VINCLUDEONCE**  
Description: View the Include on Cert Attribute on Synonym  
Option Also Grants:  
Option Also Revokes:  
Prerequisite: READ

E-signature Enabled?   
Visible?

OK Cancel

# Effect of Display Property

Domain: LOGICALOPERATOR | Logical Operator: AND

Domain Type: SYNONYM | Length: 25

**SYNONYM Domain** | Filter | Download | ? | [Logout](#)

Active	Display Order	Internal Value	Value	Description	Include On Cert	Default Organization	Site
<input type="checkbox"/>	1	AND	AND	Logical AND	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	  
<input type="checkbox"/>	2	OR	OR	Logical OR	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	  
Internal Value: OR Value: OR Description: Logical OR					Default? <input checked="" type="checkbox"/> Organization: <input type="text"/> Site: <input type="text"/> Active? <input checked="" type="checkbox"/> Display Order: <input type="text"/>		

---

Domain: LOGTYPE | LOGTYPE

Domain Type: SYNONYM | Length: 16

**SYNONYM Domain** | Filter | Download | ? | [Logout](#)

Active	Display Order	Internal Value	Value	Description	Include On Cert	Default Organization	Site
<input type="checkbox"/>	1	CLIENTNOTE	CLIENTNOTE	Client Note	<input type="checkbox"/>	<input checked="" type="checkbox"/>	  
<input type="checkbox"/>	2	UPDATE	RQMTS CHANGE	Requirements Change(s)	<input type="checkbox"/>	<input type="checkbox"/>	  
<input type="checkbox"/>	3	UPDATE	ES&H COMMENT	ES&H Comment	<input type="checkbox"/>	<input type="checkbox"/>	  
<input type="checkbox"/>	4	UPDATE	UPDATE	Update	<input type="checkbox"/>	<input checked="" type="checkbox"/>	  
<input type="checkbox"/>	5	WORK	LIMITATIONS	Limitations	<input checked="" type="checkbox"/>	<input type="checkbox"/>	  
<input type="checkbox"/>	6	WORK	REPAIR	Repair Documentation	<input type="checkbox"/>	<input type="checkbox"/>	  
<input type="checkbox"/>	7	WORK	DCDCALNOTE	DCD Note	<input checked="" type="checkbox"/>	<input type="checkbox"/>	  
<input type="checkbox"/>	8	WORK	AMENDMENT REASON	Amendment Reason	<input checked="" type="checkbox"/>	<input type="checkbox"/>	  
<input type="checkbox"/>	9	WORK	UNCERTAINTY	Uncertainty Statement	<input checked="" type="checkbox"/>	<input type="checkbox"/>	  
<input type="checkbox"/>	10	WORK	SHELF LIFE EXCEEDED	Storage Shelf Life Exceeded	<input type="checkbox"/>	<input type="checkbox"/>	  
Internal Value: WORK Value: LIMITATIONS Description: Limitations					Default? <input type="checkbox"/> Organization: <input type="text"/> Site: <input type="text"/> Active? <input checked="" type="checkbox"/> Display Order: <input type="text"/>		
Include on Cert? <input checked="" type="checkbox"/>					Display Order: <input type="text" value="1"/>		



# Scenario

- Prevent Display of Obsolete Domain Values
- This case
  - Maximo will not allow domain values to be deleted if they have been used
  - Prevent the domain values from being used in the future



# Set Up Condition

- Always return false

All Conditions | Filter > 1 - 1 of 1

Condition	Description	Type
false		
SNLFALSE	Always return a false value	EXPRESSION

**Details**

Condition: SNLFALSE      Always return a false value

Type: EXPRESSION

Expression:  $1 = 0$

Class:

Always Evaluate?

Reference Count: 0

# Add Condition to Domain Value

Domain **LOGTYPE**

Domain Type **SYNONYM**

Length **16**

Active	Display Order	Internal Value	Value	Description	Include On Cert	Default?	Organization	Site
<input type="checkbox"/>	1	CLIENTNOTE	CLIENTNOTE	Client Note	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/>	2	CLIENTNOTE	NEWCLIENTNOTE	New Client Note	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Internal Value: **CLIENTNOTE**  
Value: **NEWCLIENTNOTE**  
Description: **New Client Note**  
Include on Cert?

Default?   
Organization:   
Site:   
Active?   
Display Order: **2**

View/Modify Conditions

Domain **LOGTYPE**

Conditions **Filter**  **Download**

Value ID	Value Description	Condition Number
=LOGTYPE NEWCLIENTNOTE		
LOGTYPE NEWCLIENTNOTE	New Client Note	SNLFALSE

Value ID: **LOGTYPE|NEWCLIENTNOTE**   
Condition Number: **SNLFALSE**   
Object Name:   
Type: **EXPRESSION**  
Expression: **1 = 0**  
Condition Class:

**New Row**





# Lookup

- Obsolete Value Not Shown



The screenshot shows a 'Select Value' dialog box with a blue header bar containing a 'Select Value' button and standard window controls. The main area is a table with two rows. The first row has 'Value' in the first column and 'Description' in the second column. The second row has 'CLIENTNOTE' in the first column and 'Client Note' in the second column. The table has a light gray background with alternating row colors. The top of the table has a dark gray header row. The columns are labeled 'Value' and 'Description'. The table is surrounded by a thin gray border. The entire dialog box is set against a white background.

Value	Description
client	
<b>CLIENTNOTE</b>	<b>Client Note</b>

# LNK Domain Value Restriction

The image shows a software interface with three windows related to domain value restriction:

- ALN Domain** window (top left): Shows a list of hardware types. The domain is set to **LNKHWTTYPE**, data type to **UPPER**, and length to **1**. The list includes:
  - Master Cylinder Key
  - Cylinder Key
  - Cylinder
  - Padlock
  - Padlock Key
- View/Modify Conditions** window (bottom left): Shows conditions for the domain **LNKHWTTYPE**. The table includes:

Value ID	Value Description	Condition Number
LNKHWTTYPE A ORGNMFAC LNK		
LNKHWTTYPE A ORGNMFAC LNK	<b>Master Cylinder Key</b>	LNKLEVEL2
LNKHWTTYPE A ORGNMFAC LNK	Master Cylinder Key	LNKLEVEL3
- Select Value** window (right): Shows a list of security levels. The table includes:

Condition	Description	Type
Inklevel		
LNKLEVEL1	Lock and Key Security Level	EXPRESSION
LINKLEVEL2	<b>Lock and Key Security Level</b>	EXPRESSION
LNKLEVEL3	Lock and Key Security Level	EXPRESSION

Details for **LINKLEVEL2** (selected):

Condition	Description
LNKLEVEL2	Lock and Key Security Level

Type: EXPRESSION  
Expression: LNKLEVEL='2'  
Class:   
Always Evaluate?





# Business Rules

- Sandia has 17 groups that specialize in different types of calibrations (pressure, mass, AC, DC, temperature, ...)
- A Metrologist can be authorized to do work in more than one specialization (which is defined as a CRAFT)
- Assets calibrated by one specialization can be used as a tool in another specialization
  - a thermocouple calibrated by temperature lab could be used as a calibrated tool by the pressure lab
- Calibrating (managing) lab laborers have full access to any records relating to the record (ASSET, PM, JP, WO)
- Custodians (and other specified users) have read-only access to the same records, but are allowed to edit a few attributes on the asset record



# Scenario

- Grant data editing capability on record-by-record basis based upon Craft membership



# PM Data Restrictions

- Members of managing lab have full editing capability

-- member of a managing lab

(exists (select 1 from laborcraftrate a, labor b  
where a.craft in (

**:SNLCCALLAB,:SNLCINHOUSECALLAB** )

and a.laborcode=b.laborcode

and b.personid = :&PERSONID& ))

-- member of the IT Team

or exists (select 1 from groupuser c, maxuser d  
where c.userid=d.userid

and d.personid = :&PERSONID&

and c.groupname ='ITTEAM')

or 1=1



# PM Data Restrictions

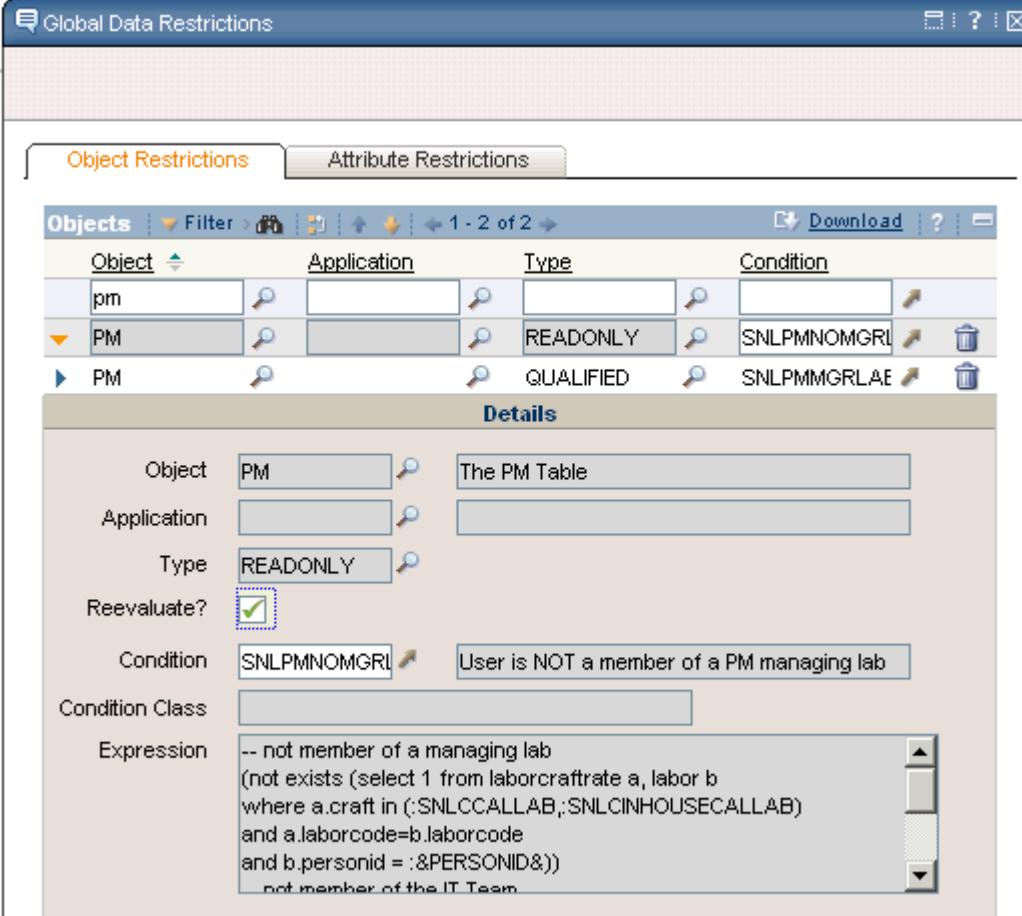
- Non-members of managing lab have read-only capability

-- not a member of a managing lab  
(not exists (select 1 from laborcraftrate a, labor b  
where a.craft in (  
:SNLCCALLAB,:SNLCINHOUSECALLAB )  
and a.laborcode=b.laborcode  
and b.personid = :&PERSONID& ))

-- not a member of the IT Team  
and not exists (select 1 from groupuser c,  
maxuser d  
where c.userid=d.userid  
and d.personid = :&PERSONID&  
and c.groupname ='ITTEAM')

# PM Restrictions Setup

No need for Attribute Restrictions because entire record is restricted to read-only if not a member of the managing lab



The screenshot shows the 'Global Data Restrictions' interface. At the top, there are tabs for 'Object Restrictions' and 'Attribute Restrictions', with 'Object Restrictions' being the active tab. Below this is a table titled 'Objects' with columns for 'Object', 'Application', 'Type', and 'Condition'. There are two entries: one for 'pm' with 'Type' as 'READONLY' and 'Condition' as 'SNLPMNOMGRL'; and one for 'PM' with 'Type' as 'READONLY' and 'Condition' as 'SNLPMNOMGRL'. The 'PM' entry is expanded to show a 'Details' panel. In this panel, the 'Object' is set to 'PM' and the 'Type' is 'READONLY'. The 'Condition' field contains the value 'SNLPMNOMGRL' and the description 'User is NOT a member of a PM managing lab'. The 'Expression' field contains the following SQL-like query:

```
-- not member of a managing lab  
(not exists (select 1 from laborcraftrate a, labor b  
where a.craft in (:SNLCCALLAB,:SNLCINHOUSECALLAB)  
and a.laborcode=b.laborcode  
and b.personid = :&PERSONID&))  
not member of the IT Team
```



# PM – Member of Managing Lab

SNL Preventive Maintenance (Cal) MAXIMO Development

PM 10021 10021, MKS Instruments Corp HQ, 390HA-100, Site SNLCAALBRTRN Status ACTIVE

Managing Lab \* PSL-VACUUM PSL Vacuum Lab

Master PM

Override Updates from Master PM?

Attachments

Open Work Orders Created From PM | Filter |  |

Work Order	Status	Target Start	Actual Finish
...No rows to display...			

**Details**

Location  Lead Time (Days)  Counter

Asset 10021 Lead Time Active?  Use Job Plan Sequences?

Route  Has Children?

**Work Order Information**

Job Plan 10021 Description 10021, MKS Instruments Corp HQ, 390HA-100,

Work Type CAL Last Start Date 1/22/10

Work Order Status \* WRECEIPT Last Completion Date 7/23/10

Priority  Earliest Next Due Date 7/23/11

Supervisor  Crew  Lead 3796

Interruptible?  Work Group  Owner  Owner Group

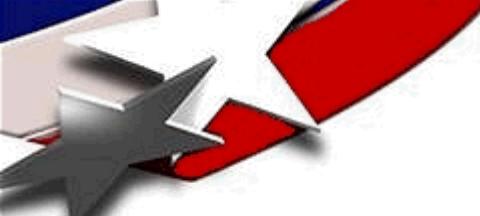
**Resource Information**

GL Account   Use this PM to Trigger PM Hierarchy?

Storeroom   Child Work Orders and Tasks Will Inherit Status Changes?

Storeroom Site SNLCAALBRTRN





# PM–Not Member Managing Lab

SNL Preventive Maintenance (Cal)

MAXIMO Development

Find: Select Action

List PM Frequency Seasonal Dates Job Plan Sequence PM Hierarchy Audit PM History

PM 10021 10021, Mks Instruments Corp HQ, 390HA-100, Site SNLCALBRTN Status ACTIVE  
Managing Lab PSL-VACUUM PSL Vacuum Lab  
Master PM

Override Updates from Master PM? Attachments

Open Work Orders Created From PM Filter Download

Work Order	Status	Target Start	Actual Finish
...No rows to display...			

Details

Location	Lead Time (Days)	Counter
Asset 10021	28	1
Route	Lead Time Active?	Use Job Plan Sequences?
	<input checked="" type="checkbox"/>	<input type="checkbox"/>
		Has Children?
		<input type="checkbox"/>

Work Order Information

Job Plan 10021	Description 10021, Mks Instruments Corp HQ, 390HA-100, <input type="checkbox"/>	Responsibility
Work Type CAL <input type="checkbox"/>	Last Start Date 1/22/10 <input type="checkbox"/>	Supervisor <input type="checkbox"/>
Work Order Status WRECEIPT <input type="checkbox"/>	Last Completion Date 7/23/10 <input type="checkbox"/>	Crew <input type="checkbox"/>
Priority <input type="checkbox"/>	Earliest Next Due Date 7/23/11 <input type="checkbox"/>	Lead 3796 <input type="checkbox"/>
Interruptible? <input type="checkbox"/>		Work Group <input type="checkbox"/>
		Owner <input type="checkbox"/>
		Owner Group <input type="checkbox"/>

Resource Information

GL Account <input type="checkbox"/>	Use this PM to Trigger PM Hierarchy? <input checked="" type="checkbox"/>
Storeroom <input type="checkbox"/>	Child Work Orders and Tasks Will Inherit Status Changes? <input checked="" type="checkbox"/>
Storeroom Site SNLCALBRTN <input type="checkbox"/>	



# Scenario

- Make selected attributes editable on record-by-record based upon Craft membership, other attributes are read-only



# Condition 1

- All users who have some kind of access to the record

-- customer of some type  
exists (select 1 from assetlocusercust  
where personid= :&PERSONID&  
and assetnum= :assetnum and siteid= :siteid  
and (iscustodian=1 or isuser=1 or snlcisaltcustodian=1  
or snlcisaltootpoc=1 ))

-- member of the owning org  
or exists (select 1 from person  
where personid= :&PERSONID&  
and snlcdeptid= :snlcowningorg )

-- a member of a cal lab  
or exists (select 1 from laborcraftrate a, labor b  
where a.laborcode=b.laborcode  
and b.personid= :&PERSONID& )

-- member of the IT Team  
or exists (select 1 from groupuser c, maxuser d  
where c.userid=d.userid  
and d.personid = :&PERSONID&  
and c.groupname = 'ITTEAM')



# Condition 2

- All users who are restricted to read-only access to identified attributes

(:status != 'NOT READY' or :snlccallab is not null ) and  
-- customer of some type  
(exists (select 1 from assetlocusercust  
where personid= :&PERSONID&  
and assetnum=:assetnum and siteid=:siteid  
and (iscustodian=1 or isuser=1 or snlcisaltcustodian=1  
or snlcisaltootpoc=1 )  
  
-- member of the owning org  
or exists (select 1 from person  
where personid= :&PERSONID&  
and snlcdeptid=:snlcowningorg )  
  
-- a member of a cal lab  
or exists (select 1 from laborcraftrate a, labor b  
where a.laborcode=b.laborcode  
and b.personid= :&PERSONID& )  
)  
-- but not a member of the managing lab  
and not exists (select 1 from laborcraftrate a, labor b  
where a.craft=:snlcowninglab and a.craft = :snlccallab  
and a.laborcode=b.laborcode  
and b.personid= :&PERSONID& )



# Condition 3

- Users who will never have editing capability

-- not a customer of some type

not exists (select 1 from assetlocusercust  
where personid= :&PERSONID&

and assetnum=:assetnum and siteid=:siteid

and (iscustodian=1 or isuser=1 or snlcisaltcustodian=1  
or snlcisaltootpoc=1 )

-- not a member of the owning org

and not exists (select 1 from person  
where personid= :&PERSONID&  
and snlcdeptid=:snlcowningorg )

-- not a member of the IT Team

and not exists

(select 1 from groupuser c, maxuser d  
where c.userid=d.userid  
and d.personid = :&PERSONID&  
and c.groupname = 'ITTEAM')



# Implementation

- Global Data Restriction
- Two Restrictions Required
  - Object-level: grant access to the record if any amount of editing capability is to be granted
  - Attribute-level: restrict to READONLY as needed
- One condition record allowed at each level
  - Object-level: Object / Restriction
    - Asset / Qualified / Condition 1
    - Asset / Read-Only / Condition 3
  - Attribute-level: Object / Attribute / Restriction
    - Asset / Manufacturer / ReadOnly / Condition 2
    - Asset / Vendor / ReadOnly / Condition 2
    - Unidentified attributes can be edited

# Custodian Condition

SNL Assets (Cal)

MAXIMO Development

Asset 21542 Counter,Universal

Manufacturer HP Hewlett Packard Co

Model # 5335A

Serial # 2336A05298

Tool (TOME) TL-096 Counter,Universal

Rotating Item/Set TL-096 ITEMSET

Item Type

Attachments

Type CALIBRATED

Status ACTIVE

Bin

Site SNLCALBRTRN

Source ID

Other ID N/A

Moved?

Details

Parent

Maintain Hierarchy?

Location

Customer Location SNLNIM/TA1/870/1504 SNLNIM, TA1, Bldg 870, Rm 1504

Physical Location SNLNIM/TA1/870/1504

Cal Lab Deliver Loc SNLNIM/TA1/827/180 SNLNIM, TA1, Bldg 827, Rm 180

Cust Drop Loc SNLNIM/TA1/870/1504B SNLNIM, TA1, Bldg 870, Rm 1504B

Condition Code

Condition Class CAL

Item Type

Tool Rate

Custodian / OOT POC

Calibration Details

Management / Ownership / Billing

Purchase Information / Costs

Filter 1 - 2 of 2 Download ?

Person	Name	Phone	Primary	Custodian	OOT POC	All Custodian	All OOT POC
74517			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
63684			<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Custodian / OOT POC

Calibration Details

Management / Ownership / Billing

Purchase Information / Costs

Managing Cal Lab PSL-ELECTRICA PSL Electrical Lab

Owner 000866

Owning SNL Org #

Cost Recovery?

Owning Cal Lab CALMAINT Calibration and Maintenance

Project ID 7530

Task ID 09

Project Status APPR

Task Chargeable/End Date? Y 9/30/25 12:00 AM

Purchase Information

Vendor

Installation Date

End of Life

Purchase Price \* 2,498.73

Replacement Cost \* 2,498.73

PO

Costs

Total Cost 0.00

YTD Cost 0.00

Budgeted \* 0.00

Inventory 0.00

# Managing Lab Condition

SNL Assets (Cal)

Find: Select Action

List Asset Spare Parts Safety Meters Specifications ES&H Properties PMs History

Asset	21542	Counter,Universal	Attachments	
Manufacturer	HP	Hewlett Packard Co	Type	CALIBRATED
Model #	5335A		Status	ACTIVE
Serial #	2336A05298		Bin	
Tool (TDE)	TL-096	Counter,Universal	Site	SNLICALBRTN
Rotating Item/Set	TL-096	ITEMSET	Source ID	
Item Type			Other ID	N/A
Moved?				

**Details**

Parent		Condition Code	
Maintain Hierarchy?	<input type="checkbox"/>	Condition Class	CAL
Location		Item Type	
Customer Location	SNLNMTA1/870/1504	Tool Rate	
Physical Location	SNLNMTA1/870/1504		
Cal Lab Deliver Loc	SNLNMTA1/827/180		
Cust Drop Loc	SNLNMTA1/870/1504B		

Custodian / OOT POC   Calibration Details   Management / Ownership / Billing   Purchase Information / Costs

Person	Name	Phone	Primary	Custodian	OOT POC	Alt Custodian	Alt OOT POC
74517			<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
63884			<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Custodian / OOT POC   Calibration Details   Management / Ownership / Billing   Purchase Information / Costs

Managing Cal Lab	PSL-ELECTRICAL	PSL Electrical Lab	Owner	000866	Chg Org	000866
Owning Cal Lab	CALMAINT	Calibration and Maintenance	Owning SNL Org #		Chg SNL Org/Status	A
			Cost Recovery?	<input checked="" type="checkbox"/>		
			Project ID	7530	Project Status	APPR
			Task ID	09	Task Chargeable/End Date?	Y   9/30/25 12:00 AM

Custodian / OOT POC   Calibration Details   Management / Ownership / Billing   Purchase Information / Costs

Purchase Information		Costs	
Vendor		Total Cost	0.00
Installation Date		YTD Cost	0.00
End of Life		Budgeted	0.00
Purchase Price *	2,498.73	Inventory	0.00
Replacement Cost *	2,498.73		
PO			



# Scenario

- Prevent related record addition based upon MAINRECORD data



# WO Actuals Restrictions

- Cal labs do not own or control assets they calibrate
- Customers are billed an hourly rate that accounts for the cost of running the labs
- Bill is calculated at WO completion
- It is still possible to add Actuals at this point – causing a mismatch between billed amount and WO Actuals
- Must prevent additional Actuals from being entered once billing process initiated



# Allow New Costs Condition

- Costs can only be added before the billing process starts

```
-- determine when user can add costs to WO
-- costs: Labor, Materials, Services, Tools/Standards
exists (
select 1 from workorder
where wonum=:refwo
and (SNLCRECVRSTATUS not in
('NOT NEEDED','ORACLEFIN','COMPLETE')
or SNLCRECVRSTATUS is null )
)
or
-- no existing cost records case
exists (
select 1
from labtrans
where :refwo is null
)
```

# Implementation

- Hide New Row button group if Billing started
- Signature Option identifies when Billing Not Started

Add/Modify Signature Options

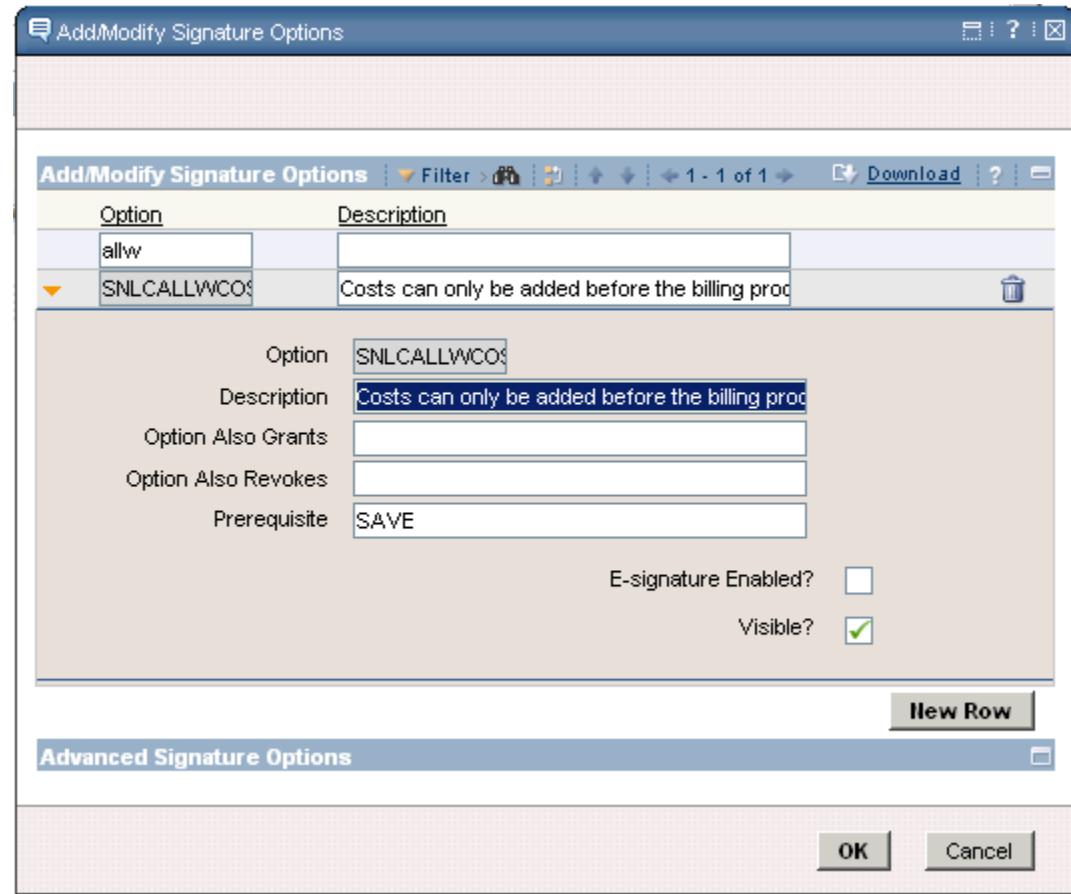
Option	Description
allw	
SNLCALLWCO\$	Costs can only be added before the billing proc

Option: SNLCALLWCO\$  
Description: Costs can only be added before the billing proc  
Option Also Grants:  
Option Also Revokes:  
Prerequisite: SAVE  
E-signature Enabled?   
Visible?

New Row

Advanced Signature Options

OK Cancel



# Signature Option on Button Group (Application Designer)

The screenshot shows the Oracle Application Designer interface for the 'SNL Work Order Tracking (Cal)' application. The main window displays a table structure for 'Labor' with columns: Task, Labor, Name, Approved, Start Date, Start Time, End Time, Regular Hours, and Rate. A 'Details' section is visible below the table. A 'Button Group Properties' dialog box is open in the foreground, centered over the table. The dialog box contains the following fields:

Control ID	actuals_actuals_aclabor_aclabor_table_2
Label	buttongroup...
Text Alignment	left
Button Alignment	left
Show Container?	<input type="checkbox"/>
Signature Option	SNLCALLWCO\$
Sig Option Data Source ID	
Configure Conditional Properties	

At the bottom of the dialog box, there is a 'Configure Conditional Properties' button. The background of the application shows other sections of the form, including 'Charge Information' with fields for GL Debit Account, GL Credit Account, Location, Asset, Memo, and Recorded as Received, as well as buttons for Select Labor, Select Planned Labor, and New.



# Security Group Setup

Security Groups

Find: Select Action

List Group Sites Applications Storerooms Labor GL Components Limits and Tolerances Data Restrictions Users

Group ADVMETR Advanced Metrologist

Applications Filter 1 - 1 of 1 Grant Listed Application

Application	Description	Main Object/Table	Original Application (if copied)
snlcwt	%Work Order Tracking%	The WORKORDER Table	Work Order Tracking
SNLWT	SNL Work Order Tracking (Cal)		

Options for SNL Work Order Tracking (Cal) Filter 1 - 1 of 4

Description	Grant Access	Condition
Delete Work Order	<input checked="" type="checkbox"/>	
New Work Order	<input checked="" type="checkbox"/>	
Read Work Order	<input checked="" type="checkbox"/>	
Save Work Order	<input checked="" type="checkbox"/>	

Filter 1 - 1 of 1

Description	Grant Access	Condition
%Billing%		
Costs can only be added before the billing process starts	<input checked="" type="checkbox"/>	SNLCALLWCO



# Effect on Work Order Actuals

SNL Work Order Tracking (Cal)

Bulletins: (0) Go To My Reports Start Center Profile Sign Out Help MAXIMO Development

Work Order: 11546640

Asset: [ ]

Mfr / Model: [ ]

Status: INPRG

Parent WO: [ ]

Recovery Status: [ ]

Serial #: [ ]

Children of Work Order 11546640 | Filter

Tasks for Work Order 11546640 | Filter

Sequence Task Summary Estimated Duration Status

No rows to display...

New Row

Labor Materials Services Tools/Standards

Labor | Filter 1 - 1 of 1

Task	Labor	Name	Approved	Start Date	Start Time	End Time	Regular Hours	Rate
29754	Graham, Mark Lee		<input checked="" type="checkbox"/>	2/2/11			0:00	275.00

Select Labor Select Planned Labor New Row

SNL Work Order Tracking (Cal)

Bulletins: (0) Go To My Reports Start Center Profile Sign Out Help MAXIMO Development

Work Order: 11546640

Asset: [ ]

Mfr / Model: [ ]

Status: INPRG

Parent WO: [ ]

Recovery Status: NOT NEEDED Cost Recovery Not Needed

Serial #: [ ]

Children of Work Order 11546640 | Filter

Tasks for Work Order 11546640 | Filter

Sequence Task Summary Estimated Duration Status

No rows to display...

New Row

Labor Materials Services Tools/Standards

Labor | Filter 1 - 1 of 1

Task	Labor	Name	Approved	Start Date	Start Time	End Time	Regular Hours	Rate
29754	Graham, Mark Lee		<input checked="" type="checkbox"/>	2/2/11			0:00	275.00





# Questions?

Mark Graham  
[mlgraha@sandia.gov](mailto:mlgraha@sandia.gov)



# End



# Adding Active Flag and Sort Order to Domains



# Business Case

- Maximo will not allow domain values to be deleted once used – however the user may not want to value to be used any more
- Maximo does give the user the ability to sort domain lookups, which is desired in some cases

# Database Changes



Database Configuration

Bulletins: (0) Go To Help Reports Start Center Profile Sign Out Help

MAXIMO Development

List Object Attributes Indexes Relationships

Object: ALNDOMAIN Alpha numeric type of domain Status:

Attributes Filter 1 of 2

Status	Attribute	Attribute #	Description	Type	Length	Scale	Required	Audit Enabled	Persistent	User Defined
	snl	9	Is this domain value active?	YORN	1	0	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	SNLACTIVE	10	The display order for this domain	SMALLINT	10	0	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
	SNLDISPLAYORDER									

- Reset the MAXOBJECTCFG.INTERNAL YORN to 0 for the domain tables
  - ALNDOMAIN
  - NUMERICDOMAIN
  - NUMRANGEDOMAIN
  - SYNONYMDOMAIN
- Add two new attributes to the domain tables
- Restore the YORN value to the original value



# Modify Domain Application

- Add Active and Display Order Table Columns and Checkboxes
- Add Sort Order
  - Active desc
  - Display Order



# Domain Application

ALN Domain

Domain	PHONETYPE	PHONETYPE
Data Type	UPPER	
Length	10	

ALN Domain | Filter > 1 - 6 of 6

<input type="checkbox"/>	Active	Display Order	Value	Description	State	Organization	Site				
<input type="checkbox"/>			CELL	Cellular phone number							
<input type="checkbox"/>			FAX	Fax number							
<input type="checkbox"/>			WORK	Work Phone							
<input type="checkbox"/>			PAGER	Pager							
<input type="checkbox"/>			HOME	Home Phone							
<input type="checkbox"/>			PHONE	Office phone number							

ALN Domain | Filter > 1 - 6 of 6

<input type="checkbox"/>	Active	Display Order	Value	Description	State	Organization	Site				
<input type="checkbox"/>			1	WORK	Work Phone						
<input type="checkbox"/>			2	PAGER	Pager						
<input type="checkbox"/>			3	CELL	Cellular phone number						
<input type="checkbox"/>			4	FAX	Fax number						
<input type="checkbox"/>			5	HOME	Home Phone						
<input type="checkbox"/>			PHONE	Office phone number							



# Modify Lookups

- Add orderby and whereclause statements to the table definition

```
- <table id="valuelist" inputmode="readonly" orderby="snldisplayorder" selectmode="single" whereclause="snlactive=1">
- <tbody displayrowsperpage="20" filterable="true" filterexpanded="true" id="valuelist_lookup_tablebody">
  <tr>
    <td dataattribute="value" id="valuelist_lookup_tablebody_col_5" mxevent="selectrecord" mxevent_desc="Go To %1" sortable="true" type="link"/>
    <td dataattribute="description" id="valuelist_lookup_tablebody_col_6" mxevent="selectrecord" mxevent_desc="Go To %1" sortable="true" type="link"/>
  </tr>
</tbody>
</table>
```