



MOC BEST PRACTICES

Gateway Consulting Group, Inc.

a leader in Management of Change process redesign and Electronic Document Management systems implementation

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Perspectives

Scoping will be discussed beginning with this issue. The scoping activity always results in a list of action items—things to do, in order to accomplish the objectives of the MOC. I will use this issue to look at MOC action items: what kinds of action items are there; where do they come from; how do we organize them?

While this issue of the newsletter focuses on action items, within the context of an MOC, there remains the question of what to do with action items in general? I have already touched on this concern a couple of times in previous newsletters:



- Vol 1, No. 2 focused on lifecycles [1], but introduced the notion that prior to initiating an MOC, a problem needs to be identified. The sources of “problems” are diverse, including incident investigation findings, PSSR punch list items, audit findings, and many more.
- Vol. 4, No. 4 focused on Chem NEP readiness [2], and introduced the notion that if action items are spread over multiple documents and multiple computer files and databases, it is almost impossible to manage them effectively.

In this issue, we'll take an in-depth look at just the action items that need to be addressed, once an MOC has been created.

Introduction

After an MOC has been initiated (see May 2010 Newsletter [3]), it is not quite ready to be acted upon. During Initiation, one describes the attributes of the proposed change; during Scoping one creates a list of things to do, in order to accomplish the change. These “things to do” are normally labeled “action items”. So, it is fair to say that Scoping creates the list of action items needed to accomplish the objectives of the change.

Scoping Is a Planning Activity

Most people are familiar with the concept of project planning. As illustrated in the left hand column of Figure 1.

- The project planning **activity**,
- produces **results**, often in the form of a Gantt chart,
- Project **execution** proceeds by issuing and completing work orders.

Similar and analogous behavior occurs for MOCs as illustrated in the right hand column of Figure 1:

- The scoping **activity**,
- produces **results**, in the form of a list of action items.
- MOC **execution** proceeds by assigning and completing action items.

Scoping Is a Planning Activity...continued

Like project planning, scoping should be as complete as possible. But, there's no requirement that scoping be perfect, since it is possible to add action items to an MOC after scoping is completed. In fact, certain kinds of action items, like PHA follow-up items and PSSR punch-list items, cannot be specified during scoping, since the activities that produce those action items have not occurred at the time initial MOC scoping is performed.

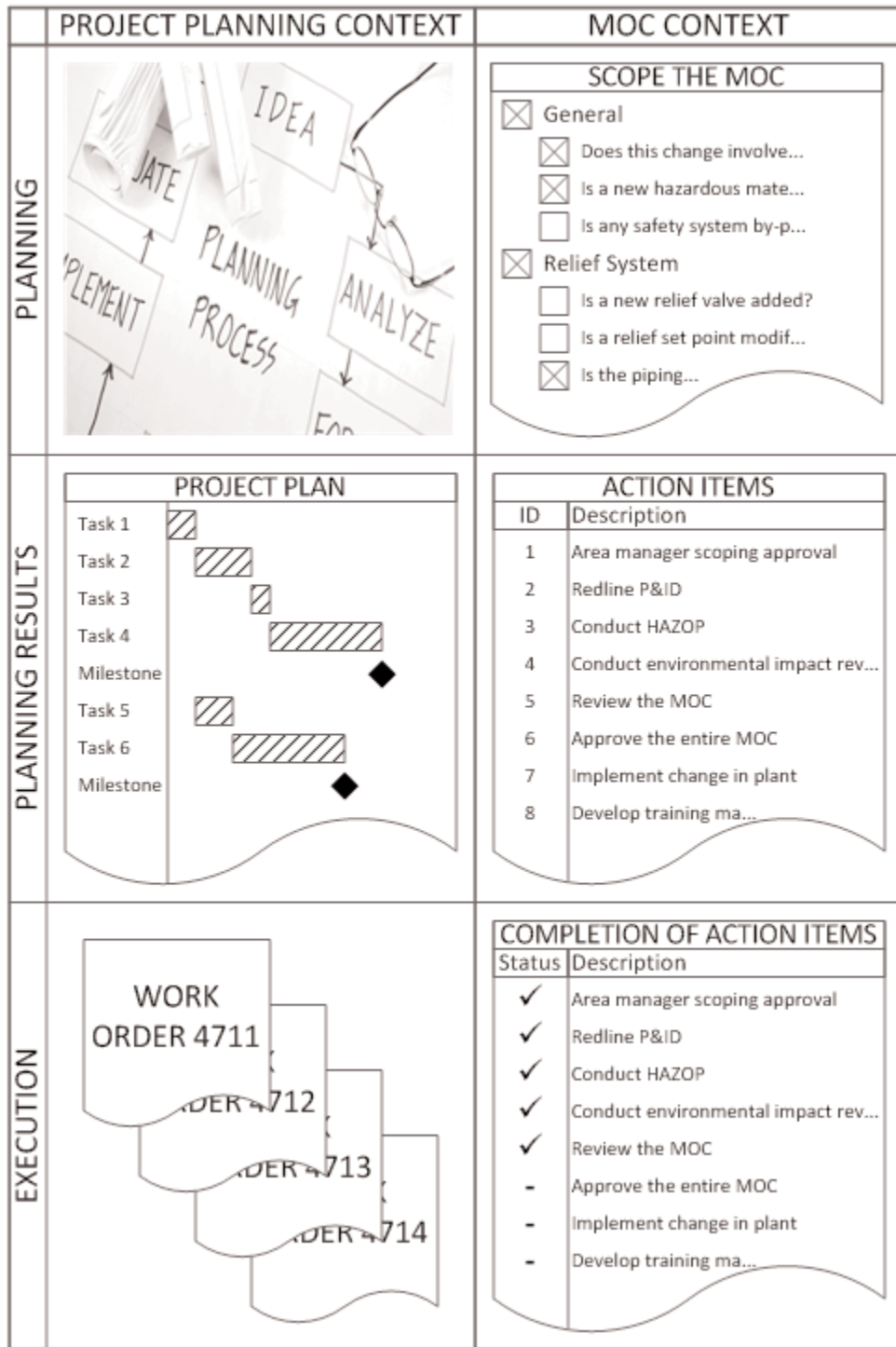


Figure 1. MOC "Scoping" is analogous to project planning.

The RACI Model

At first glance, action items are things that someone is expected to do. Upon further inspection, it becomes clear that there truly are different kinds of things that people do, and therefore there are different types of action items. One currently popular model for classifying action items is a method that goes by several names, such as “Responsibility Assignment Matrix”, and “Linear Responsibility Chart”. The idea is that, for a certain deliverable such as a document, different roles have different responsibilities. These responsibilities are labeled as follows:

- Responsible: the person (or team) who does the work to accomplish the task
- Accountable: the person ultimately accountable for the work being correct
- Consulted: a person, often a subject matter expert, who reviews and provides input to the task
- Informed: a person who is informed of the task’s progress.

The initials of each of the roles form the acronym “RACI”, usually pronounced the same as the word “racy”.

Two problems arise when applying the standard RACI model to the MOC business process:

1. The terminology is not accessible to people who work in process plants. Usually the word “Responsible” has a different meaning in a facility, than the authors of the RACI model intended.
2. The RACI model is usually depicted as all the different responsibilities being applied to the same deliverables: i.e. the “Responsible” person creates a document, the “Consulted” person reviews it, the “Accountable” person signs off on it, and then the “Informed” person is notified about it. In an MOC, that level of granularity is excessive.

The first issue, terminology, can be addressed by simply using different terminology. An alternate labeling scheme is shown in Table 1, which is the labeling scheme we shall use henceforth.

RACI Initial	Standard RACI Label	Description	Alternate Label
R	Responsible	The person who performs the work	Perform
A	Accountable	The person who is ultimately responsible	Sign-off
C	Consulted	The person who provides input	Review
I	Informed	A person who must be notified	Notify

Table 1. Standard and alternate labeling for RACI model responsibilities.

The second issue, granularity, can be addressed by removing the constraint that each document is processed by a Perform > Review > Sign-off > Notify sequence. Instead, responsibilities are assigned to individuals in a manner that is most effective for MOCs. Consider Table 2, by way of example. The “Perform” action item pertains to a specific document. The “Review” action item pertains to several documents in the example. Both the “Sign-off” and “Notify” action items pertain to the entire MOC, and not just the individual documents that support the MOC.

Action Item Type	Typical Example(s)
Perform	Redline a P&ID,
	Conduct a What-if analysis
Review	Review environmental aspects of MOC
Sign-off	Approve the entire MOC

Table 2. Examples of different action item types.

In conclusion, the RACI model is used as the guiding principle for classifying types of action items. However, the standard RACI model is adapted for use with lifecycle-based business processes in general, and MOCs in particular.

Action Item Attributes

Many attributes are necessary to fully describe an action item. As shown in Table 3, there are so many attributes that it makes sense to break them into categories such as:

- Identifying information: what is this action item?
- Resource information: who is/shall be assigned to this action item?
- Scheduling information: when shall it be done?
- Context: how does it relate to other things going on?
- Comments: additional thoughts and advice

Category	Attribute Name	Example	Comments
Identifying Information	ID	4711	Usually assigned by an electronic system
	Title	Redline a P&ID	The name of the action item
	Description	Add the relief valves to the P&ID	Additional descriptive information
	Additional Categorization(s)	PHA Follow-up item	Common ones are [PHA Follow-up item, Incident investigation recommendation, audit finding, PSSR punch list item]
Resource Information	Role	Engineering Manager	What role is intended to perform this action item?
	Person Assigned	Rhonda Jennings	
	UserID	rjennings	The system ID of the person assigned to complete the action item
Scheduling Information	Execution State	Change Design	The state during which this action item is to be completed
	Action Item Status	Active	Common values are [inactive, active, completed]
	Priority	Normal	Common values are [low, medium, high]
	Estimated Duration	3 days	The time allotted to complete the action item, starting when the action item becomes active
	Due Date/ Completion Date	Jan 25, 20xx	The date the action item is expected to be completed, if it is active, or the date it was completed.
	Start Date	Jan 24, 20xx	The date that the action item became active: i.e. it was assigned to someone for immediate action.
	%-complete	50%	An indication that the action item is in progress and is partially complete
	Status	In progress	Common values are [not started, in progress, completed, deferred, waiting on someone else]
Context	Parent Object	MOC-1234	The object that the action item belongs to. The parent can be an MOC, an Incident Investigation, a Capital Project, etc.
	Related Action Items	ID=4712	Action items on related projects, or related MOCs. Often it's more efficient to combine the work on multiple related action items.
		ID=4713	
	Reference Documents	DWG 123456-R3.dwg	Related drawings
	Reference Templates	acad.dwg	Any templates that might be useful to complete this action item
	Unit ¹	Hydrotreater	The unit where the proposed change is to take place
	Product ²	XL-1000	A product, which may be affected by the change
Comments	Comments	When adding the relief valves, be sure to consider...	A running commentary of helpful advice, or other noteworthy information

Table 3. Attributes of an action item.

MOC Action Items

There are five ways in which action items are created during an MOC. Although these are not standard names, the action item creation mechanisms can be labeled:

1. Automatic Action Items
2. Calculated Action Items
3. Scoped Action Items
4. User-Created Action Items
5. Imported Action Items

These action item creation mechanisms hold true whether the MOC is in paper or electronic form. The following sections provide the details.

Automatic Action Items

Automatic action items are those that “automatically” exist for every MOC. These are actions that usually appear at the beginning of an MOC form, and may include actions like:

- complete a risk prescreening, shown by the triangle-A symbol in the Initiation state in Figure 2,
- complete a checklist, in order to scope the MOC, shown by the triangle-A symbol in the Scoping state

Without these preliminary steps, the MOC can't proceed.

One could argue that the first “automatic” action item in an MOC is the creation of the MOC itself. However, there is no MOC before it is created, so the MOC creation action cannot be the first MOC task.

This discussion of MOCs shall not consider MOC creation as an MOC task.

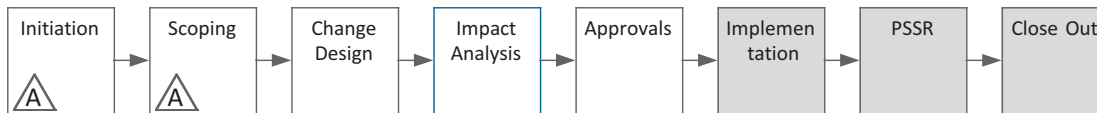


Figure 2. MOC showing Automatic action items.

Calculated Action Items

Calculated action items are created on the basis of some form of calculation.

For example, users are often asked a number of questions during initiation, such as:

1. Does this change the inventory quantity of a hazardous material?
2. Does this change the process energy?
3. Does this impact the mass/energy balance?
4. Etc.

In this example, depending on the number of “yes” answers to these sorts of questions, the MOC is scored for process safety risk. Then, depending on the value of the score, action items are created:

- High Score: conduct a HAZOP during the Impact Analysis state
- Medium Score: conduct a What-If analysis during the Impact Analysis state
- Low Score: complete a hazards review checklist during the Impact Analysis state
- Zero Score: no process hazards analysis task is created

So, these action items are created based on a **calculated** value, and are depicted in Figure 3 using the triangle-C symbol.

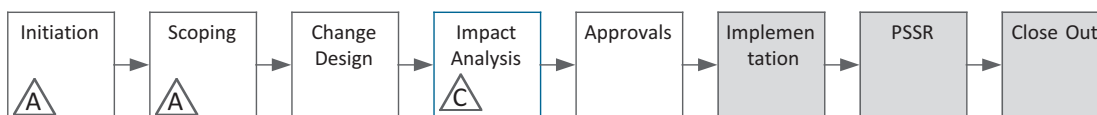


Figure 3. MOC showing Calculated action items.

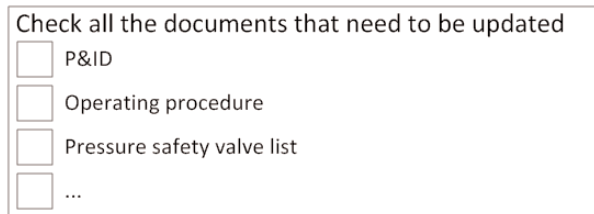
1. The unit where the change is taking place is certain to impact which person satisfies which Role (Engineering Manager in this example). However, the Role may also be determined by higher levels in the physical plant hierarchy: area, zone, plant, etc.
2. The same logic described in the previous footnote, also applied here. Except, in the case of product, the roles might be Product Manager, Product Line Manager, etc.

Scoped Action Items

The purpose of the Scoping state is to create a list of all³ the action items needed to successfully design and implement the change.

A user can certainly create a list of action items by creating each action item individually (see next section “User-Created Action Items”). However, that approach doesn’t provide any guidance to the user with respect to what kinds of actions might be possible, or even common, on an MOC.

The document-based scoping of Figure 4 shows the first level of assistance that the process might give the user.



Check all the documents that need to be updated

P&ID

Operating procedure

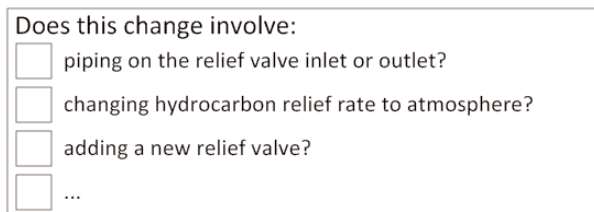
Pressure safety valve list

...

Figure 4. Document-based scoping.

“Document-based scoping”, while common, requires that the user must already be experienced with which documents need to be updated under which circumstances—experience that a younger person wouldn’t have.

A more systematic scoping approach involves challenging the user with questions related to the assets or physics of the process. As shown in Figure 5, pertaining to relief valve changes, these are questions that even a junior person could answer objectively. In this way, the Scoping process aids the user in scoping the MOC correctly.



Does this change involve:

piping on the relief valve inlet or outlet?

changing hydrocarbon relief rate to atmosphere?

adding a new relief valve?

...

Figure 5. Asset-based scoping.

The result of answering these questions is that the correct action items are generated.

This issue of optimum scoping approach is very important to the success of MOCs, and will be the subject of an entire MOC Best Practices newsletter, in the near future.

Regardless of which scoping approach is used, direct, document-based or asset-based, the result is a list of action items that will need to be completed during the execution of the MOC. A possible list of MOC action items may include:

- Redline P&ID
- Conduct environmental impact review
- Review the MOC
- Approve the entire MOC
- Implement change in plant
- Develop training materials
- Redline operating procedures
- Train operations
- Conduct PSSR
- Notify operations of intent to start up
- Notify maintenance of change
- Update P&ID
- Update operating procedures
- Close-out the MOC

3. “all” should be interpreted as “all, to the extent possible”. Obviously, scoping cannot respond to unforeseen circumstances.

Scoped Action Items, continued...

The scoped action items may be allocated to any state in the overall MOC lifecycle, as shown in Figure 6.

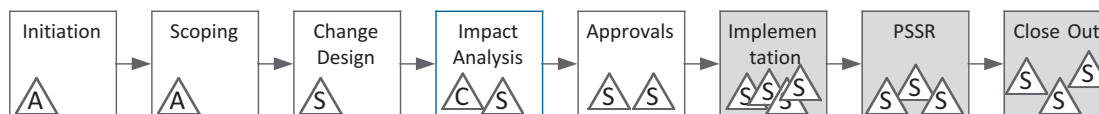


Figure 6. Scoped action items.

User-Created Action Items

At any time, the MOC owner can create specific action items for the MOC, by creating individual action items, as shown in Figure 7. Indeed, taken to its extreme, the user can scope the entire MOC this way.

Provide a list of all MOC action items :

1. _____
2. _____
3. _____
- ...

Figure 7. User-created action items.

Normally, user-created action items are used in circumstances where the predefined MOC ruleset doesn't create the necessary action items, because a new circumstance is encountered. Specific examples are difficult to provide, because, by their very nature, user-created action items are intended to be exceptions to the rules. Some examples of categories of exceptional circumstances are:

- remediation of improperly completed action items
- remediation of the MOC after any approver has rejected the MOC
- new or unique design document creation
- redlining/updating vendor-specific or product specific documentation
- providing information to respond to new or changing regulatory requirements
- new MOC characteristics calling for additional subject matter expert review or approval
- new or unusual training requirements
- additional persons who must be notified of the change

User-created action items appear in Figure 8 with the triangle-U symbol.

Imported Action Items

Oftentimes, sets of action items appear which must be closed out during the execution of the MOC. The most common examples are:

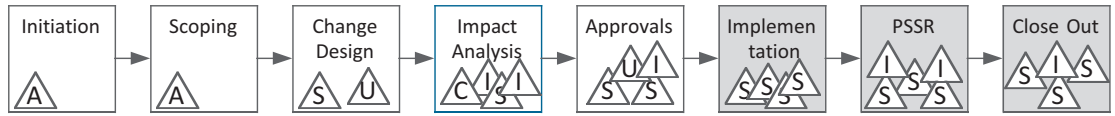
- PHA follow-up items, generated during the process hazards analysis
- PSSR punch list items, generated during the pre-startup safety review

Nowadays, process hazards analyses are usually assisted by software tools. These tools can invariably export the resulting action items into a spreadsheet form, which can then be imported into the MOC. That way the MOC participants have a comprehensive view of all the action items needed to successfully complete the MOC.

The same logic applies to PSSR punch list items, even though PSSRs are usually accomplished using "homegrown" forms or spreadsheets.

Figure 8 depicts imported action items using the triangle-I symbol. Note that while action item lists are commonly imported during the Impact Analysis and PSSR states, the action items contained in these imported lists may be assigned to any state, as shown by the triangle-I symbols in Approvals and Close-Out.

Imported Action Items, continued...



LEGEND






-  Automatic action items
-  Calculated action items
-  Imported action items
-  Scoped action items
-  User created action items

Figure 8. MOC lifecycle diagram shown all types of action items.

References

- [1] Hoff, R., 2007, "Lifecycles," MOC Best Practices, 1(2).
- [2] Hoff, R., 2010, "Preparing for Chem NEP," MOC Best Practices, 4(4).
- [3] Hoff, R., 2010, "MOC Attributes," MOC Best Practices, 4(3).