Aras Corporation

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Program Management

Aras Program Management application is the answer for many businesses that require both complex and simple Program Management solutions. Other Program Management applications are highly flexible, but unlike Aras Program Management, they do not interface directly with other information systems. Aras Program Management is integral with Innovator and adopts industry standard principles of the Program Management Institute (PMI).

Aras Program Management is a temporary endeavor to produce a unique result. Each Project is different, but they all have a beginning and an end.

- Standard work
- Data Model
- Innovator Implementation
    - Project & Tree
    - Project Template & Project Tree

Standard Work

The following are the steps a Project Manager should take before creating a project:

1. Discuss the project with project stakeholders, owner, customer, participants and users.
2. Gather data before going to Innovator.
3. Make a tree structure representing the organization of the project and define its scope. This will commonly divide the project into phases and or other parts which will be used for monitoring progress, reporting status and collecting costs.
4. Make a list of deliverable items and identify which single branch of the organization structure they belong to.
5. Make a list of Work Activities that are required and identify one or more resources that will be required to complete them.
6. For each Work Activities make a list of component tasks as a simple checklist to be managed separately by the resources assigned to the task.
7. Identify Milestone events marking significant progress points for the Project. Determine which individual branch of the organization structure the Milestones belong. They may belong to the root of the tree structure.
8. Consider all the Milestones and Activities together and for each, determine the sequence of the activities usually referred to as precedence.
9. Any Milestone or Activity which has no precedence can start when the project starts.
10. Any Milestone or Activity which has no subsequent Activities must be complete in order for the project to be complete.

11. For each Activity determine the duration and work estimate.
12. For each Activity and Milestone determine the start and due date according to the steps above.

Project Lifecycle Progress

Listed below is the process flow for setting up a project.

1. Project Manager creates a Project Template.
2. Project Manager promotes the Template to the Approved state.
3. A member of the Project Group creates a Project from a Template or from scratch and assigns the "Project Manager"=Owned_by_id.
4. Project Manager promotes the Project to the Active state.
5. Run the Daily Update to perform the following:
    a. All Projects in Active state updates all Activities with a Scheduled Start Date<=today and State = Pending
    b. Runs the Rollup which sets the status for the active Activities and WBS Elements
    c. Populates the Phases with the WBS Elements status
6. Assignee opens Activity from InBasket, selects Update Activity and completes it.
7. Project Manager, when all activities are complete promotes the Project to the Complete state.
8. Project Manger at any time, if a Project is not in the complete state, can promote the Project to the cancelled state.

All users can access projects, but only users that are part of the Program Management group can add new projects into the system. Projects are accessible from the TOC tree.

Below is a list of standard Identities and their descriptions.

Identities

Identity	Description
Program Management	Program Management is the group of project managers responsible for the creation of Templates and Projects. The users in this group will be the only users that can add projects to the system. The user identities in this group will also be the only list of users that can be selected as a project manager
Project Manager	The identity assigned to this property will use the standard property in Aras Innovator Owned_by_id. He will be the owner of the project and will be able to enter or change any

Identity	Description
	information in the project plan structure. The default user is the user who created the project
Assignee	The identity assigned to this property will use the standard property in Aras Innovator Managed_by_id. All activities assigned to this user will appear in his InBasket.
World	All users, both internal and external, are members of the World identity.

Permissions

The standard named permission is:

Permission Name	Identity	Get	Update	Delete	Access
Project	Project Management	✓	✓	✓	✓
	Owner	✓	✓	✓	✓
	Innovator Admin	✓	✓	✓	✓
	Manager	✓	✓		
	World	✓			

If you wish to limit or add access, edit the Project permission or whatever permission is associated with the Project ItemType. All newly created projects will then use the new permissions, any previously created project will maintain the original permissions.

If you need to change project managers for a given project, the admin or current project manager can go to the project form and change the project manager property to the new project manager identity. The system will trap this event and update the project, WBS elements and activities to make this new project manager the Owned_by_id.

Templates

Project Templates are used to provide a level of standardization for Program Management throughout the company. It enables the company to make sure that specific activities are done as part of the project. A Project Template is created and modified by a project manager and will be used by other project managers as a starting point for most projects. Project managers will create their own projects by selecting one of the project templates.

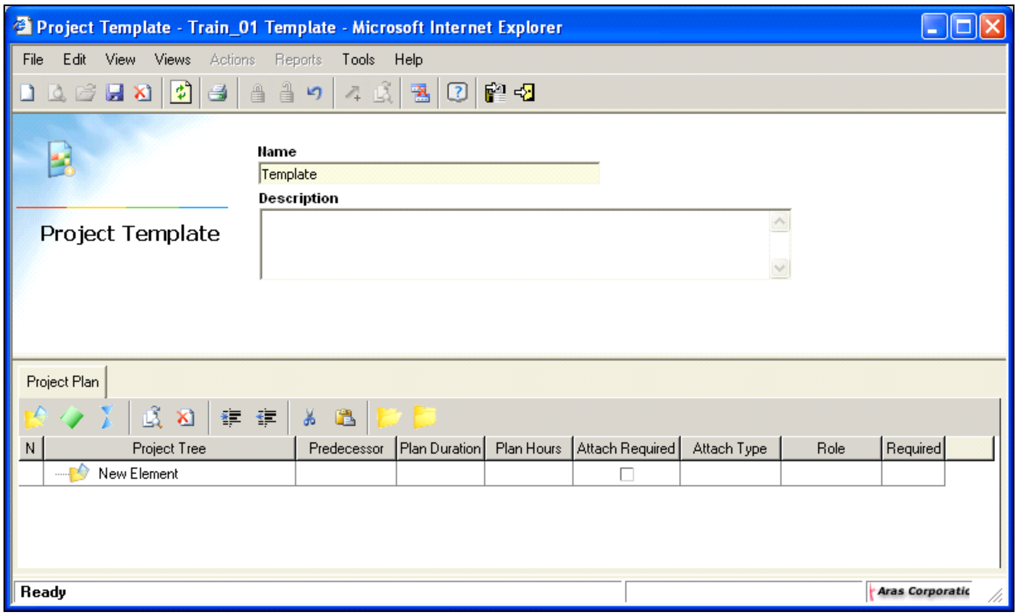


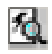
Figure 1

There are no assignments made for project templates and the activities do not appear in any users' InBasket. When a project is created from this template, the activities will then appear in the assignee's InBasket as pending, and will update to active when their due date has arrived and the Daily Update is run.

Create a Project Template

1. Login to Innovator as Admin
2. Click on the "+" to the left of Templates to expand the folder.
3. Select Project Templates, right click and select New or click the New  icon on the toolbar.
4. Name the Template FOUNDATION BRAKE.
5. Enter a description.

Project Plan Toolbar Icons

Icon	Description
	Add WBS Element
	Add Activity
	Add Milestone
	View/Edit Selected Item
	Delete Selected Item
	Indent Element
	Outdent Element
	Cut
	Paste
	Expand All
	Collapse All

Project Plan Properties

Label	Description
N	Column N displays the row number of the Item and is maintained by the system.
Project Tree	The Project Tree display the WBS Elements, Activities and Milestones
Predecessor	Predecessor establishes the Scheduled Start date of the Activities and Milestones. For example, if Activity 2 has a Predecessor of 1 its Scheduled Start date will be the Scheduled Finish date of Activity 1
Plan Duration	Estimated number of days an Activity will take to complete. The default is 1
Plan Hours	The number of hours based on the Plan Duration. The default is 8 hours.

Label	Description
Attach Required	Specifies if an attachment is required for the Activity to complete
Attach Type	What ItemType is associated with the attached Item
Role	Role is a List Item and can be Assigned Activities. In the Project, users can be assigned to Roles.
Required	If checked the Activity or Milestone must remain as part of the Project.

Project Tree Properties

Label	Description
WBS Element	WBS Element is a way of grouping or organizing Activities and Roll-up information from those activities.
Activity	An Activity can have Tasks, Attachments and Time Records and can be used for resource planning reports
Milestone	A Milestone, like an Activity, can have Tasks, Attachments and Time Records but cannot be used for resource planning reports.

WBS Elements

WBS (Work Breakdown Structure) Elements derive their information from Activities. You are not allowed to enter information directly into date fields, duration fields, and hour fields of WBS Elements. For example, Scheduled Start and Scheduled Finish are calculated from the list of associated activities. Attachments can be added, but they do not have Assignments, Time Record, or Tasks. They do however, have a Lifecycle.

Add WBS Elements, Activities and Milestones

There is at least one New Element populating the grid below the Project Tree, the Root Element. You are going to add two new Sub Elements off the root naming them PHASE 0 and PHASE PR1- CONCEPT.

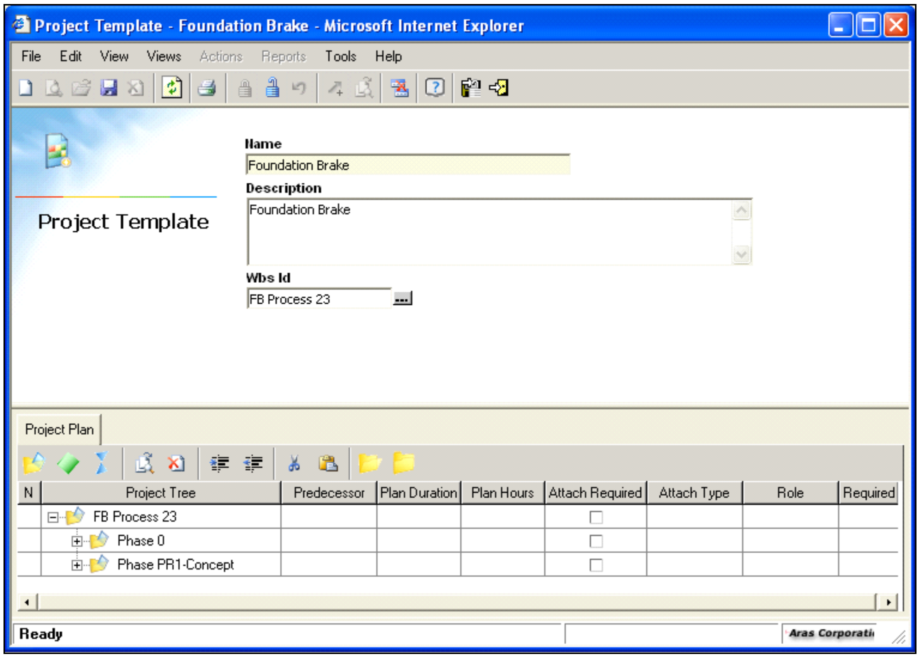


Figure 2

1. Click on the existing WBS Element called New Element and change the name to FB PROCESS 23.
2. Click the cursor into the sort column (N), right click FB Process 23 and select Add WBS Element or click on the Add WBS Element icon on the toolbar.
3. Click on the Expand All icon on the toolbar.
4. Rename this element to PHASE 0.
5. Click the cursor into the sort column (N) next to Phase 0 and click on the Add WBS Element icon on the toolbar.
6. Rename this element to Phase PR1-Concept.

Activities

Once the WBS Element is created, Activities get attached to it. Activities are used to track work that is assigned to users. All Activities must have a user assignee to drive the lifecycle to the Complete state. Activities can have Tasks, Attachments and Time Records and can be used for resource planning reports. Each Activity has a duration set for completion.

Associate an Activity to a WBS Element

1. Select Phase 0 and click the Add Activity icon on the toolbar.
2. Change the name to REVIEW SOURCING DECISION DOCUMENTATION.
3. Right click Review Sourcing Decision Documentation, add another Activity naming it REVIEW CUSTOMER INPUT REQUIREMENTS (VOC).

Milestones

Milestones are used to track key dates or gates that are part of the project plan. Milestones also have users assigned to drive the Lifecycle to completion. The Duration of a Milestone is always 0. Just like an activity, the Milestone has tasks and attachments but is not used for resource planning.

Associate a Milestone to an Element

1. Select Review Customer Input Requirements (VOC) and click the Add Milestone icon on the toolbar.
2. Change the name to PR4 PRODUCT COMPLIANCE REVIEW.
3. Select Phase PR1-Concept and click the Add Activity icon on the toolbar.
4. Click on the Expand All icon on the toolbar.
5. Rename this activity #1 SOURCING DECISION.
6. Select #1 Sourcing Decision and click the Add Activity icon on the toolbar.
7. Rename this activity #2 CUSTOMER INPUT REQUIREMENTS (VOC).
8. Select the above activity, #2 Customer Input and click the Add Milestone icon on the toolbar.
9. Change the name to PPAP SUBMISSION TO CUSTOMER.

Add a new WBS Element as a sub element to Phase PR1-Concept.

1. Right click Phase PR1-Concept and select Add WBS Element or click on the Add WBS Element icon on the toolbar.

When the WBS Element is added to the tree, it is placed off the root element, i.e., FB Process. To make it a sub element of Phase PR1-Concept you must indent it.

2. Click on the Indent icon on the toolbar.
3. Rename this element All PROJECT SPECIFIC PR1 APQP ELEMENTS ACHIEVED.

Note: When you add a WBS Element as a sub element it then becomes the parent to all the activities and milestones below it.

The table below shows the behavior of the WBS Elements, Activities and Milestones.

Selected	Condition	Behavior
WBS Element	Root WBS Element	Adds a new row directly below the root, indented in one level. All activities, milestones and WBS elements that belong to the root WBS Element now belong to the new WBS Element

Selected	Condition	Behavior
WBS Element	Non Root WBS Element	Adds a new row directly below and at the same level as the selected WBS Element. All activities, milestones and WBS elements that belonged to the selected WBS Element now belong to the new WBS Element
Activity or Milestone	Parent is Root WBS Element	Adds a new row directly below and at the same level as the selected activity. All activities and milestones that belonged to the root WBS Element that are below the selected activity now belong to the new WBS Element and are indented on level
Activity or Milestone	Parent is not Root WBS Element	Adds a new row directly below and at the same level as the selected activity's parent WBS Element All activities, milestones and WBS elements that belonged to the selected activity's parent WBS Element that are below the selected activity now belong to the new WBS Element

Note: The Outdent and the Indent icons can be used to control the level of the WBS Elements.

Predecessor

When the WBS Elements, Activities and Milestones have been entered you can set the Predecessors. Predecessor is used to establish the Scheduled Start date of the Activities and Milestones. For example, when the schedule is run, the Scheduled Start date for the first activity will automatically be set to the same date as the start date of the project. The Scheduled Finish date for this first activity will be the Scheduled Start date calculated by the number of days set for the Duration. Weekend days will not be included in the calculation. If a Predecessor of 1 is set for the second activity, then it cannot begin until the first activity is finished. The Scheduled Finish date set for the second activity will be calculated the same way as the first, Start Date calculated by the Duration.

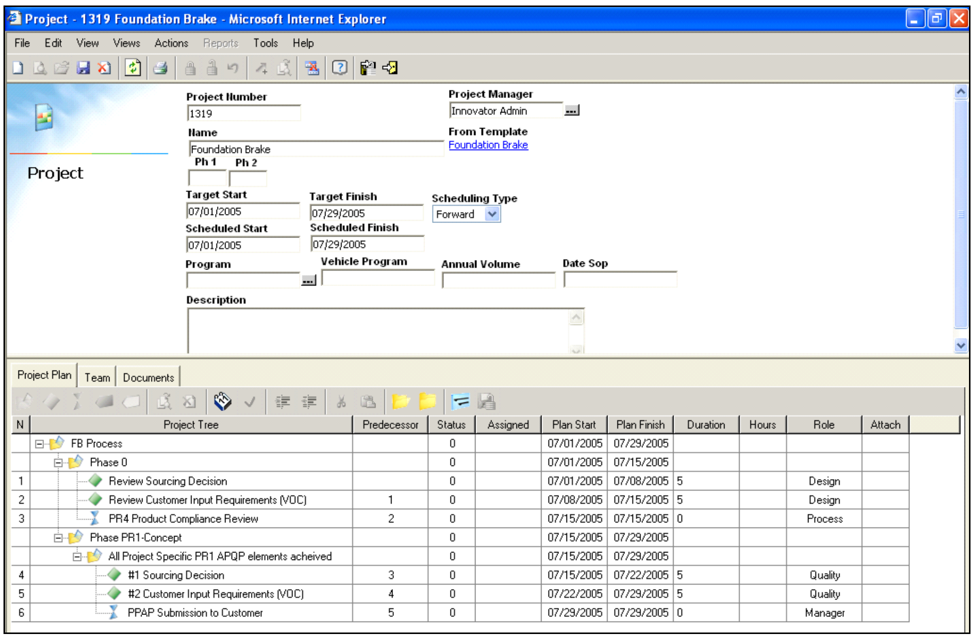


Figure 3

If no Predecessor is used, then the Scheduled Start date for all activities and milestone will be the same as the Target Start date for the project.

If an activity or milestone is inserted into the middle of an existing structure, e.g., row 7, the system will automatically renumber the rows and adjust the Predecessor accordingly, keeping the predecessor link to the original activity or milestone.

Set the Predecessor for the Activities and Milestones

1. Click the cursor into the grid under Predecessor for activity, Review Customer Input Requirements and enter the number 1.
2. Click in the grid under Predecessor for the Milestone, PR4 Product Compliance Review and enter the number 2. Continue down the rest of the Activities and Milestone and enter the Predecessor incrementing the number by one for each, e.g., row 2 will have 1 as its Predecessor and row 3 will have 2.

Plan Duration / Plan Hours

The next field to be filled in is the Plan Duration. By default, this fills in a 1 for all the Activities and 0 for Milestones. The 1 representing 1 day, and the Plan Hours displays 8 as in 8 hours a day. The Plan Duration for the Activities can be changed to represent the number of days each activity will take to complete.

1. Click the cursor in the grid under Plan Duration for Review Sourcing Decision Documentation and set the duration to 5.
2. Repeat the above step for each Activity and set the duration, leaving the Milestones set to 0.

Roles

Roles can be assigned to each activity and or milestone. When a new project is created using this template, the specified role will appear in the Role column. The Project Manager can assign an alias identity to this role when creating the Project.

Note: Roles are a list item called Project Role and can be edited via the List item in the TOC tree.

There are five predefined Roles in Project:

1. Design
2. Quality
3. Process
4. Assemble
5. Manager

Create a Role

1. Click in the grid under Role for the 1st activity and select Design from the list.
2. Repeat the above step to assign a Role to all the Activities and Milestones.

Attach Required	Can be set if on completion of the Activity, a Deliverable must be attached
Attach Type	Is used to establish which ItemType must be attached as the Deliverable
Required	If checked for an Activity or Milestone, then that Activity or Milestone is necessary for the Project completion and cannot be deleted

3. Click Save, Unlock & Close icon on the toolbar.

Promote a Template

Promote a Template to the Active lifecycle state

When a template has been created the default lifecycle state is set to Pending. Before it can be used to create a project, its lifecycle state must be set to Approved.

To promote the template to the Approved lifecycle state, make sure it is unlocked.

1. From the main Innovator window, select the Template, Design Template.
2. Click on the Promote icon on the toolbar.
3. Select Approved in the Promote window dialog box and click the checkmark icon on the toolbar.

The Properties for the Template will show the State as Approved, it is now available to use when creating Projects.

Projects

Projects can be created in two ways.

- Create the Project using a Template
- Create a Project building the WBS Elements, Activities and Milestones from scratch in the Project without using a Template

Either way, every Project window will display a standard set of properties in the header section and related information displayed as tabs in the lower section of the window.

1. From the TOC tree click the “+” to the left of Portfolio to expand the folder.
2. Select Project and click the New icon on the toolbar.

The Add Project Plan window box appears.

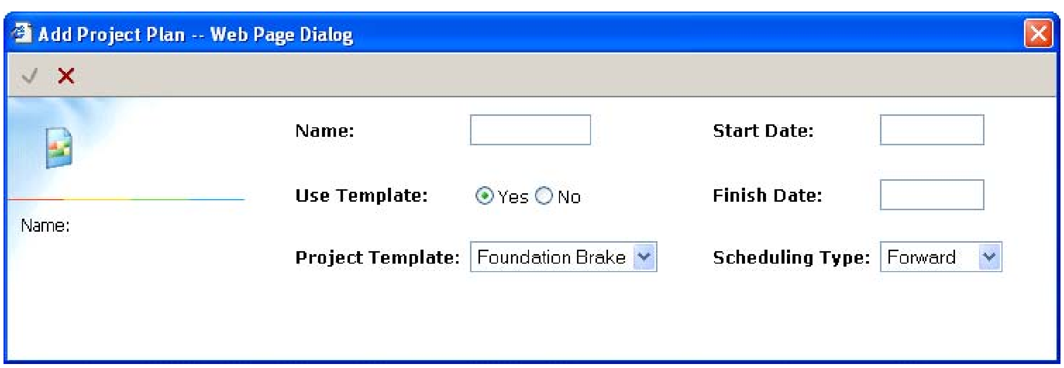


Figure 4

3. Name the Project FOUNDATION BRAKE.
4. For Use Template check the Yes radio button.
5. Change the Template selection to Foundation Brake

6. Click into the Start Date, the calendar should pop up, select a start date of 7/01/05.
7. Click into the Finish Date and select a finish date of 7/29/05 for the Project.
8. Leave default Forward for the Schedule Type.

Schedule Type has three settings:

- Forward — Starts with the Start date and does a forward pass then backward pass.
- Backward — Starts at the Finish date and does a backward pass then forward pass
- Milestone — Uses the latest Milestone date as a Finish date using backward scheduling.

Scheduling will be explained in-depth in the Scheduling section later in this manual.

9. Click the OK button at the end of the window.

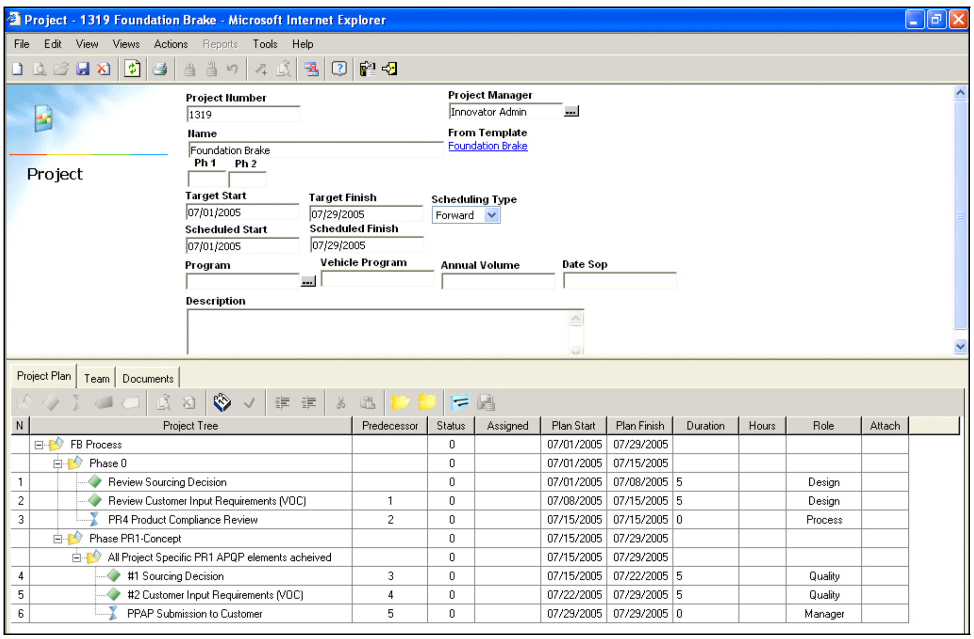


Figure 5

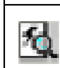
The Project window opens populating the fields based on the data fed into the Add Project Plan window.

Project Header Properties

Label	Description
Project Number	System generated sequence number
WBS	If using a template, defaults to the template name, if not, defaults to the Project Number

Label	Description
Project Manager	If left blank it will default to the Identity of the Creator. Is assignable
Name	The name given in the Add Project Plan window
Phase #	A Phase field will be displayed for every WBS Element set in the Template. If no template is used no Phase will show until New Elements are created and saved. The maximum Phases displayed are 10. If more than 10 Phases only 1 will be displayed
Target Start	Displays the Start Date set in the Add Project Plan window. If no date was set this field will be blank
Target Finish	Displays the End Date set in the Add Project Plan window. If no date was set this field will be blank
Schedule Type	Displays the schedule type selected in the Add Project Plan window. The default is Forward
Scheduled Start	When the schedule is run for the Project this field gets populated with the earliest date of an activity or milestone
Scheduled Finish	When the schedule is run for the Project this field gets populated with the latest date of an activity or milestone

Project Tree Toolbar Icons

Icon	**Description**
	Add WBS Element
	Add Activity
	Add Milestone
	Add Existing Deliverable
	Add New Deliverable
	View/Edit Selected Item
	Delete Selected Item

Icon	Description
	Execute Schedule
	Open Completion Dialog
	Indent Element
	Outdent Element
	Cut
	Paste
	Expand All
	Collapse All
	Show Gantt Chart
	Save and Unlock

Relationship Tabs

Tab	Description
Project Plan	Define all the Activity and Milestone information
Team	Assign Identities to the Roles
Documents	Set Deliverable ItemTypes
Project Part	Assign a Part to the Project

Project Plan Properties

Name	Description
N	Column 0 is the row number of the Item and is maintained by the system.
Project Tree	The Project Tree display the WBS Elements, Activities and Milestones
Predecessor	Predecessor establishes the order in which the Activities and Milestones will become active

Name	Description
Status	The percentage status of Activity completion
Assigned	The User assigned to the specified Activity or Milestone
Scheduled Start	The date the Activity or Milestone is due to start
Scheduled Finish	The date the Activity or Milestone is due to finish
Duration	Estimated number of days an Activity will take to complete. The default is 1.
Hours	The number of hours based on the Plan Duration. The default is 8 hours.
Roles	A List Item to pick a Role, e.g., Design, Quality etc.
Attach	Display a link to the Deliverable attachment

Team Properties

Name	Description
Sort Order	Determines the sort order of the Roles
Role	Role Name
Name	Alias Identity assigned to Role

Document Properties

Name	Description
ItemType	The ItemType of the Deliverable attachment
Name	Name of Item to be attached

Project Part Properties

Name	Description
Part Number	The Unique number of the Part
Revision	System populated Revision
Name	Name of Part

Name	Description
Type	Type of Part, e.g., Assembly, Component etc.
State	Lifecycle State
Unit	Unit Measure e.g., IN, FT, EA etc.

The Project Number is system generated and will display automatically. The Project Manager is assigned as the creator by default. If you are not going to be the owner of the project then another identity can be assigned here.

A Phase is displayed in the form for each WBS Element in the Template. Phases are used to display the percentage of completion for each of the WBS Elements after the Daily Rollup is completed. Our template has two WBS Elements off the root, so our form displays Phase 1 and Phase 2.

The relationship grid displays only the root element: To view all of the details:

1. Click on the Expand All icon on the toolbar.

The Project tree will expand displaying all of the WBS Elements, Activities and Milestones that were created in the Project Template. All data created in the template now populates the grid accordingly. The Scheduled Start and Scheduled Finish dates are populated based on the Start and End dates set for the Project and the Predecessor order and Duration days set from the template.

If any changes are made to the Predecessors or Duration, the Scheduled Start and Scheduled Finish dates will automatically reflect the change and will reschedule the project with the adjusted dates.

Identities

The identities for each activity and milestone can be assigned either in the Assigned field or assigned to the Role via the Team tab. When a user has been assigned to a Role, the user’s identity will automatically appear under the Assigned tab in the Project Tree grid next to each activity or milestone that has that role associated with it as soon the project is saved.

Only Alias Identities are assigned to Roles and can be changed at any time in the Project. If an assigned identity is changed in a Role, all activities that are still pending or active will reflect the change, only those activities that are in a complete state will stay with the original Identity.

Assign a User Identity to a Role

1. Click on the Team tab.
2. Select the role Process and click the Pick/Replace Related Item icon on the toolbar.
3. Click the Search icon on the toolbar

4. Select PM1 from the list of Identities.

Note: Only Alias Identities would be used in Roles as the assignee would be a single user.

5. Click on the green checkmark icon.
6. Repeat steps 2-5 and add PM2 & PM3 to the other Roles accordingly.
7. Click on the Project Plan tab.
8. Click the Save icon on the toolbar.

You will notice the Assigned column shows the identity next to the activity for each Role.

Deliverables

Deliverables can be attached to an activity such as a document or a drawing etc. A list of Deliverables is created via a Poly Item ItemType. A Poly Item is an ItemType that groups different ItemType Items to form a list that can be pick/related and attached to an activity.

To attach a deliverable

1. Click in the grid under Attach for the activity Review Sourcing Decision Documentation and click on the Add Existing Deliverable icon on the toolbar.
2. Select Documents from the dialog box.
3. Click on the Run Search icon on the toolbar and select a document.
4. Click on the green checkmark icon to insert it into the project.
5. Click in the grid under Attach for the activity 2 Customer Input Requirements and click on the Add Existing Deliverable icon on the toolbar.
6. Select Project Files from the dialog box.
7. Click on the Run Search icon on the toolbar and select a file name.
8. Click on the green checkmark icon to insert it into the project.

Scheduling

When the Project is created using a template, the Scheduler takes the Start Date and End Date that was entered in the Header section of the Project, and calculates the Scheduled Start and Scheduled Finish based on the Predecessor and the Duration days set in the Template. This means that the Target start and finish date might not match the scheduled start an finish date. If however, the Project is being created without a template, the Scheduler does not have the Predecessor or the Duration information yet, so the Target and Scheduled start and finish dates will be the same and will adjust according when the Predecessor and Duration is entered.

To Run the Schedule manually

1. Click on the Run Schedule icon on the toolbar, or by right clicking and selecting Run Schedule for the context menu.

There are three types of scheduling in Project.

- Forward
- Backward
- Milestone

Forward Scheduling

When using Forward type scheduling, the scheduler works by taking the Scheduled Start date of the first activity, adds the Duration days to it to calculate the Scheduled Finish. That Scheduled Finish date becomes the start date for the next activity that has a Predecessor row number set to follow that first activity. For example, Review Sourcing Decision Documentation is set to start on 7/1/05 and has a Duration set to 5. The Scheduled Start for Review Sourcing Decision Documentation will be 7/1/05 and the Scheduled Finish date will be 7/8/05. Review Customer Input Requirements has a Predecessor of 1 and a Duration set to 5, this means that Review Customer Input Requirements should start when Review Sourcing Decision Documentation is finished. So it will have a start date of 7/8/05 and a finish date of 7/15/05. If the duration days span over a weekend, the Scheduler will only count business days, so it will ignore all weekend day’s in-between.

Note: An activity that is set to start after a preceding activity will start as soon as its preceding activity has reached is Scheduled Finish date regardless of the activity been complete.

As explained above the calculated finish date is based on the start date and the number of duration days. The schedule works through the activities and milestones going forward and then works back to the first activity. By making a forward pass and then a backward pass it allows the user to see which activities have some leeway in their scheduled time. Sometimes this might take the project outside of the target finish date.

If this happens, the Project Manger has a number of different options to consider. He might consider changing the durations days set for each activity, or he might try and change the finish date of the Project. If neither of these options is possible and the project start date is flexible, then Backward type scheduling would be the best solution. Backward scheduling starts with the target finish date and works backwards then forward.

Backward Scheduling

Backward scheduling starts at the last activity or milestone and enters the Target Finish date of the Project to that last activity and works backwards. For example, let’s say you have a Target Finish date of 7/29/05 and the last activity, #2 Customer Input Requirements (VOC), has a duration set to 5, the schedule will set the finish date for that activity to 7/29/05 and the start date to 7/22/05. #1 Sourcing Decision will have a finish date of 7/22/05. It also has a duration set to 5 so its start date will be 7/15/05. Working backward up through the activities will mean that Review Sourcing Decision Documentation will have a finish date of 7/08/05 which in turn, means its start date will be 7/01/05. This will set the Scheduled Start date to 7/01/05 and the Scheduled Finish date to 7/29/05.

Note: As both activities span over a weekend, the schedule will adjust the start date to skip over the weekend days.

Milestone Scheduling

In order to use Milestone scheduling, every Phase in the Project must have at least one milestone. When creating the project and selecting Milestone scheduling, you will be prompted to enter a date for at least one milestone for every phase. If more than one milestone date is entered, for example, you have multiple milestones in a phase, the latest milestone date will be used for all the other activities and milestones that do not have a successor defined.

Milestone scheduling takes the latest Milestone date in the phase, and using backward scheduling, sets that date as the finish date for all Activities that don't have a predecessor. Milestone scheduling also schedules each Phase separately. For example, Product Release is the last milestone in this project and has a finish date of 7/29/05. This will determine that the activity, #2 Customer Input Requirements (VOC), will have a finish date of 7/29/05 and will use Backward scheduling as described above to complete the activities for that phase. The next phase will use its milestone date to determine the finish date of that phases activities.

Critical Path Method

When determining the project schedule it is very helpful to know which of the activities have flexible start and finish dates. By creating the diagram below you can work out the earliest start, earliest finish, latest start and the latest finish date for each activity.

Each square represents an activity. The numbers on top represent the earliest start day, duration and earliest finish date. The numbers below each square represent the latest finish day – duration = latest start day. The diagram works across the top numbers first, and then works back along the bottom numbers.

The start date for the each activity will depend on its predecessor. For example, based on the diagram below, activities 2 & 3 both have a predecessor of 1. That means they are due to start when activity 1 is finished, so activities 2 & 3 will have a start day of 3.

This diagram is based on Forward scheduling and will determine the critical path where the dates are flexible.

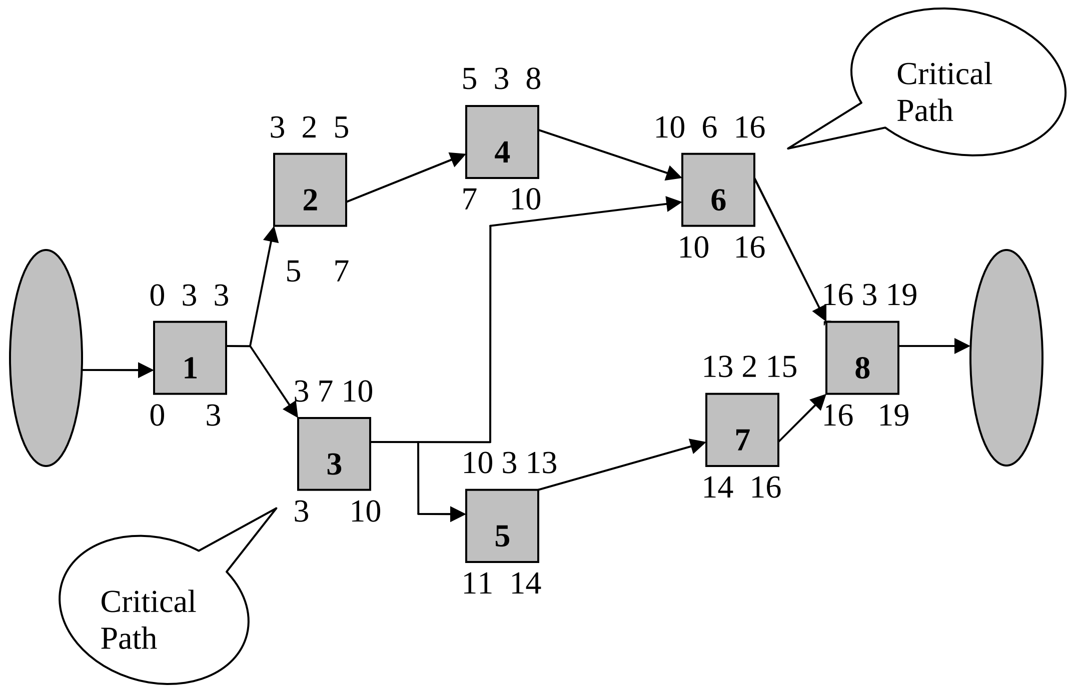


Figure 6

This is how it works:

Activity 1 starts at 0 and has a duration of 3, so it finishes on day 3. There are two activities that have a predecessor of 1, activities 2 & 3, that means they will both start when activity 1 has finished, so they will both start on day 3. Activity 2 has a duration of 2 so it will finish on day 5. Activity 3 has a duration of 7 so it won't finish until day 10.

Activity 4's early end day is 8, but activity 6 has a predecessor of 3 & 4. This means activity 6 cannot start until both 3 & 4 have finished, so its start day will be 10. Activity 8 has a predecessor of 6 & 7, however they both finish on day 16, so 8 will start on 16.

When the forward pass is complete it begins the backward pass. This starts at the finish day of activity 8 and works backwards.

Once finished you will see from the diagram above there are two activities that have no flexibility in their start and finish day, those activities are 3 & 6. Both of these activities are called, Critical Paths, they have no flexibility in their start and end dates.

Promote the Project to the active state

When the project has been saved and unlocked, the Owner promotes it to the Active state in the lifecycle.

1. Select the Project in the search grid, either right mouse click and choose Promote or click the Promote icon on the toolbar.
2. Select Active in the lifecycle dialog box and click the green checkmark icon.

Activity Lifecycle Map

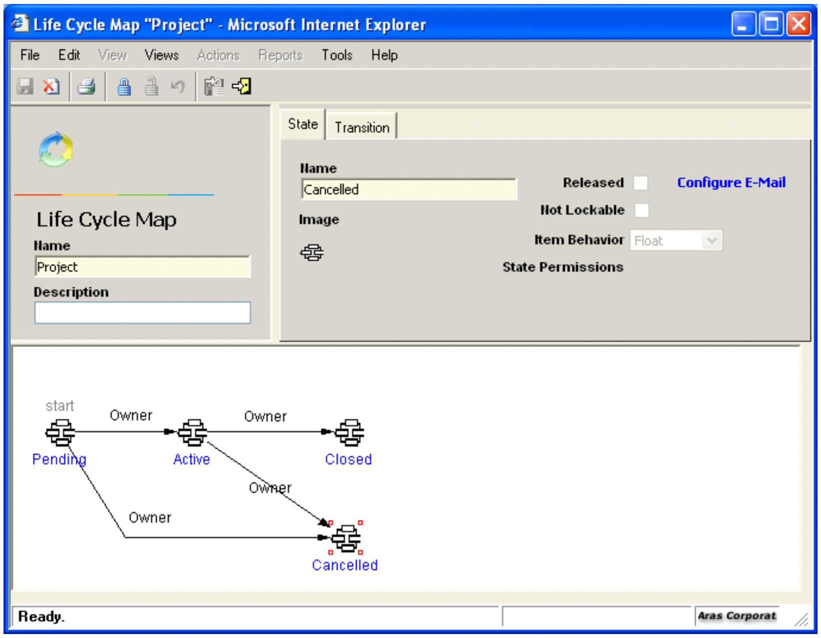


Figure 7

Above is a diagram of the Lifecycle Map for an Activity. When the Owner has promoted the Project to the Active state, the activity will appear in the assigned user's InBasket. When the user completes the activities, the owner can then promote the activity to Closed. The owner of the Project can cancel the activity at any time in its lifecycle.

InBasket

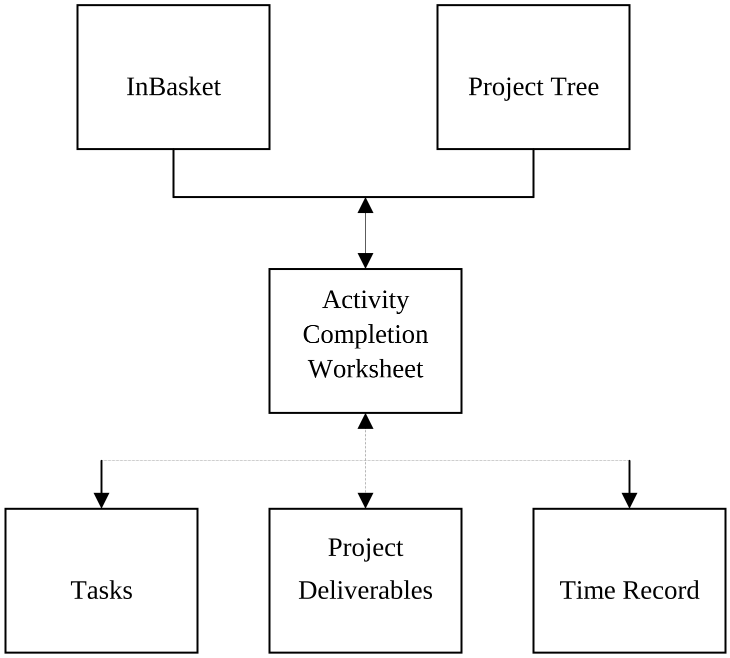
When a Project is saved and promoted to the Active state, the activities will appear in the assignee's InBasket as pending if the activity has not reached its start date. When an activity has reached its start date the Daily Update will activate it. When the Daily Update is run it performs the following task:

- For all Active Projects, it checks all project activities that have a start schedule date of <= today and State = "Pending" and promotes them to the Active state.

It will then show in the InBasket of the assignee as active instead of pending. Users can update the Activity, fill in the Completion Worksheet and indicate that the Activity is complete when all the tasks have been completed.

Note: Activity assignments can also be accessed from the Project Tree in the Project itself.

Below is a diagram of the Activity structure:

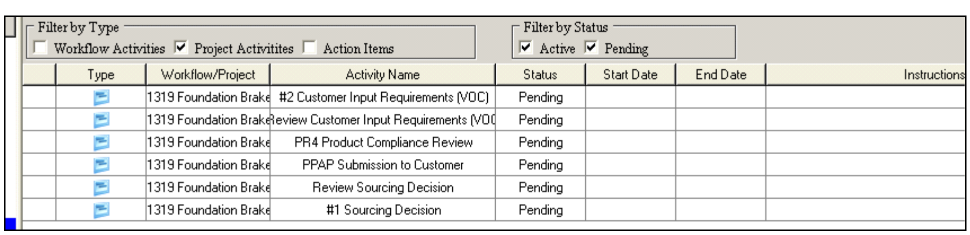


Activity Completion Worksheet

When the Project has been created, the Activity or Milestone will appear in the assignee's InBasket as Pending. As soon as the Daily Update has been completed all pending activities that have a scheduled start date <= today will appear as Active, and the assignee can fill in the Activity Completion Worksheet (ACW).

To access the ACW:

1. Login as the Assignee.
2. Click the "+" to the left of My Innovator to expand it.
3. Select My InBasket.
4. In the Filter by Type section at the top of the window make sure Project Activities is checked.



Filter by Type: Workflow Activities, Project Activitites, Action Items
Filter by Status: Active, Pending

Type	Workflow/Project	Activity Name	Status	Start Date	End Date	Instructions
	1319 Foundation Brake	#2 Customer Input Requirements (VOC)	Pending			
	1319 Foundation Brake	Review Customer Input Requirements (VOC	Pending			
	1319 Foundation Brake	PR4 Product Compliance Review	Pending			
	1319 Foundation Brake	PPAP Submission to Customer	Pending			
	1319 Foundation Brake	Review Sourcing Decision	Pending			
	1319 Foundation Brake	#1 Sourcing Decision	Pending			

Figure 8

5. Select Review Sourcing Decision Documentation, right click and choose Update Activity or click on the Update Activity icon on he toolbar.

The Activity Completion Worksheet opens.

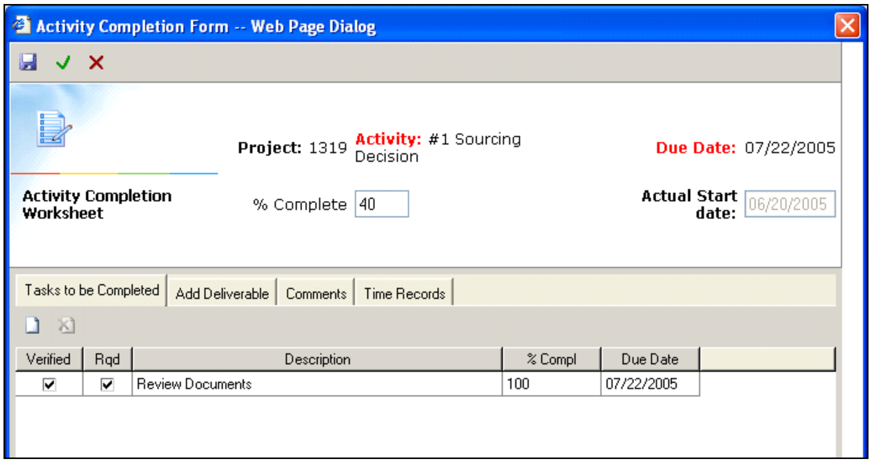


Figure 9

Any tasks or deliverables that were attached to this activity by the Project Manger will appear in the worksheet. The assignee can complete the worksheet or set a completion percentage, choose the actual start date, save the changes and come back later to complete it. When all assignments have been completed and the deliverables are attached, they can click the complete button to complete the activity. Once the activity is completed, the next time the daily update is run it will update the status fields in the Project. All activities that are completed will be displayed in the Project Tree as green regardless of their early or late start.

There are four related items in the Activity Completion Worksheet.

1. Tasks to be completed
2. Add Deliverables
3. Comments
4. Time Records

Label	**Description**
Task to be completed	Tasks can be used by the Project Manager or the Assignee and set as required by checking the Rqd option in the form. If required is checked the assignee must check Verified before completing or saving the form.
Add Deliverables	Deliverables can be set as required and the type of deliverable specified when the Template was created. If required, a deliverable of the specified type must be added to the form.

Label	Description
Comments	Comments can be added and a file attached if necessary.
Time Records	Time Records allows the user to record the amount of hours they have worked on the Activity.
Actual Start Date	Before saving or completing the form, the actual start date must be entered. This will record in the activity the date the user actually started the project whether it be earlier or later then the scheduled start date
Complete	If the activity is finished, the Complete button sets the activity to 100% Complete and will move it to the Complete Lifecycle state
Save Changes	Save Changes will save any work done on the Activity but will not send it to the Complete Lifecycle state. The activity will remain in the assignee's InBasket
Cancel	Cancel all changes and close the ACW

. In the Task section of the ACW click on the New icon.

1. Create a task and set it as required by entering a checkmark for Rqd.
2. Select the Add Deliverable tab and click on the Add Existing Deliverable icon and select a Deliverable type from the drop down list.
3. Click on the Run Search icon on the toolbar.
4. Select a deliverable and click on the green checkmark icon.
5. Add a comment if desired.
6. Select the Time Records tab and click on the New icon on the toolbar.
7. The user's name will automatically appear under "Who", select a Date From and a Date To and any notes necessary.
8. Click on the Actual Start date and select today's date.
9. In the heading section of the ACW enter 40% for Complete.
10. Click on the Save icon on the toolbar.

The activity will still be listed in the InBasket because it has not been completed. When the daily update is run again, the status of this activity will appear in the project.

Daily Updates

When the Daily Update is run, it performs the following tasks.

- For all Active Projects, it checks all project activities that have a start schedule date of <= today and State = “Pending” and promotes them to the Active state.
- It then performs a Rollup. The Rollup is responsible for updating the Status field and populating the WBS Elements with the activities and milestones completion percentage. It starts at the lowest level of the WBS Elements tree structure, calculates the completion status of each activity and milestones and color codes each one based on their early or late start from the scheduled finish date.

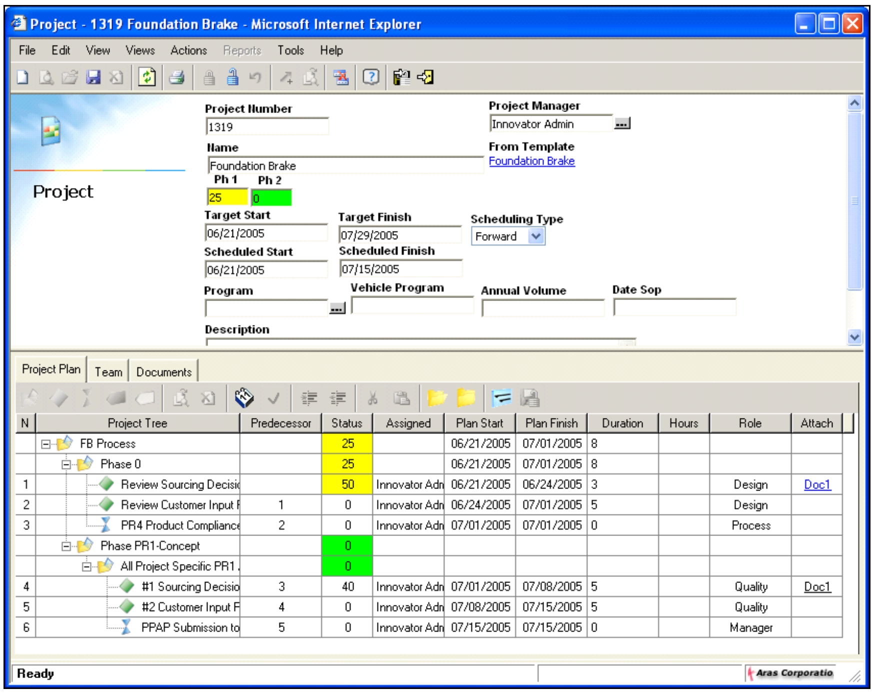


Figure 10

The table below describes the rules of how the Rollup determines the colors.

State	Days From Finish Plan	Color
Pending	N/A	No Color
Active	>5	Green
	<6	Yellow
	0 or Late	Red
Complete	N/A	Green

- The Daily Update then updates each Phase with the WBS information. The table below describes the rules of how it updates the Phase.

Rule	Color
WBS Element status is Pending	No Color
WBS Element status is Active & there is at least 1 sub activity or WBS Element that is Red	Red
WBS Element status is Active & there are no sub activities or WBS Elements that are Red & there is at least one sub activity or WBS Element that is Yellow	Yellow
WBS Element status is Active & there are no sub activities or WBS Elements that are Red or Yellow or the activity is complete	Green
Percent complete= sum of (% complete x duration) Sum of (duration)	75

Complete an Activity

1. Login as the Assignee.
2. Click the “+” to the left of My Innovator to expand it.
3. Select My InBasket.
4. In the Filter by Type section at the top of the window make sure Project Activities is checked.
5. Select Review Sourcing Decision Documentation, right click and choose Update Activity or click on the Update Activity  icon on he toolbar.

The Activity Completion Worksheet opens.

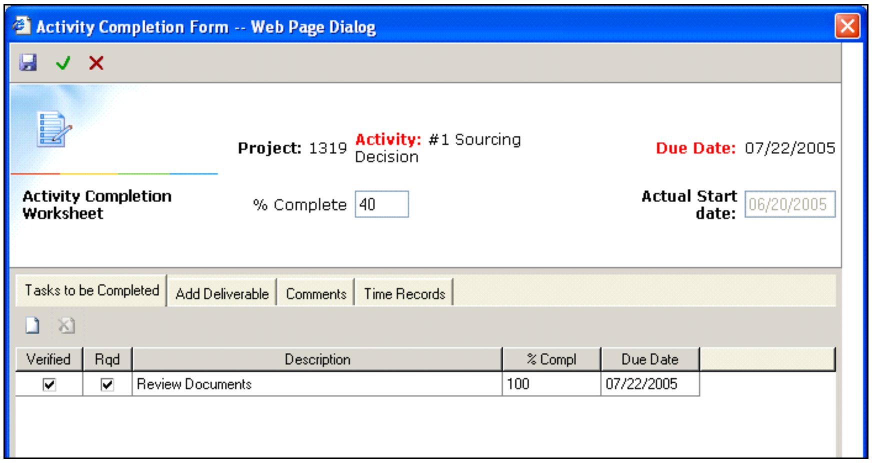


Figure 11

6. In the Task section of the Activity Completion Worksheet, click on the New icon.
7. Create a task and set it as required by entering a checkmark for Rqd.
8. Select the Add Deliverable tab and click on the Add Existing Deliverable icon and select a Deliverable type from the drop down list.
9. Click on the Run Search icon on the toolbar.
10. Select a deliverable and click on the green checkmark icon.
11. Add a comment if desired.
12. Select the Time Records tab and click on the New icon on the toolbar.
13. The user's name will automatically appear under "Who", select a Date From and a Date To and add any notes necessary.
14. In the heading section of the ACW enter 100% for Complete.
15. This time click on the green checkmark icon on the toolbar.

Now the activity will no longer be listed in the InBasket. It has moved into the Complete Lifecycle state.

When the Daily Update is run, the Project will be updated to reflect the completed activity.

Gantt Charts

Gantt Charts display the project in dashboard format.

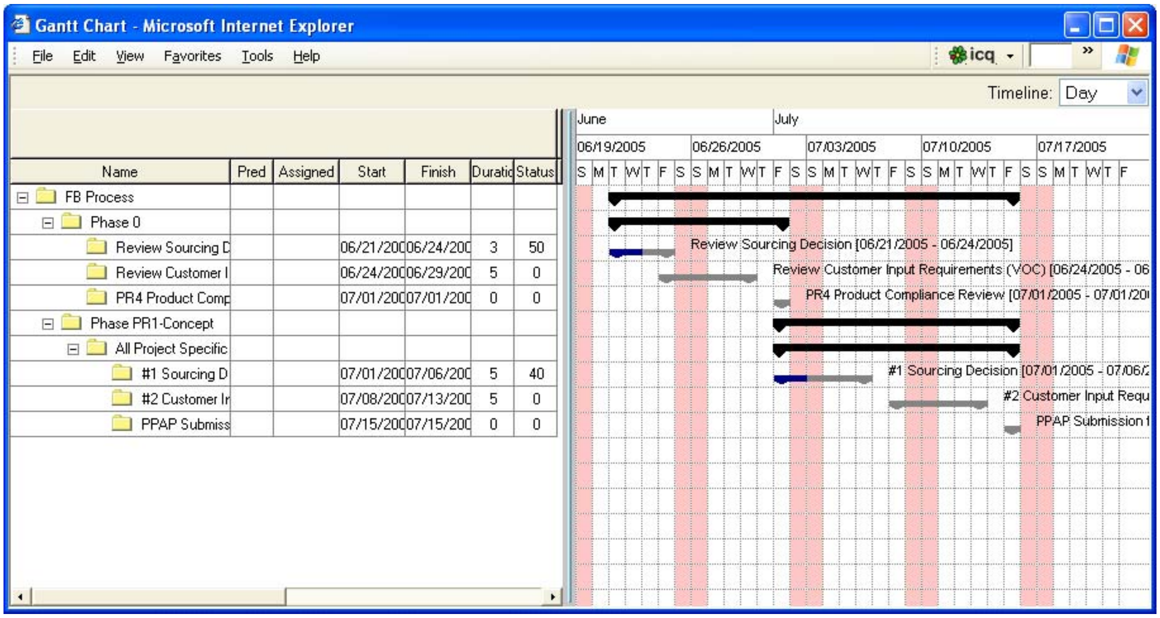


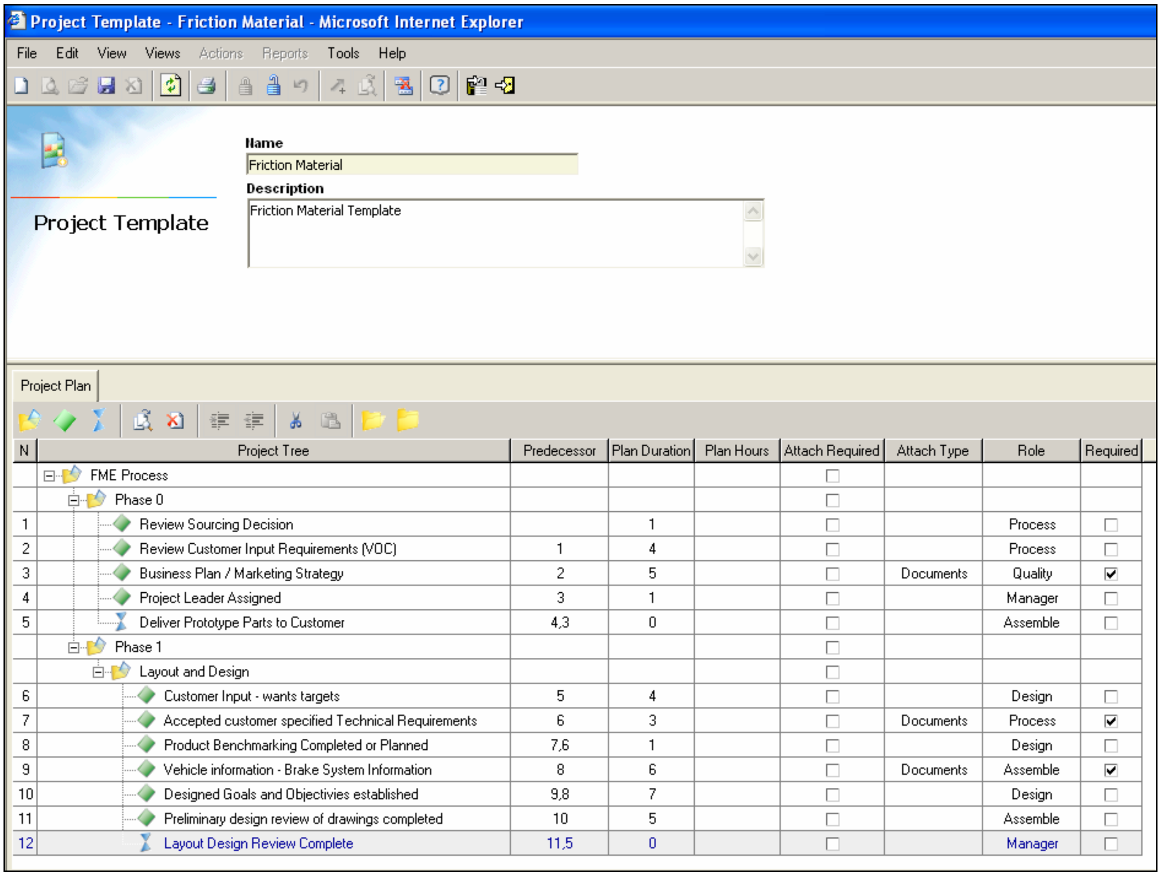
Figure 12

All the WBS elements are displayed in black and the activities and milestones in gray. When the user starts work on an activity or milestone, and sets the percentage complete, the Gantt chart display the completed percentage in blue.

The chart can be viewed by Day, Week, Month, Quarter or Year.

Exercise 1

1. Create a new Template, called Friction Material.
2. Add the following WBS Elements, Activities and Milestones as in the diagram below.
3. Enter the Predecessor, Durations, Attach Required, Attach Type and Role



N	Project Tree	Predecessor	Plan Duration	Plan Hours	Attach Required	Attach Type	Role	Required
	FME Process				☐			
	Phase 0				☐			
1	Review Sourcing Decision		1		☐		Process	☐
2	Review Customer Input Requirements (VOC)	1	4		☐		Process	☐
3	Business Plan / Marketing Strategy	2	5		☐	Documents	Quality	☑
4	Project Leader Assigned	3	1		☐		Manager	☐
5	Deliver Prototype Parts to Customer	4,3	0		☐		Assemble	☐
	Phase 1				☐			
	Layout and Design				☐			
6	Customer Input - wants targets	5	4		☐		Design	☐
7	Accepted customer specified Technical Requirements	6	3		☐	Documents	Process	☑
8	Product Benchmarking Completed or Planned	7,6	1		☐		Design	☐
9	Vehicle information - Brake System Information	8	6		☐	Documents	Assemble	☑
10	Designed Goals and Objectivies established	9,8	7		☐		Design	☐
11	Preliminary design review of drawings completed	10	5		☐		Assemble	☐
12	Layout Design Review Complete	11,5	0		☐		Manager	☐

Figure 13

Answers Exercise 1

Templates

Create a Template

1. Login to Innovator
2. Click on the "+" to the left of Templates to expand the folder.
3. Select Project Templates, right click and select New or click the New icon on the toolbar.
4. Name the Template FRICTION MATERIAL.
5. For the description type FRICTION MATERIAL TEMPLATE.
6. Click on the Project Plan tab in the relationship section of the window box.

There is at least one New Element populating the grid below the Project Tree, the Root Element.

7. Rename the New Element to FME Process.

Add WBS Elements

You are going to add two new Sub Elements to it naming them PHASE 0 and PHASE 1.

1. Right click FME Process and select Add WBS Element or click on the Add WBS Element icon on the toolbar.
2. Rename this element to PHASE 0.
3. Repeat steps 1 & 2 to add PHASE 1.
4. Select Phase 1 and add another WBS Element.
5. Select the New Element and click on the Indent icon to make it a sub element of Phase 1.
6. Name this sub element LAYOUT AND DESIGN.

Associate an Activity to a WBS Element

1. Select Phase 0 and click the Add Activity icon on the toolbar.
2. Rename New Activity to REVIEW SOURCING DECISION .
3. Repeat steps 1 & 2 to add the other Activities as in the diagram above.

Associate a Milestone to an Element

1. Select the activity, Project Leader Assigned and click the Add Milestone icon on the toolbar.
2. Rename New Milestone to DELIVER PROTOTYPE PARTS TO CUSTOMER .

3. Select the WBS element, Layout and Design and click the Add Activity icon on the toolbar.
4. Rename New Activity to CUSTOMER INPUT – WANTS, TARGETS.
5. Repeat steps 3 & 4 to add the other activities as in the diagram above.

Set the Predecessor for the Activities and Milestones

1. Click the cursor into the grid under Predecessor for activity, Review Customer Input Requirements (VOC) and enter the number 1.
2. Following the diagram continue down the rest of the Activities and Milestones and enter the Predecessor assigned to each, in some cases more than one.

Plan Duration

1. Click the cursor in the grid under Plan Duration and enter the duration of each activity and milestone as shown in the diagram above.

Attach Type

The attach type can be set to determine the type of deliverable to be attached to this activity.

1. Click the cursor into the grid under Attach Type for activity, Review Customer Input Requirements (VOC) and select from the list Documents.
2. Repeat the above steps to add a Attach Type of Documents for Activity 7 & 9, making them required also.

Assign Roles

1. Click in the grid under Role for the activity Review Sourcing Decision and select Sales from the list.
2. Repeat the above step to assign a Role to all the Activities and Milestones as shown in the diagram above.
3. Click Save, Unlock & Close icon on the toolbar.

When a template has been created the default lifecycle state is set to Pending. Before it can be used to create a project, its lifecycle state must be set to Approved.

Required

Required is used to prevent an activity or milestone from being deleted from the project. To set an activity as required:

1. Enter a checkmark for Activity 3, 7 & 9.

Promote the Template

To promote the template to the Approved lifecycle state, make sure it is unlocked.

1. From the main Innovator window, select the Friction Material template.

2. Click on the Promote icon on the toolbar or right mouse click and select Promote.
3. Select Approved in the Promote window dialog box and click the green checkmark icon on the toolbar.

The Properties for the Template will show the State as Approved, it is now available to use when creating Projects.

Exercise 2

1. Create a Project using the above template.
2. Assign Identities to the roles via the Team tab.
3. Decide what scheduling to use, i.e., Forward, Backward or Milestone.
4. Attach a Deliverable to Activity 3, 4, 7 & 9. (Note the different choices when attaching the deliverable to activity 4)

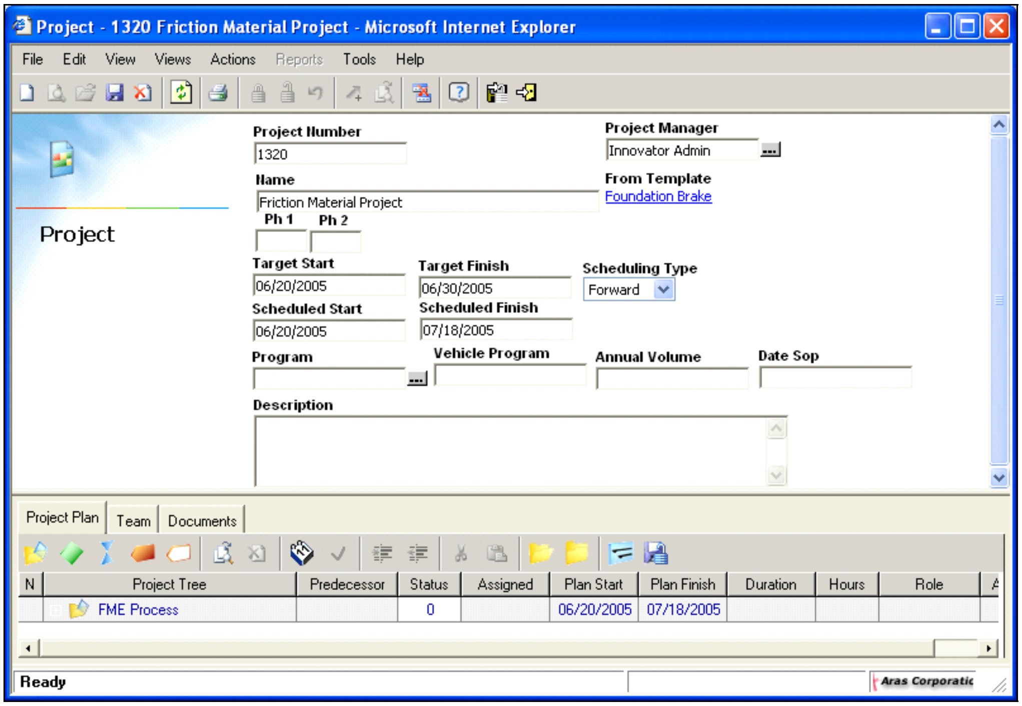


Figure 14

Answers Exercise 2

Project

Create a Project from a Template

1. From the TOC tree click the "+" to the left of Portfolio to expand the folder.
2. Select Project and click the New icon on the toolbar.

The Add Project Plan window box appears.

3. Name the Project FRICTION MATERIAL PROJECT.
4. Leave the default radio button to "Yes" For "Use Template".
5. Select from the list of Templates Friction Material.
6. Click into the Start Date and select today's date from the calendar. .
7. Click into the Finish Date and select a date 1 month from the start date selected.
8. Leave the default for the Schedule Type to "Forward".
9. Click the green checkmark icon at the top left corner of the window.

The relationship grid displays only the Root element: To view all of the details:

10. Click on the Expand All icon on the toolbar.

Assign a User Identity to a Role

1. Click on the Team tab.
2. Click into the Name for the 1st Role in the list and Pick/Replace Related Item icon on the toolbar.
3. Click the Search icon on the toolbar
4. Select PM# from the list of Identities.

Note: Only Alias Identities would be used in Roles as the assignee would be a single user.

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5. Click on the green checkmark icon.
6. Repeat steps 2-5 and add PM# to the other Roles accordingly.
7. Click on the Project Plan tab.
8. Click the Save icon on the toolbar.

You will notice the Assigned column shows the identity next to the activity for each Role.

9. Click the Save, Unlock & Close icon.

Attach a Deliverable

1. Select Activity 3 and click on the Add Existing Deliverable icon on the toolbar.

The Document search screen will appear listing all created Items.

2. Select a document from the list and click on the green checkmark icon.
3. Repeat the above steps to add a deliverable to Activity 4.

When attaching a deliverable to Activity 4, unlike Activity 3, you will be presented with a choice of deliverable types to choose from. This is because, the template stipulated for Activity 3, 7 & 9, an Attach Type of Document must be used.

Promote the Project to Active

1. Select the Design project in the grid, right mouse click and choose Promote or click on the Promote icon on the toolbar.
2. Select Active and click on the green checkmark icon.

Update Project

To update the Project to activate the Activities:

1. From the menu bar select Actions / Update Project.

When the Update Project has completed, a dialog will appear. Click on the X in the top right corner to close the dialog. The Project will appear in the grid as Active instead of Pending.

Exercise 3

Activity Completion Worksheet

To access the ACW:

1. Launch a second instance of Innovator and login as the Assignee.
2. Click the "+" to the left of My Innovator to expand it.
3. Select My InBasket.

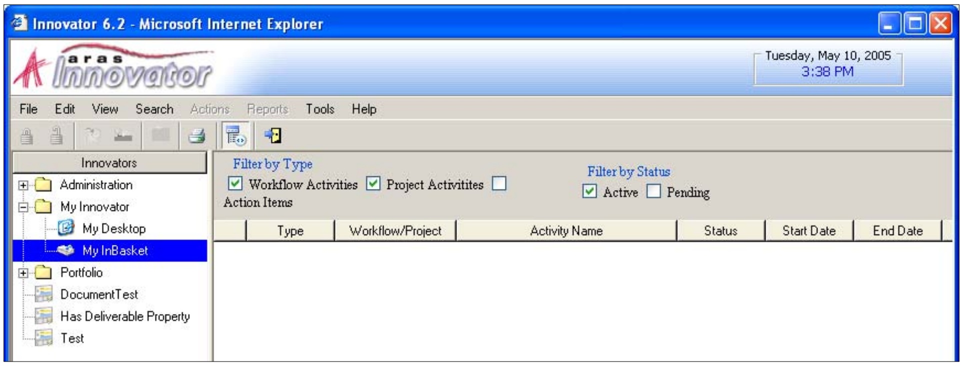


Figure 15

4. In the Filter by Type section at the top of the window make sure Project Activities is checked.
5. In the Filter by Status section make sure Active is checked.
6. Select Outline Drawing, right click and choose Update Activity.

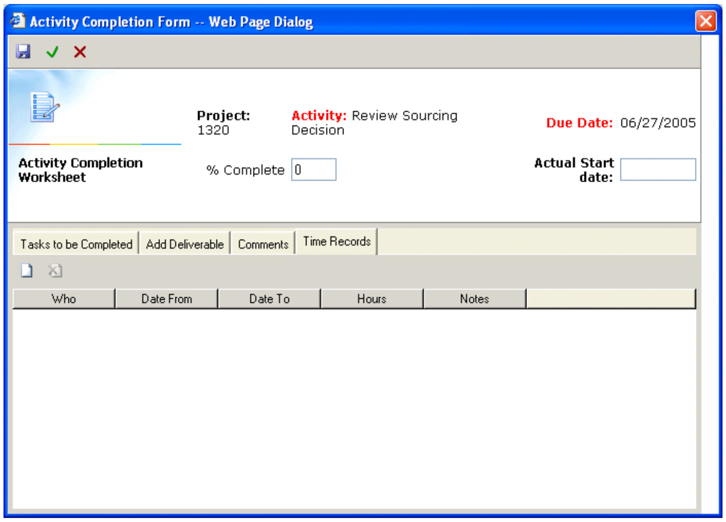


Figure 16

The dialog box has four related tabs

- Tasks to be Completed

- Add Deliverables
- Comments
- Time Records

7. Select Tasks to be Completed and click on the New icon.
8. Create a task and set it as required by entering a checkmark for "Rqd".
9. Enter a checkmark for "Verified".
10. Select Add Deliverable, click on the Add Existing Deliverable icon and select a Deliverable type of Document from the drop down list.
11. Click on the Run Search icon on the toolbar.
12. Select a document item and click on the green checkmark icon.
13. Add a comment if desired.
14. Select Time Records and click on the New icon on the toolbar.
15. The user's name will automatically appear under "Who". Select today's date for "Date From" and "Date To" and type 8 for Hours and any notes if required.
16. In the heading section of the ACW enter 40% for Complete and enter today's date for the Actual Start date.
17. Click on the Save Changes button at the end of the ACW.

The activity will still be listed in the InBasket because it has not yet been completed..

Update Project

To update the Project

1. Switch back to the login for the Project Manager.
2. Click on the "+" to the left of Portfolio.
3. Click on Projects, select your Project from the search grid.
4. From the menu bar select Actions / Update Project.

When the Update Project has completed a dialog will appear click on the X on the top right corner to close the dialog.

1. Edit the Project.
2. Click on the Expand All icon.

The Update Project will have completed the Rollup and the 40% will be listed in the Status field next the Activity, Review Sourcing Decision. The Status field will also appear in green.

Complete the Activity

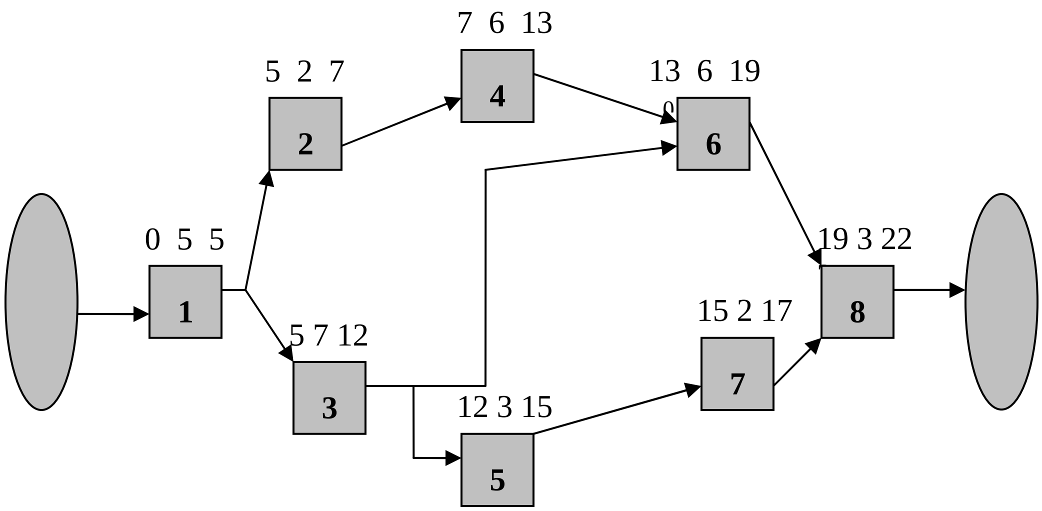
1. Switch back to the Assignee login.

2. Select My InBasket.
3. In the Filter by Type section at the top of the window make sure Project Activities is checked.
4. Select Outline Drawing, right click and choose Update Activity.
5. This time click on the Complete button at the end of the ACW.

Switch back to the Project Manager, go to the Project and select Actions / Update Project. If you edit the project you will see the activity is set to 100% and is green.

Exercise 4

Determine the critical path/s from the following diagram.



Exercise 4 Answer