**+IsaacSim – Webserver Interface Contract**

August 29, 2025

When Communication Happens:

* Start of the simulation.
* Every time an LTL replan happens.
* Periodically (10s).

Contents of the Payload:

* Each robot’s plan’s XY coordinates.
* Current simulation time.
* Each robot’s coordinates.

JSON Structure:

{

"simulator time": "<time\_since\_sim\_started>",

// --- STATIC MAP DATA ---

"walls": [

{

"x0": "<number\_coordinate>", "y0": "<number\_coordinate>",

"x1": "<number\_coordinate>", "y1": "<number\_coordinate>"

}

// ... more wall objects ...

],

"zones": [

{

"x0": "<number\_coordinate>", "y0": "<number\_coordinate>",

"x1": "<number\_coordinate>", "y1": "<number\_coordinate>",

"color": "<string\_rgba>"

}

// ... more zone objects ...

],

"nodes": [

["<number\_x>", "<number\_y>"]

// ... more node arrays ...

],

"edges": [

{

"x0": "<number\_coordinate\_start>", "y0": "<number\_coordinate\_start>",

"x1": "<number\_coordinate\_end>", "y1": "<number\_coordinate\_end>"

}

// ... more edge objects ...

],

// --- DYNAMIC DATA ---

// A list of all package objects and their current status.

"packages": [

{

"id": "<string\_package\_id>",

"x": "<number\_current\_x>",

"y": "<number\_current\_y>",

"carried\_by": "<string\_robot\_id | Null>"

"state": "<string: | On Ground| In Transit |'Delivered' >",

"Quadrant": "<string | SE| SW| NE| NW| >",

"Discovered": "<0\_or\_1>", // 0 = No, 1 = Yes

}

// ... more package objects ...

],

// An object containing all robots, keyed by their ID.

"robots": {

// The key is the unique robot ID, e.g., "robot1"

"<robot\_id>": {

// The high-level state used for visualization.

"state": "<string: 'waiting'|'moving'|'carrying'>",

"plan": [

["<x>", "<y>"],

// ... more coordinates ...

],

// where we are in the plan

"plan index": "<current\_index\_of\_plan>",

"immediate goal": ["<x>", "<y>"],

"x": "<current\_x>",

"y": "<current\_y>",

"Mission time": "<timesteps\_to\_goal (timesteps needs to reach goal pos from current pos)>",

"Current\_weather": "<0\_or\_1>", // 0 = bad, 1 = good

"Battery\_status": "<0\_1\_2>", // 0 = <40%, 1 = >40%, 2 = dead

"Momentarily\_offline": "<0\_or\_1>", // 0 = online, 1 = offline

"Replan\_flag": "<0\_or\_1>" // 0 = normal, 1 = replanning

}

// ... more robots, each with its own ID as the key ...

}

}