

World Robot Summit
Disaster Robotics Challenge
Tunnel Disaster Response and Recovery Challenge
Outline of Rules

Ver. 2019.5.14

TS-1 (Simulation)

- Inspection of the vehicle and surrounding area, rescue
 - Inspection of the area surrounding the vehicle and outside the vehicle.
 - Break down door
 - Investigate the inside of the vehicle and the victim
 - Rescue victim

※1 Consolidation of Missions T2, T3 WRS 2018

※2 Conditions requiring the robot to overcome obstacles will be added to each mission as [Field Environments].

[Field Environments] such as road surface conditions, visibility, smoke, road incline, etc., as well as the new obstacle communication delays.

TS-2 (Simulation)

- Securing a route
 - Move obstacles off the route (to a specified point)
 - Transfer
 - Extract
 - Prepare for blasting (drill, insert cylinder) <-- new

※1 WRS 2018 Mission T4. Drilling is related to breaching in mission T6

※2 Conditions requiring the robot to overcome obstacles will be added to each mission as [Field Environments].

[Field Environments] such as road surface conditions, visibility, smoke, road incline, etc., as well as the new obstacle communication delays.

TS-3 (Simulation)

- Extinguish Fire
 - Pull out hose
 - Connect the hose to the nozzle
 - Operate the valve
 - Extinguish fire

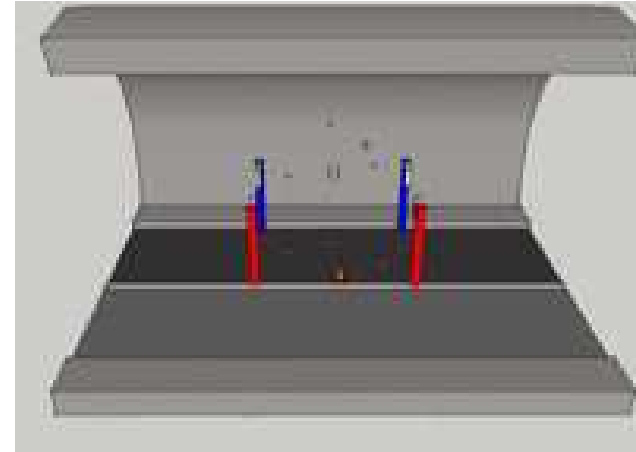
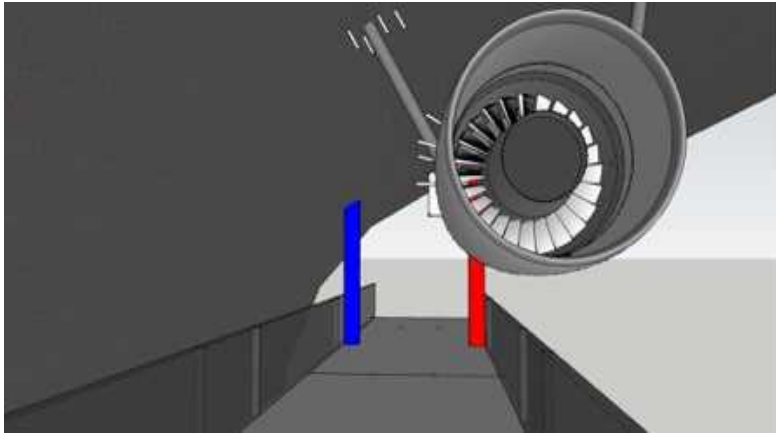
※1 WRS 2018 Mission T5

※2 Conditions requiring the robot to overcome obstacles will be added to each mission as [Field Environments].

[Field Environments] such as road surface conditions, visibility, smoke, road incline, etc., as well as the new obstacle communication delays.

TS-4 (Simulation)

- The Surface of the Tunnel Wall and Secondary Equipment Checks
 - Check the number of bolts on secondary equipment (jet fan)
 - Check the surface of tunnel walls and floor



※1 Same as JVRC 2015 Task O1, O2 (Task under normal circumstances)

※2 Conditions requiring the robot to overcome obstacles will be added to each mission as [Field Environments].

[Field Environments] such as road surface conditions, visibility, smoke, road incline, etc., as well as the new obstacle communication delays.

TR-1 (Physical Robot)

- Rescue from Vehicle
 - Open door
 - Investigate
 - Rescue dummy from the vehicle (take out)

※1 Simulation TS-1 carried out with a physical robot.

※2 Conditions requiring the robot to overcome obstacles will be added to each mission as [Field Environments].

[Field Environments] such as road surface conditions, visibility, smoke, road incline, etc.

TR-2 (Physical Robot)

- Securing a Route
 - Move obstacles off the route (to a specified point)
 - Transfer
 - Extract
 - Prepare for blasting (drill, insert cylinder) <-- new

※1 Simulation TS-2 carried out with a physical robot.

※2 Conditions requiring the robot to overcome obstacles will be added to each mission as [Field Environments].

[Field Environments] such as road surface conditions, visibility, smoke, road incline, etc.

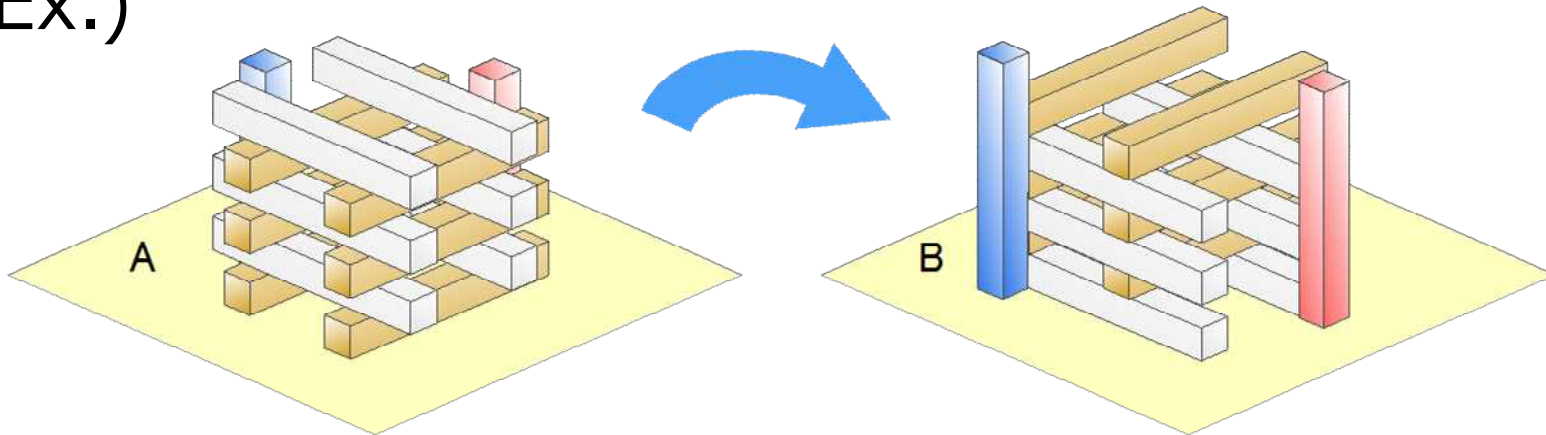
※3 If drilling is not possible, insert cylinder into pre-drilled hole in tunnel wall (or mock-up wall) <-- Necessary technology for maintenance and safety management.

TR-3 (Physical Robot)

- Disassembly • Reassembly <-- New

- Reassemble the parts in configuration A into configuration B

Ex.)



※1 Conditions requiring the robot to overcome obstacles will be added to each mission as [Field Environments].

[Field Environments] such as road surface conditions, visibility, smoke, road incline, etc.

※2 Possible to implement as a simulation.