

# **Maximo V7.5 Automation Scripting Sep 9, 2012**



# Automation Scripting - Overview

Java 6 enabled the ability to access and control Java objects from a scripting environment.

Maximo 7.5 adds the ability to access and control Maximo objects from within a scripting environment.

Automation Scripting is Programming.

A script could be one line of code to make a field read only or required.

A script could be hundreds of lines of code to add business logic to a new or existing Maximo object.

Scripts are executed at user defined Launch Points.

# Benefits of Using Automation Scripting

Scripts are executed on the Server at time of call

- No compiling

- No ear file rebuilding & redeploying

- No system outages required for updates or deployment

Scripts offer more options than Application Designer configuration

Scripts are an alternative to Java customizations

Scripts are stored in the Database as metadata

They are supported with upgrades and Migration Manager

Script programming requires no Java skills or Maximo API knowledge

- Simple scripts can be created using default variables and bindings.

# Options for Launching Automation Scripting

Execute scripts on **Maximo Business Objects** when the object is

**Initialized** – executed when the MBO is created and populated

Set default values, populate non-persistent fields, make fields read only, make fields required, ...

**Added** – executed when a new MBO is added to the database

Validate values, set missing values, add new related records, ...

**Modified** - executed when an existing MBO is saved to the database

Validate values, set missing values, validate related records, ...

**Deleted** - executed when an MBO is deleted from the database

Validate the action, delete related records, ...

Scripting also supports calls from Maximo Attributes/Applications, Actions for Escalations or Workflow, and custom points such as Workflow Condition Nodes and Conditional Expressions

# When to Use Automation Scripting

You would use Automation Scripting when you need to change the behavior of Maximo beyond the capabilities of normal Application Designer or crossover domain abilities.

- Set business rules for the value entered into a field such as when a date has to be greater than or less than the current date
- Set business rules for field values that are based on other data associated with the record
- Have other fields populate based on the entry into a different field such as the GL account being set by parameters other than the PM, Asset and/or Location
- Have fields be calculated or totaled
- Automate complex actions that aren't currently supported with Escalations, Workflow and Actions

# What Skills Are Needed to Us It?

Simple scripts can be created by users with limited programming experience.

Set the description field read only

```
description_readonly = true;
```

Set the description field required

```
description_required = true;
```

Set the description

```
description = "This is the new description";
```

More complex scripts would require the skills needed to manipulate the selected scripting language (JavaScript, Jython, JRuby, ...).

Extremely complex scripts would require working knowledge of the MAXIMO API.

# Simple Example

Simple Example of Cohesive' use of Automation Scripting in ExTRA....

- Some internal applications such as time entry and expense entry required a total field for the totals of the entries on the page

How would we have done it without Automation Scripting and what would be the impact of this approach?

- Normal approach would have been a non-persistent field with a field class file to perform the calculations. The class file would have had to be written in java, compiled, embedded in the ear file and an outage required to deploy or update

What was involved in using Automation Scripting in this example and why are we better off because of it?

- Created a simple jython script to calculate the total and set the value. Associated the launch point with the object. No outages required for deployment. Can be updated during system operation. Registered in the database simplifying future upgrades.

# Simple Example

The screenshot displays a software interface with a navigation menu on the left and a main content area. The 'Automation Scripts' menu item is highlighted, and its sub-menu is open, showing options like 'System Properties', 'Logging', 'Domains', 'Database Configuration', 'Application Designer', 'Communication Templates', 'Actions', 'Roles', 'Escalations', 'Workflow Designer', 'Workflow Administration', 'Cron Task Setup', 'E-mail Listeners', 'Web Services Library', 'Launch in Context', 'Escalations (SP)', 'Domains (SP)', 'Automation Scripts', 'Task Management', and 'Work Orders'. The 'Automation Scripts' sub-menu is also open, showing options like 'Create', 'Change Status', and 'Cognos Reporting'. The main content area shows a table of automation scripts with columns for Script, Description, Script Language, and Status.

Script	Description	Script Language	Status
<a href="#">EXP_TOTCOST_UPD</a>	Update Total Cost for Expenses	jython	Active
<a href="#">LOCK_EXPENSES</a>	Lock Expense Records	jython	Active
<a href="#">LOCK_TIMEENTRY</a>	Lock Time Entry Fields and LABTRANS	jython	Active
<a href="#">RESET_TRANSDATE</a>	Reset entered date to the beginning of the week	javascript	Draft
<a href="#">RESET_WEEKBEGIN</a>	Reset entered date to the beginning of the week	JavaScript	Active
<a href="#">UPDATE_LABTRANS_STATUS</a>	Update LABTRANS.STATUS* when TIMEENTRY.STATUS changes	JavaScript	Active
<a href="#">UPDATE_TIMEENTRY</a>	Update Time Entry record	jython	Active

# Simple Example

The screenshot displays the 'Automation Scripts' application interface. At the top, there is a navigation bar with 'Bulletins: (0)', 'Go To', 'Reports', 'Start Center', 'Profile', 'Sign Out', and 'Help'. Below this is a search bar with 'Find:' and a 'Select Action' dropdown. A toolbar contains icons for file operations and navigation. The main area is titled 'Automation Script Details' and contains the following information:

- Script: EXP\_TOTCOST\_UPD
- Update Total Cost for Expenses
- Status: Active
- \* Script Language: Python
- \* Log Level: ERROR
- Version: (empty field)
- User Defined?

The Source Code field contains the following Python script:

```
thisSet = mbo.getThisMboSet()

if (mbo.getOwner() is not None) :
    if (thisSet.count() > 0) :
        sumtot = 0
        num = thisSet.count()
        for i in range(num) :
            expTrans = thisSet.getMbo(i)
            sumtot += expTrans.getDouble("LINEPRICE")
            mbo.getOwner().setValue("TOTCOST", sumtot)
            mbo.getOwner().getThisMboSet().save()

if (onDelete) :
    newtot = mbo.getOwner().getDouble("TOTCOST") - mbo.getDouble("LINEPRICE")
    mbo.getOwner().setValue("TOTCOST", newtot)
    mbo.getOwner().getThisMboSet().save()
```

At the bottom, there is an 'Author Details' section which is currently empty.

# Simple Example

Automation Scripts

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

Find: Select Action

List Automation Script Variables **Launch Points**

Script: EXP\_TOTCOST\_UPD Update Total Cost for Expenses Status: Active

Script Language: jython

**Object Launch Point**

Launch Point: EXPTRANS\_UPD Expense Transactions Updated

Active?

Add?

Initialize?

Update?

Delete?

Object: PLUSPGBTRANS

Object Event Condition: salesordernum is not null

**Launch Point Variables** Filter > 0 - 0 of 0

Variable	Variable Type	Binding Type	Binding Value	Overri
...No rows to display...				

OK Cancel

# More Complex Example

## Business Requirement

- Automatically add a prorated standard service line to an invoice created for a Purchase Order flagged for retention.

## Typical Approach

- Extend the MBO for invoices to automate the function. Requires a working knowledge of java and Maximo MBO API's. Extension requires compiling, ear file registration and outage for deployment. Extension must be manually moved during future upgrades.

## Using Automation Scripting

- Script can be launched on the PO number attribute of the invoice. No outage required. If requirements or defaults change in the future for the invoice line (different standard service for different percentage retention), script can easily be updated without incurring an outage. Functionality should upgrade easily to the next release.

# Extremely Complex Example

## Business Requirement

- Have a PDF copy of a PO automatically emailed to the vendor at the appropriate time and register a copy of that communication in Maximo.

## Typical Approach

- A custom java class file would have been created to automate the process. Much of it would have been hard coded and the typical compiling, registering and outages would apply to deploy or make any changes.

## Using Automation Scripting

- Script can be launched from an escalation action to create the PDF and attach it as an attached document to the PO. Then standard escalation and communication template functionality can be used to email a copy to the vendor. Using escalations with flexible actions and communication templates leverage core Maximo functions and provide extreme flexibility on the messaging and trigger points.

## Other Examples

- Automation of Work Order GL based on the craft/crew performing the work and the work type of the work order (and any other factors required)
  
- Automation of tax calculations based on
  - Site material being purchased
  - Vendor material purchased from
  - End use of the material
  - Accrued or paid to the vendor

## In Summary...

Automation Scripting is a powerful new feature in Maximo 7.5 and can enhance your organizations use of Maximo

### Benefits:

- Easily extends Maximo business rules for processing objects
- Easily Deployed or Updated without requiring an Outage
- Easily activated or disabled
- Stored as metadata for upgrades
- Simplified Scripting versus Java skills
- Support for Migration Manager

# Reference Material

- Maximo 7.5 Information Center for Automation Scripts application help
  - <https://www.ibm.com/developerworks/wikis/display/tivolidoccentral/IBM+Maximo+Asset+Management>
- Jython scripting
  - <http://www.jython.org>
- Javascript (Rhino) scripting
  - <http://www.mozilla.org/rhino/>
- JSR-223 scripting for Java specification
  - <http://jcp.org/aboutJava/communityprocess/pr/jsr223/>