

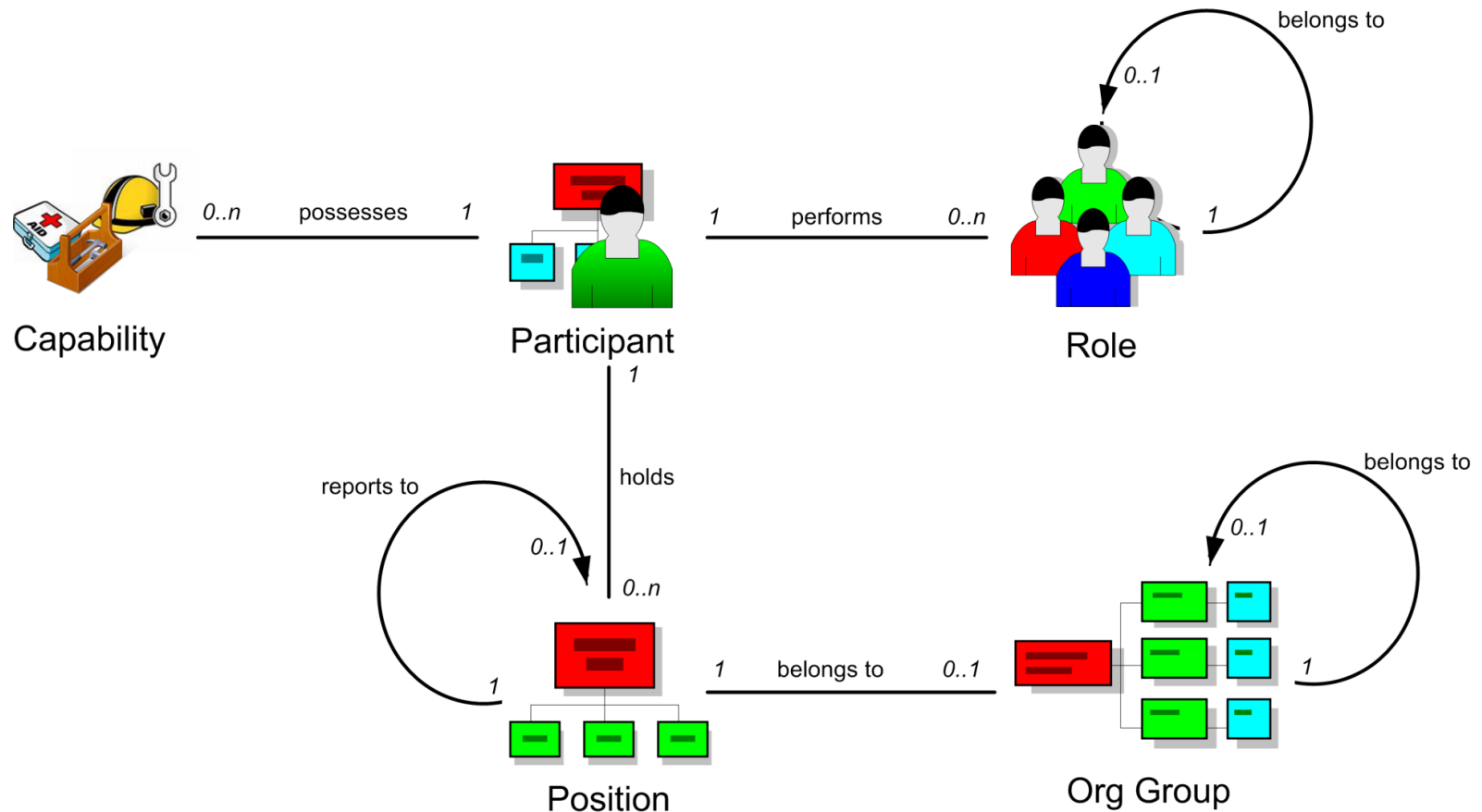
# THE YAWL RESOURCE PERSPECTIVE



# Specifying the Organizational Model

# YAWL Organizational Model

\*All relations are from the perspective of a unique participant



# User Privileges

| Privilege                        | Granted  | Denied   |
|----------------------------------|--|--|
| Choose which work item to start  | Can choose allocated items to start in any order           | Can only choose the oldest allocated item to start           |
| Reorder work items               | Same as above  | Same as above  |
| Start work items concurrently    | Can have several items started at once                     | Can only have one item started at a time                     |
| View all work items of team      | Can view team's work items on <i>Team Queues</i> form      | Can't view team's work items on <i>Team Queues</i> form      |
| View all work items of org group | Can view org group's work items on <i>Team Queues</i> form | Can't view org group's work items on <i>Team Queues</i> form |
| Chain work item execution        | Can chain work items for a case                            | Can't chain work items for a case                            |
| Manage cases                     | Can access the case management form                        | Can't access the case management form                        |

# Org Data Maintenance

- The Org database may be populated and maintained via the *User Management* and *Organizational Data Management* forms, part of the toolset available to Resource Service administrators

The screenshot displays a web-based interface for managing organizational data. At the top, there are four tabs: 'Roles', 'Capabilities', 'Positions' (which is selected and highlighted in blue), and 'OrgGroups'. To the right of these tabs are three small icons: a yellow lightning bolt, a blue document, and a blue circular arrow. The main content area is divided into several sections. On the left, under the heading 'Position Titles', there is a list box containing 'CEO', 'Finance Manager', and 'HR Manager', with 'HR Manager' selected and highlighted in blue. To the right of this list box is a large empty text area labeled 'Description'. Below the 'Description' area is another large empty text area labeled 'Notes'. To the right of the 'Description' and 'Notes' areas are two dropdown menus. The first is labeled 'Reports To' and has 'CEO' selected. The second is labeled 'Org Group' and has 'Human Resources' selected. At the bottom right of the form, there are four buttons: 'Save', 'New', 'Reset', and 'Remove'.

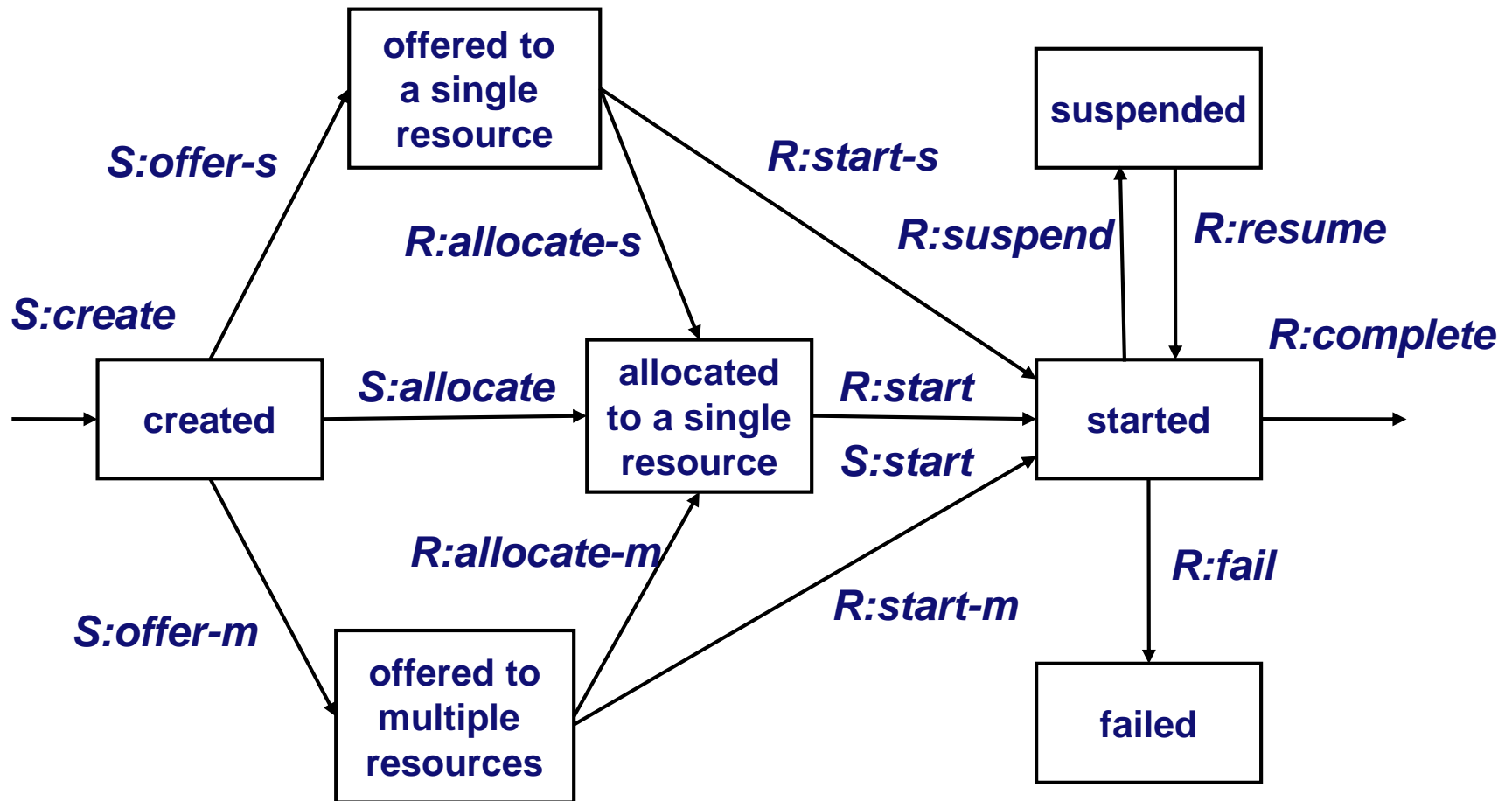
# Org Data Maintenance

|  |  |   |                                       |
|--|--|---|---------------------------------------|
| <b>Participant:</b> <input type="text" value="Jetson, George"/>                                    |  | <b>Privileges</b>   |                                       |
| <b>First Name:</b> <input type="text" value="George"/>   |  |   |                                       |
| <b>Last Name:</b> <input type="text" value="Jetson"/>  |  |   |                                       |
| <b>User ID:</b> <input type="text" value="jetsong"/> <input type="checkbox"/> <b>Administrator</b> |  |   |                                       |
| <b>Description:</b> <input type="text"/>   |  |   |                                       |
| <b>Notes:</b> <input type="text"/>   |  |   |                                       |
| <b>Roles</b> <b>Positions</b> <b>Capabilities</b>  |  | <b>Password</b>   |                                       |
| <b>Owns:</b>   |  | <b>Available:</b>   | <b>New:</b> <input type="text"/>      |
| <input type="text" value="Junior Credit Officer"/>   | <input "="" <input="" type="button" value=" &lt; "/> | <input type="text" value="Credit Officer"/><br><input type="text" value="Junior Credit Officer"/><br><input type="text" value="Senior Credit Officer"/> | <b>Confirm:</b> <input type="text"/>  |
|  |  | <input type="button" value="Save"/>   | <input type="button" value="New"/>    |
|  |  | <input type="button" value="Reset"/>  | <input type="button" value="Remove"/> |



# Specifying Run Time Behaviour

# Work Item Lifecycle in YAWL





# Resourcing Interaction Points

- There are three places in a work item's lifecycle where resourcing *decisions* are to be made
  - **Offer:** The work item is offered to one or more participants. There is no obligation for the participant to accept the offer
  - **Allocate:** The work item is allocated to a single participant, so that the participant is committed (willingly or not) to performing that work item at a later time. If the work item was previously offered to several other participants, the offer is withdrawn from them at this time; and
  - **Start:** The work item is started by the allocated participant.
- At each interaction point, the decision may be:
  - **System-initiated:** automatically performed by the system, using parameters set at design time, or
  - **User-initiated:** the work item is passed to the administrator's *Unoffered* queue so that it can be manually offered to one or more participants

# Distribution Set and Filters

- For a manual task, the process designer can provide details of a **distribution set** of resources to which the task should be offered at runtime
- A distribution set consists of a **union** of:
  - Zero or more individual participants
  - Zero or more roles
  - Zero or more dynamic variables (which at runtime will be supplied with details of participants and/or roles)
- The resultant distribution set may be further **filtered** by specifying that only those participants which certain capabilities, occupying certain positions and/or being members of certain org groups, be included

# Distribution Set Constraints

- A designer may also specify certain constraints to apply, for example:
  - **Four Eyes Principle:** (or Separation of Duties): a certain work item must not be performed by the same participant who completed an earlier specified work item in a process, or
  - **Retain Familiar:** if a participant who is a member of the distribution set of a work item is the same participant who completed a particular previous work item in the process, then they must also be allocated the new work item.

# Allocation

- If a work item's allocation interaction is user-initiated, one of the participants offered the work item may manually choose to allocate the task to him/herself
- If the allocation interaction is system-initiated, an allocation strategy (e.g. random choice, round robin, shortest queue), as defined at design time, is invoked that selects a single participant from those offered

# After Distribution

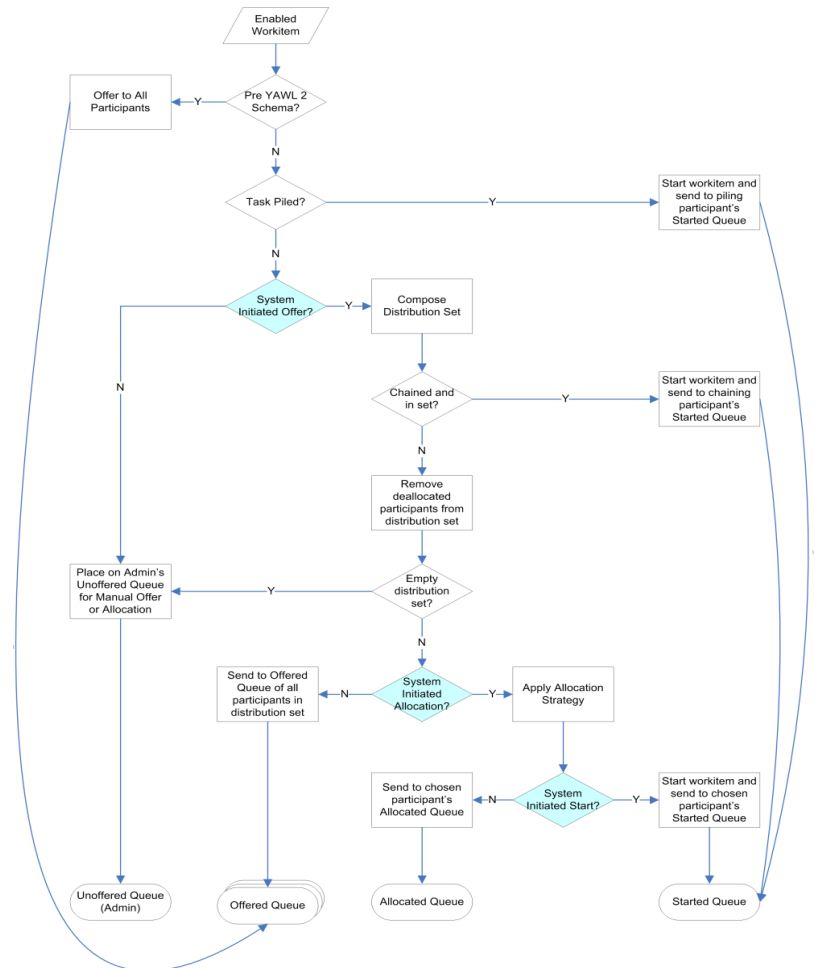
- Given appropriate privileges, a participant may:
  - If allocated:
    - **Deallocate** it (removes themselves from the distribution set and redistribute the item)
    - **Delegate** it (to a member of their 'team')
    - **Skip** the work item (complete it immediately without first start it)
  - If started:
    - **Reallocate** it (to a member of their team), and in doing so may preserve the work done within the work item thus far (stateful reallocation), or to reset the work item data to its original values (stateless reallocation)

# After Distribution

- A participant with the necessary privileges may choose to:
  - **Pile** a task, so that all future instances of work items of the task across all current and future cases of the process are directly allocated to the participant, overriding any design time resourcing specifications
  - **Chain** a case, which means that for all future work items in the same process instance where the distribution set specified includes the participant as a member, each of those work items are to be automatically allocated to the participant and started

# Initial Distribution

- When the engine notifies the resource service of an enabled work item, the service undertakes to distribute the work item to resource(s) using the resourcing specifications for the task from which the work item was created, as specified at design time



# User-Task Privileges

| Privilege                | When Granted...   |
|--------------------------|---|
| Can suspend              | suspend a started work item   |
| Can reallocate stateless | transfer the work item to another participant, with all data updates reset  |
| Can reallocate stateful  | transfer the work item to another participant, with all data updates preserved  |
| Can deallocate           | reject allocation of the work item; the work item is redistributed with the participant removed from the distribution set |
| Can delegate             | delegate the work item to a subordinate team member (by position)   |
| Can skip                 | immediately complete the task without performing its work   |
| Can pile                 | immediately redirect all future instances of this work item to the participant  |

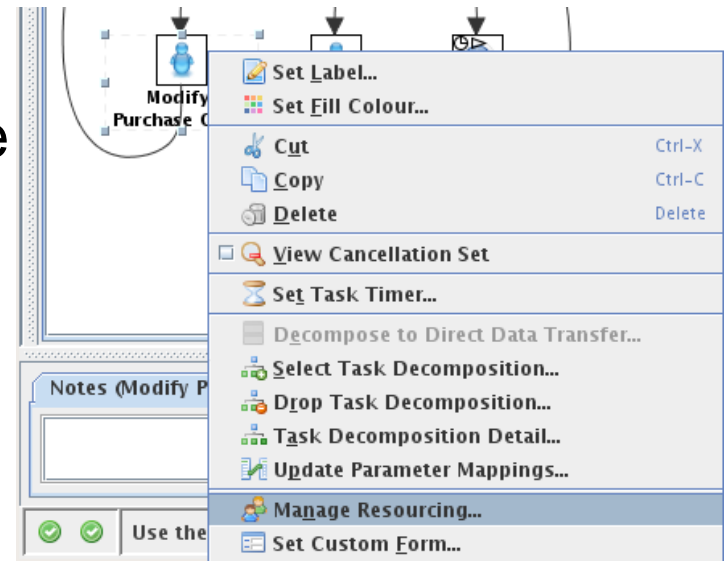






# Resource Perspective in the YAWL Editor

# Resource Manager Wizard

- The Resource Manager Wizard allows to easily assign participants to a manual task
- In order to invoke the wizard
  - A decomposition needs to be assigned to the task
  - The task must be related to the default worklist
  - The Editor has to be connected to a running Resource Service



# Step 1 – Interaction Points

  Manage Resourcing Wizard for Atomic Task "Identify Staffing Needs"

Step 1 : Interaction Points

Each task passes through three *interaction* (or decision) points before a participant begins working on it. For each of the interaction points below, please specify whether the task is to be handled by the *System* (dynamically, based on the settings chosen later in this wizard) or by the *User* (manually, by a participant or an administrator) when the task is executed.

Offer - The task is made available to a number of participants: ☐ User ☒ System

Allocate - The task is assigned to a single participant: ☐ User ☒ System



Start - Work begins on the task: ☐ User ☒ System

< Back

> Next

Finish

# Step 2 – Offering a Work Item


  **Manage Resourcing Wizard for Atomic Task "Identify Staffing Needs"**

**Step 2 : System Offer**


A task may be offered to one or more participants and/or roles. Please choose below the participant(s) and/or role(s) the task is to be offered to.

One or more net parameters (if available) may also be chosen below. These are parameters that, at runtime, may contain either a userid (set the 'Refers To' value to 'Participant') or a role name (set to 'Role') that is to be included in the set of resources the task is offered to.

**Participants**  

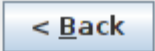
Kay Adams (ka)  
Katherine Alexander (Katherine)  
Billy Van Arsdale (bva)  
Momo Barone (mb)  
Emilio Barzini (eb)  
Pointy-Haired Boss (phb)  
Peter Clemenza (pc)  
Stefano Clemenza (sca)  
Don Vito Corleone (dvc)  
Fredo Corleone (fc)  
...  


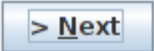
**Roles**  


Account Manager  
Accounts Payable Specialist  
Carrier Admin Officer  
Client Liaison  
Controller  
Courier  
Department Director  
Department Manager  
Finance Officer  
Junior Supply Officer  
Mailroom Clerk  
Order Fulfillment Manager  


**Net Parameters**  

| Name | Refers to |
|------|-----------|
|------|-----------|

 **< Back**

 **> Next**

 **Finish**

# Step 3 – Distribution Set Filters & Constraints

- Restriction of selected resources to those who
  - Belong to a certain organization group
  - Have appropriate capabilities

The screenshot shows a software window titled "Manage Resourcing Wizard for Atomic Task 'Identify Staffing Needs'". The window is divided into sections for configuring filters and runtime constraints.

**Step 3 : System Offer - Filters and Constraints**

**Filters**

The resource set specified in Step 2 can be filtered and/or constrained so that only those resources that meet the criteria selected below will be offered the task.

| Filter   |
|--|
| <input type="checkbox"/> Filter by Organisational Data |
| <input type="checkbox"/> Filter by Capability          |

| Parameter | Value |
|-----------|-------|
|-----------|-------|

**Runtime Constraints**

☐ Allow this task to be piled to a single participant.

☐ Choose participant(s) who completed previous task:

☐ Do not choose participant(s) who completed previous task:

Navigation buttons at the bottom: < Back, > Next, Finish.

# Step 4 – Secondary Resources

- Secondary resources are required to carry out tasks
  - Human or non-human resources (e.g. machines, tools, etc.)
  - Have no work-list (non-human secondary) or task not added to work-list (human secondary)
  - Manual tasks must have at least one primary human resource

The screenshot shows a software window titled "Manage Resourcing Wizard for Atomic Task 'Identify Staffing Needs'". The window is at "Step 4 : Secondary Resources".

Below the title bar, there is a text box explaining secondary resources: "Secondary resources are those additional resources that are required to carry out a task. They may include both human and non-human resources. Secondary human resources don't see the task on their worklist. A resourced task must have one primary (human) resource, and may have zero or more secondary resources. Please select the secondary resources required for the task below."

The main area of the wizard is divided into three sections:

- Available Resources:** This section contains two lists:
  - Participants:** A list box containing "Kay Adams (ka)", "Katherine Alexander (Kather)", "Billy Van Arsdale (bva)", "Momo Barone (mb)", and "Emilio Barzini (eb)".
  - Roles:** A list box containing "Account Manager", "Accounts Payable Specialist", "Carrier Admin Officer", "Client Liaison", "Controller", and "Courier".
- Assets:** An empty list box.
- Categories:** An empty list box.

To the right of these sections is a larger list box labeled **Selected Resources**, which is currently empty. Below this list box is a "Remove" button.

At the bottom of the window are three buttons: "< Back", "> Next", and "Finish".

# Allocating a Work Item

**Manage Resourcing Wizard for Atomic Task "Identify Staffing Needs"**

**Step 5 : System Allocation**

An allocation strategy is a way of dynamically selecting one participant from those resources that have been offered a task, and have the task allocated, or assigned to, the chosen participant. Each allocation strategy uses a different method to choose a participant. Please choose the preferred strategy from those listed below.

Allocation strategy: Cheapest to Allocate

- Cheapest to Allocate
- Random Choice
- Round Robin (by experience)
- Cheapest Starter
- Shortest Queue
- Fastest Resource
- Fastest to Allocate
- Round Robin (by time)

< Back   > Next   Finish

# Step 5 – Runtime Privileges

Manage Resourcing Wizard for Atomic Task "Identify Staffing Needs"

Step 6 : Establish Default User Runtime Privileges for this Task

Can a participant suspend a started work item of this task? ☒ No ☐ Yes

Can a participant reallocate a work item of this task to another participant, resetting state? ☒ No ☐ Yes

Can a participant reallocate a work item of this task to another participant, retaining state? ☒ No ☐ Yes

Can a participant deallocate themselves from a work item of this task? ☒ No ☐ Yes

Can a participant delegate a work item of this task to another participant? ☒ No ☐ Yes

Can a participant skip a work item of this task? ☒ No ☐ Yes

< Back   > Next   Finish