

Scenario 1: Reconnaissance and surveillance in non-urban environments (RSTA)

Performance Measures	Tele-operated	Supervised autonomy	Unsupervised autonomy
Vehicle left start position	100	200	300
Intermediate waypoints reached	100 per waypoint	200 per waypoint	300 per waypoint
Detection of OPI (i.e. position entry in the map)	100 per OPI	200 per OPI	300 per OPI
Image of OPI produced	50 per OPI	100 per OPI	150 per OPI
Image of OPI transmitted online to control station	100 per OPI	100 per OPI	100 per OPI
% x of correct OPIs with respect to overall number of OPIs reported	0.5*x	1*x	2*x
Vehicle trajectory drawn in map	100	100	100
Live position and imaginary transmitted	100	100	100
Mission completed in time	See table below Max 1000	(See table below)*2 Max 2000	(See table below)*3 Max 3000
Penalty for n manual interventions	-100*n	-50*n	-25*n
Penalty for manual intervention duration t (i.e. $t = IAT + TIAT$)	$-2000 * \frac{TIAT}{runtime}$	-1000*t/runtime	-500*t/runtime
<i>Bonus: Additional objective reconnoitered</i>	<i>not yet specified</i>	<i>not yet specified</i>	<i>not yet specified</i>

Mission completion before...	Score
...half of trial time	1000
...¾ of trial time	750
...end of trial time	500

Scenario 2: Transport/Mule – repeated shuttling between two camps

Performance Measures	Tele-operated	Supervised autonomy	Unsupervised autonomy
Vehicle left start position P1	100	200	300
Turning point P2 (i.e. end of teach-in) reached	100	200	300
Target points (P1/P2) reached (during shuttling)	150 per target point	300 per target point	400 per target point
Live position and images transmitted	100	100	100
Penalty for n manual interventions	-100*n	-50*n	-25*n
Penalty for manual intervention duration t (i.e. $t = IAT + TIAT$)	$-2000 * \frac{TIAT}{runtime}$	-1000*t/runtime	-500*t/runtime
<i>Bonus: Human-guided teach-in</i>	300	600	900
<i>Bonus: New route found after change of environment</i>	200 each	350 each	500 each
<i>Bonus: Heavy payload carried</i>	See table below Max 300	See table below Max 300	See table below Max 300

Payload carried...	Bonus score
<5kg	0
>=5kg and <20kg	100
>=20kg and <100kg	200
>100kg	300

Scenario 3: Search and retrieval of casualties in outdoor environments (MedEvac)

Performance Measures	Tele-operated	Supervised autonomy	Unsupervised autonomy
Vehicle left start position	100	200	300
Vehicle reached imitated body	100 each	200 each	300 each
Picture of imitated body acquired	100 each	200 each	300 each
GPS position of imitated body acquired	100 each	200 each	300 each
Imitated body moved (score per imitated body)	See table below Max 1000	(See table below)*2 Max 2000	(See table below)*3 Max 3000
Live position and images transmitted	100	100	100
Mission completed in time	See table below Max 1000	(See table below)*2 Max 2000	(See table below)*3 Max 3000
Penalty for n manual interventions	-100*n	-50*n	-25*n
Penalty for manual intervention duration t (i.e. $t = IAT + TIAT$)	$-2000 * \frac{T-IAT}{runtime}$	-1000*t/runtime	-500*t/runtime

Imitated body moved...	Score
...away from finding location	500-(weight reduction penalty)
...more than 1/2 of total distance	750-(weight reduction penalty)
...close to target location (<10m)	1000-10*(distance in m)-(weight reduction penalty)
Selected imitated body weight	Weight reduction penalty
70kg	0
60kg	25
50kg	50
40kg	75
30kg	100
20kg	125
10kg	150

Mission completion before...	Score
...half of trial time	1000
...3/4 of trial time	750
...end of trial time	500

Scenario 4: Reconnoitring of urban building structures (MAUT)

Performance Measures	Tele-operated	Supervised autonomy	Unsupervised autonomy
Vehicle left start position	100	200	300
Vehicle entered building	100 per building	200 per building	300 per building
Map of area produced	See table below Max 500	(See table below)*2 Max 1000	(See table below)*3 Max 1500
Detection of OPI (i.e. position entry in the map)	100 per OPI	200 per OPI	300 per OPI
Image of OPI produced	50 per OPI	100 per OPI	150 per OPI
Image of OPI transmitted online to control station	100 per OPI	200 per OPI	300 per OPI
% x of correct OPIs with respect to overall number of OPIs reported	0.5*x	1*x	2*x
Vehicle trajectory drawn in map	100	100	100
Live position and images transmitted	100	100	100
Mission completed in time	See table below Max 1000	(See table below)*2 Max 2000	(See table below)*3 Max 3000
Penalty for n manual interventions	-100*n	-50*n	-25*n
Penalty for manual intervention duration t (i.e. $t = IAT + TIAT$)	$-2000 * \frac{T-IAT}{runtime}$	-1000*t/runtime	-500*t/runtime
<i>Bonus: 2nd floor reached – via ramp / via stairs</i>	<i>500 / 1000</i>	<i>1000 / 2000</i>	<i>1500 / 3000</i>
<i>Bonus: Additional objective reconnoitered</i>	<i>not yet specified</i>	<i>not yet specified</i>	<i>not yet specified</i>

Percentage of area mapped	Score
<10%	0
Between 10% and 25%	125
Between 25% and 50%	250
Between 50% and 75%	375
>75%	500

Mission completion before...	Score
...half of trial time	1000
...¾ of trial time	750
...end of trial time	500