# Document for resource planner (Replanning scenario) to complete a task

## Task planner asks resource planner for resources to complete the replanning of task, assuming ROBOT knows Task-Id and the preselected policy.

### Step 1: Administrator get the preselected policy to the robot\_1

### Step 2: Get action sequence (Action\_1)

### Step 3: Resource planner will iterate through the action sequence

### → Relation model for every relation in images (owns, provides, extends)

### → Mapping all relations between the entities

### Step 4: List all the relations with images for the action

### Step 5: Robot\_1 has the same network connections with Edge\_1 and Edge\_2 where the middleware is installed.

### Step 6: Mopping of the instance model

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### Step 7: Middleware informs Robot of the plan

### Step 8: Redis Graph will be updated with “owns” relationship between Robot\_1 and Task\_1

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### Step 9: Robot\_1 provides Task\_id to the Middleware

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### Step 10: Middleware infers the action\_sequence and placement

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### Step 11: Middleware informs Robot of the plan

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### Step 12: Redis Query will give the info to the Orchestrator “ Resource that are free to perform task Edge\_1”

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### Step 13: Actions needed to be instantiated like SLAM, OBJECT DETECTION for the specified tasks. (GET the images that needs to be deployed )

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### Step 14: Endpoints of the replanning will be triggered

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### Step 15: Middleware tries to find the another Netapp from the same Netapp family where the netapp is deployed

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### Step 16: Middleware changes the placement (Edge\_1) and putting the netapp in more powerful machine (Edge\_2) that complies with current policy based on a)latency b)Remaining Computation c)bandwidt

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### Step 17: Assigning new images to that action that is Netapp Object Detection

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### Step 18: Orchestrator will pass this information to the Task Planner

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### Step 19: Return Task model with updated images

### Step 20:

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# Possibilities of Replanning

1: Robot asks for Replan before completing the Task\_1 (Robot failed the task\_1)

2: Robot failed Task\_1 and the Middleware provides a replan (Partially failed)

3: Middleware will proactively suggest a replan (In this possibility, Robot\_1 can accept of reject the replan)

4: Container has failed (Lack of resources or reset of resources)

5: Robot is always in connected with Edge\_1

6: Edge\_1 and Edge\_2 is registered

7: Policy that is preselected (Choose the closest resource Edge\_1)

8: Replanning triggers; Netapp, Machine learning, Connection triggered

9: How to know if Task\_1 has failed and needs replanning? Network Connection failure

10: Features of available bandwidth → what policies we are using, what are the matrices, BUTNetapp

11: