

subsystem_requirements

Source: database_dump.json, 2025-12-05, 21:48

parent_id	sub_req_id	requirement	priority	effect	rationale	author	verification_status	verifier	validation_status	vv_method	comment
	CON-01	The consensus sub-module shall specify how agents confirm agreement on the prevailing mission state.	Mandatory	Consensus		C.N	Accepted	E.Z	Pending		
	INF-01	The information sub-module shall define the content of mission state data.	Key	Data content		C.N	Accepted	E.Z	Pending		
	MSG-01	The messaging sub-module shall define the communication rules for transmitting mission state information between agents.	Mandatory	Data transmission		C.N	Accepted	E.Z	Pending		
	SIS-01	The state instruction sub-module shall define the procedures for issuing instructions to agents based on the current mission state.	Mandatory	Behaviour		C.N	Accepted	E.Z	Pending		
	CON-02	The consensus sub-module shall define the procedures that agents will follow to reach a common understanding of the mission plan.	Mandatory	Consensus		C.N	Accepted	E.Z	Pending		
	INF-02	The information module shall specify procedures that agents will follow so as to retrieve the mission plan.	Key	Data retrieval		C.N	Accepted	E.Z	Pending		
	INF-03	The information shall define the data structure that constitutes the mission plan.	Key	Data structure		C.N	Accepted	E.Z	Pending		
	MSG-02	The messaging sub-module shall define the communication procedures for transmitting mission plan data between agents.	Mandatory	Data transmission		C.N	Accepted	E.Z	Pending		
	MSG-03	The messaging sub-module shall define acknowledgment procedures to ensure complete delivery of the mission plan to all intended agents.	Optional	Confirmation		C.N	Accepted	E.Z	Pending		
	MSG-04	The messaging sub-module shall specify the message formats used for mission plan exchange.	Key	Message format		C.N	Accepted	E.Z	Pending		
	SIS-02	The state instruction sub-module shall specify the process agents must follow after receiving mission plan.	Mandatory	Behaviour		C.N	Accepted	E.Z	Pending		
	CON-03	The consensus sub-module shall specify how agents confirm agreement on final task allocations.	Optional	Confirmation		C.N	Accepted	E.Z	Pending		
	INF-04	The information sub-module shall define the data structure used to represent tasks.	Mandatory	Data structure		C.N	Accepted	E.Z	Pending		
	MSG-05	The messaging sub-module shall define the communication procedures for distributing task assignment messages to agents.	Mandatory	Task assignment		C.N	Accepted	E.Z	Pending		
	MSG-06	The messaging sub-module shall specify message formats for transmitting task allocation information.	Key	Message formatt		C.N	Accepted	E.Z	Pending		
	MSG-07	The messaging sub-module shall define acknowledgment procedures to ensure that all agents receive their assigned tasks.	Optional	Confirmation		C.N	Accepted	E.Z	Pending		
	SIS-03	The state instruction sub-module shall define the conditions under which agents initiate task execution based on the confirmed assignment.	Key	Conditions for action		C.N	Accepted	E.Z	Pending		
	TAL-01	The task allocation sub-module shall specify the criteria used to determine which agent is assigned a given task.	Mandatory	Task assignment		C.N	Accepted	E.Z	Pending		
	TAL-02	The task allocation sub-module shall define the procedure for mapping mission plan objectives to specific agent tasks.	Mandatory	Mapping		C.N	Accepted	E.Z	Pending		
	INF-05	The information sub-module shall define the data schema representing agent capabilities.	Mandatory	Data structure		C.N	Accepted	E.Z	Pending		
	MSG-08	The messaging sub-module shall define the communication procedures that agents shall use to transmit capability information to other agents.	Mandatory	Data transmission		C.N	Accepted	E.Z	Pending		
	MSG-09	The messaging sub-module shall specify the message formats that agents shall use to transmit capability information to other agents	Mandatory	Message format		C.N	Accepted	E.Z	Pending		Capability information may also be known as health status.
	SIS-04	The state instruction sub-module shall define the conditions under which capability information influences mission plan.	Key	Conditions for action		C.N	Accepted	E.Z	Pending		

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	CON-04	The consensus sub-module shall define procedures for agents to decide on capability-based task assignments.	Mandatory	Task assignment		C.N	Accepted	E.Z	Pending		
	CON-05	The consensus sub-module shall specify conflict-resolution procedures when multiple agents are equally capable of performing the same task.	Mandatory	Conflict resolution	The priority of this requirement depends on the chosen implementation. Some implementation might inherently take care of this, however those that dont will need to observe this requirement.	C.N	Accepted	E.Z	Pending		
	TAL-03	The task allocation sub-module shall define the rules for mapping capabilities to specific tasks.	Mandatory	Mapping		C.N	Accepted	E.Z	Pending		
	CON-06	The consensus sub-module shall define the procedures for agents to agree on task re-assignments.	Mandatory	Task re-assignment		C.N	Accepted	E.Z	Pending		
	INF-06	The information sub-module shall define the data model linking agent capabilities with corresponding task requirements.	Mandatory	Mapping		C.N	Accepted	E.Z	Pending		
	INF-07	The information sub-module shall specify procedures for updating task assignment records when re-assignments occur.	Key	Task re-assignment		C.N	Accepted	E.Z	Pending		
	MSG-10	The messaging sub-module shall define acknowledgment rules to ensure that all affected agents reliably receive re-assignment notifications.	Key	Notification		C.N	Accepted	E.Z	Pending		
	TAL-04	The task allocation sub-module shall define the triggers for initiating a task re-assignment.	Mandatory	Task re-assignment		C.N	Accepted	E.Z	Pending		
	TAL-05	The task allocation sub-module shall specify the procedure for selecting a new agent for a re-assigned task based on the prevailing agent capabilities.	Mandatory	Task re-assignment		C.N	Accepted	E.Z	Pending		
	MSG-11	The messaging sub-module shall define the procedures for exchanging task re-assignment messages between agents.	Mandatory	Message exchange		C.N	Accepted	E.Z	Pending		
	MSG-12	The messaging sub-module shall define the standard message structure for task re-assignment proposals.	Key	Message format		C.N	Accepted	E.Z	Pending		
	MSG-13	The messaging sub-module shall define the communication procedure for transmitting degraded status notifications to other agents.	Mandatory	Notification		C.N	Accepted	E.Z	Pending		
	MSG-14	The messaging sub-module shall specify the identifiers for status messages.	Key	Message content		C.N	Accepted	E.Z	Pending		
	INF-08	The information sub-module shall specify procedures for evaluating the criticality level of each task.	Mandatory	Critical level assessment		C.N	Accepted	E.Z	Pending		
	TAL-06	The task allocation sub-module shall define procedures for using criticality levels to assign tasks.	Mandatory	Task assignment		C.N	Accepted	E.Z	Pending		
	TAL-07	The task allocation sub-module shall specify rules for updating task priority when criticality changes.	Key	Critical level assessment		C.N	Accepted	E.Z	Pending		
	TAL-08	The task allocation sub-module shall define procedures for identifying fully functional agents eligible to take over high-criticality tasks.	Mandatory	Task assignment		C.N	Accepted	E.Z	Pending		
	TAL-09	The task allocation sub-module shall define procedures for identifying degraded agents eligible for lower-criticality tasks based on their prevailing capabilities.	Mandatory	Task re-assignment		C.N	Accepted	E.Z	Pending		
	TAL-10	The task allocation sub-module shall specify rules for assigning lower-criticality tasks to degraded agents without exceeding their current capabilities.	Mandatory	Task re-assignment		C.N	Accepted	E.Z	Pending		
	CON-07	The consensus sub-module shall define procedures for validating data received from multiple agents.	Mandatory	Consensus	In order for the consensus mechanism to be robust (as goal G-03 states), there needs to be a way to validate data from multiple agents to ensure that the data being agreed upon is accurate and reliable. This is why the requirement is mandatory.	C.N	Accepted	E.Z	Pending		
	CON-08	The consensus sub-module shall define the conditions under which data is considered accepted as correct by all agents.	Key	Consensus		C.N	Accepted	E.Z	Pending		

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	CON-09	The consensus sub-module shall specify rules for resolving conflicts when at least one agent provides incorrect data.	Mandatory	Conflict resolution		C.N	Accepted	E.Z	Pending		
	CON-10	The consensus sub-module shall define the rules that agents will follow to reach a collective decision for tasks that require coordination.	Mandatory	Consensus		C.N	Accepted	E.Z	Pending		
	CON-11	The consensus sub-module shall define the procedures that agents will follow to reach a collective decision for tasks that require coordination.	Mandatory	Consensus		C.N	Accepted	E.Z	Pending		
	MSG-15	The messaging sub-module shall define procedures for transmitting search area boundary information between agents.	Mandatory	Data transmission		C.N	Accepted	E.Z	Pending		
	MSG-16	The messaging sub-module shall specify message formats for boundary data.	Key	Message format		C.N	Accepted	E.Z	Pending		
	MSG-17	The messaging sub-module shall define the procedures for exchanging search area information between agents.	Mandatory	Data transmission		C.N	Accepted	E.Z	Pending		
	CON-12	The consensus sub-module shall define procedures for agents to agree on which agent searches which portion of the area.	Mandatory	Search mechanism		C.N	Accepted	E.Z	Pending		
	TAL-11	The task allocation sub-module shall define procedures for assigning portions of the search area to agents based on a collective decision.	Mandatory	Search mechanism		C.N	Accepted	E.Z	Pending		
	CON-13	The consensus sub-module shall define the rules that specify when consensus is required for a task.	Key	Consensus		C.N	Accepted	E.Z	Pending		
	CON-14	The consensus sub-module shall specify conditions under which an agent may act independently without seeking consensus.	Mandatory	Conditions for action		C.N	Accepted	E.Z	Pending		
	SIS-05	The state instruction sub-module shall define the actions an agent is permitted to take in states where independent decision-making is allowed.	Mandatory	Behaviour		C.N	Accepted	E.Z	Pending		
	SIS-06	The state instruction sub-module shall specify the procedure for reporting independent decisions to other agents.	Mandatory	Situational awareness		C.N	Accepted	E.Z	Pending		
	MSG-18	The messaging sub-module shall specify what information is included in messages that inform other agents about an agent's independent decision.	Mandatory	Message content		C.N	Accepted	E.Z	Pending		
	MSG-19	The messaging sub-module shall define the procedure for sending notifications of independent actions to other agents.	Mandatory	Notification		C.N	Accepted	E.Z	Pending		
	MSG-20	The messaging sub-module shall specify message formats for independent action notifications.	Key	Message format		C.N	Accepted	E.Z	Pending		
	CON-15	The consensus sub-module shall define rules for reconciling independently made decisions with the swarm's shared state.	Mandatory	Synchronisation		C.N	Accepted	E.Z	Pending		
	INF-09	The information sub-module shall specify procedures for updating the shared state after reintegration.	Optional	Synchronisation	This requirement intends to ensure consistency across the swarm.	C.N	Accepted	E.Z	Pending		
TAL-08	TAL-08A	The task allocation sub-module shall assign each high-criticality task only to agents whose capabilities match the task requirements.	Mandatory	Task re-assignment		C.N	Accepted	E.Z	Pending		