qvscribe for Microsoft Word

Document Name: UxAS_Reqs_AWF_edits(20170901).docx

Date Analyzed: September 1, 2017 at 10:25AM **Total Requirements:** 88

Score Summary

Score	# of Reqs.	Percentage	What should I do?
5	71	80%	**Looking good,** move along!
4	0	0%	**Review it!** Check the flow and clarity of the requirement.
3	17	19%	**Revise it!** Replace negative or amibguous terms with clear and concise ones.
2	0	0%	**Rewrite it!** Focus on what needs to happen and choose clear and unambiguous terminology to re-express the requirement.
1	0	0%	**Rethink it!** Consider what the requirement is trying to convey and rewrite it as one concise requirement, or as separate multiple requirements.

Analysis Breakdown

	Percentage	# of Reqs.	Color Highlighting
Vague Words	15%	14	Light Brown
Negative Imperatives	2%	2	Light Red
Optional Words	1%	1	Yellow
Multiple Imperatives	0%	0	Light Blue
No Imperatives	0%	0	No Highlight
Excessive Continuances	0%	0	Light Green
No Directives	N/A	N/A	No Highlight

Individual Requirements

Score: 5

A reusable framework is needed that must support a broad class of autonomous ISR missions using unmanned assets — including unmanned aircraft.

Score: 5

The framework must enable distributed, multi-agent cooperative control in a comms-denied environment.

Score: 5

The framework must be modular

Score: 3

Vague Words

The framework must be computationally efficient

Score: 5

The framework must run on modest hardware

Score: 5

The framework must allow for mission planning tasks

Score: 5	The framework must allow for path planning tasks
Score: 5	The framework must allow for mission planning tasks
Score: 3 Vague Words	The framework must allow for tasks to be efficiently developed, rapidly updated, and rapidly replaced before the start of ISR missions.
Score: 5	The framework must optimize tasks for mission-time efficiency.
Score: 5	The framework must ensure safety and security.
Score: 5	The framework must facilitate formal verification and validation.
Score: 5	UxAS shall enable cooperative control.
Score: 5	UxAS shall support multiple agents.
Score: 5	UxAS shall be distributed.
Score: 5 Universal Quantifiers	UxAS shall operate when there is no comms.
Score: 5	UxAS shall operate in the presence of lost comms
Score: 5	UxAS shall operate in the presence of denied comms
Score: 5	UxAS shall be modular
Score: 3 Vague Words	UxAS shall be computationally efficient; to run quickly on cell-phone sized processors
Score: 5	UxAS will run on modest hardware, e.g., cell-phone sized processor
Score: 3 Vague Words	UxAS shall allow tasks to be efficiently developed

Score: 5 	UxAS shall allow configurations to be rapidly modified before the start of a mission
Score: 5 	Configurations shall optimize tasks for mission-time efficiency
Score: 5 	Configurations shall ensure the safety of agents by having collision avoidance.
Score: 5 	Configurations shall ensure the safety of agents by having health monitoring.
Score: 5 	Configurations shall ensure the safety of agents by having contingency planning
Score: 5 	Configurations shall ensure security integrity & confidentiality of comms
Score: 5 	Configurations shall ensure security integrity & confidentiality of onboard data
Score: 5 	Configurations shall ensure security availability of computing resources
Score: 5 	UxAS shall facilitate formal verification and validation
Score: 5 	UxAS shall be employ a service-oriented architecture
Score: 5 	Configurations shall be based off of a service oriented architecture
Score: 5	Configurations shall ensure schedulability of tasks
Score: 5	Configurations shall ensure timeliness of task execution
Score: 5	Configurations shall ensure timeliness of message delivery within an asset
Score: 5	Configurations shall guarantee non-interference amongst services under nominal hardware configurations
Score: 5	Configurations shall provide time partitioning of services
Score: 5	Configurations shall provide space partitioning of services

Score: 5

Configurations shall provide resource partitioning of services

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Score: 5

Configurations shall provide a message-passing interface for inter-service communication

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Score: 3

Vague Words

There shall be a common interface for all services within a configuration.

Score: 3

Vague Words

For every Unique Automation Request, the system shall produce a response (which might be an error message).

Score: 3

Vague Words

Every task included in a request message shall be included in the associated response message.

Score: 5

If the request and response messages do not have identical task listings, an error shall be produced.

Score: 5

The system shall respect airspace constraints

Score: 3

Negative Imperatives

Paths produced shall not intersect with a “Keep-Out” zone.

Score: 5

Vehicles shall stay in “Keep-In” zones

Score: 5

If there is a feasible assignment (mission solution) possible the system shall calculate the solution.

Score: 5

If the process algebra relationship is valid (well-formatted), then we shall adhere to the defined relationship.

Score: 5

If the process algebra relationship is not valid (not well-formatted), then an error shall be generated

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Score: 5

Vehicles altitudes shall be distinct and differ by at least X ft

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Score: 3

Negative Imperatives

Vehicle altitudes shall not be changed during the mission

Score: 5

The costs associated with that of tasks and missions shall be influenced by vehicle altitude

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Score: 5

If a map update is sent by the user, that user will also determine when to force a replan (for the entire system).

Score: 5

Assignment cost matrix coming out of route aggregator service shall be defined by the #vehicles* # task options + # vehicles* (#task options)^2.

Score: 5

Message IDs shall be unique system-wide throughout a mission

Score: 5

Route planner shall be configured with vehicle configuration data before a route plan request is sent (or received)?

Score: 5

Messages shall be received in the order in which they were sent

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Score: 5

The system shall propagate error messages to the final recipient

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Score: 5

A sent request message shall have a corresponding response or error message.

Score: 5

The configuration shall report an error if an automation request is received but the requested resource has not been defined

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Score: 5

The configuration shall generate a UniqueAutomationRequest message if an AutomationRequest is received and the requested resource has been defined

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Score: 5

The configuration shall publish UniqueAutomationRequest messages in the order in which they are generated

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Score: 5

The configuration shall publish one UniqueAutomationRequest message and wait for a corresponding UniqueAutomationResponse message to be received

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Score: 3

Vague Words

Universal Quantifiers

The configuration shall publish the next UniqueAutomationRequest message immediately if there is no outstanding UniqueAutomationResponse message

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Score: 3

Optional Words

Optionally, the configuration shall publish the next UniqueAutomationRequest if the outstanding UniqueAutomationResponse message has not been received within a set time

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Score: 5

The configuration shall publish an AutomationResponse message in response to the corresponding AutomationRequest message when a corresponding UniqueAutomationResponse message is received

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Score: 5

The configuration shall ensure that only one AutomationRequest is executed at a time

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Score: 5

Universal Quantifiers

The configuration shall create a unique RoutePlanRequest message for each vehicle ID in each RouteRequest message received

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Score: 3

Vague Words

Universal Quantifiers

The configuration shall send each RoutePlanRequest message to the planners that are appropriate for the associated vehicle type

Score: 5	The configuration shall correlate RoutePlanReponses with RoutePlanRequests
Score: 3 Vague Words	The configuration shall send a RouteResponse message when all RoutePlanResponses are received for a particular RouteRequest
Score: 5 Universal Quantifiers	The configuration shall generate a route for each pair of start and end locations specified in each RoutePlanRequest message received
Score: 3 Vague Words	Route generation shall be efficient
Score: 5	Route generation shall be responsive
Score: 5	Routes shall be approximately distance optional
Score: 5	Routes shall respect vehicle limitations
Score: 3 Vague Words	The configuration shall send a RoutePlanResponse message using return-to-sender addressing when a route has been generated for all pairs of start and end locations specified in the associated RoutePlanRequest message
Score: 3 Vague Words	The configuration shall take environment and vehicle constraint information from appropriate inputs
Score: 5	UxAS shall ensure communication is only between intended services.
Score: 3 Vague Words	UxAS shall ensure data is only accessible to services with proper permission authority.
Score: 5 Universal Quantifiers	UxAS communication channels shall be always available to intended users.
Score: 5	UxAS will filter out garbage data from communication channels.
Score: 5	UxAS shall detect the authenticity of incoming messages.
Score: 5	UxAS will detect if an attacker resends an old message.

Score: 5

UxAS will encrypt communications.

Score: 5

UxAS shall verify received messages are from a source authorized to send the given message type.
