

Amendment Number 1 for BAA 08-003
“Sense & Respond Logistics Information Mechanism Design and Integration”
04 DEC 2007

The purpose of Amendment #1 is to respond to questions resulting from BAA 08-003 and to provide Use Cases and a list of Industry Day attendees:

1) Are cost proposals for all Phases (I, II, and III) required by December 19th?

No, only a cost proposal for Phase I is required by December 19th. If selected for a Phase I award, then a cost proposal for Phase II will be required upon completion of Phase I, and if selected for a Phase II award then a cost proposal for Phase III will be required upon completion of Phase II.

2) How much funding is expected to be available?

The **total** amount of funding for **all** awardees expected to be available for this BAA is approximately \$7 million.

3) Attached to this amendment is the Industry Day Final Attendee List (pages 2 – 5 of this amendment).

4) Attached to this amendment are official use cases developed in support of the S&RL Information Architecture development effort. These cases capture the functional requirements of the Information Architecture (pages 6 – 42 of this amendment).

5) The Industry Day presentation materials will be posted at a later date, they are still being prepared for posting.

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Format Description:

S&RL Modes	User Need	System Function to Support User Need	System Requirements to Accomplish Function	Discussion/Sidebar
<p><i>Insert basic flow text.</i> <i>Color code text to correspond with S&RL modes</i></p> <p>ASA - Assess Situational View PLN – Logistics Planning EXE – Logistics Execution</p>	<p><i>Identify what is the users need in terms of desired outcome.</i> <i>Keep simple and, focused on step in narrative. Capture points of confusion/clarification in column E.</i></p>	<p><i>Identify what function the system must do in order to support the users need. Use adverbs to describe function – i.e., compare, calculate, provide, report, record.....,</i></p>	<p><i>Identify system requirements (things the system will need to do) to support the function.</i></p>	<p><i>Capture points of clarification, discussion, and questions/issues that need to be addressed.</i></p> <p><i>We may want to break out as separate columns</i></p>

COP (Common Operating Picture) Command & Control

This use case pertains to the function of command and control for logistics. It is a higher level narrative that ties together many of the concepts from, and sets the context for, the other use cases.

Narrative Steps	User Need	System Function to Support User Need	System Requirements to Accomplish Function	Discussion/Sidebar
1. MEB conducts attack to seize MEF Obj A				
2. Upon successful attack, MEB begins to consolidate on Obj A				
3. MEB CO receives FRAGO to conduct attack to destroy a company-sized enemy element located vicinity of grid 123456				
4. <u>PLN</u> - MEB CO tasks his staff to develop three distinct COAs (one air assault, one motorized assault and one mechanized attack). COA evaluation criteria includes the ability of the CLR(-) to support the projected COA requirements for fuel, ammo and maintenance, as well as a comparative assessment of the logistics status (fuel, ammo, water, system health/readiness) of his 3 subordinate infantry bns based on pre-established thresholds	Ability to develop and evaluate multiple COAs based current logistic status and mission and logistic requirements/ constraints	Multi-variant/constraint logistic planning tools User interface with query and data entry capability	<ol style="list-style-type: none"> 1. Input Mission 2. Input COA (air, assault, motorized) 3. Input COA attributes 4. Input COA evaluation criteria 5. Develop concepts of support (COS) for each COA 6. Sensing – data acquisition, aggregation, analysis, presentation. 7. Monitor, record, report and present asset supply status 8. Equipment condition/health monitoring (comparative assessment to complete mission) 9. Diagnostics – data analysis and condition assessment 10. Prognostics – projection of expected equipment health and operation 	
5. The logistician {OP} accesses the shared data environment (SDE) [ASA] and checks the availability	Equipment availability/status report	Provide asset availability for mission.	<ol style="list-style-type: none"> 1. Determine if equipment can turn on and move? 	

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and asset status of the equipment needed to support three candidate COAs (which are incomplete, under development).			<ol style="list-style-type: none"> 2. Determine if personnel with the necessary qualifications are available to drive it? 3. Determine if the equipment is currently committed to something else. 	
6. Based on the commander’s intent and the three candidate COAs, the staff {OPS} generates mission timelines and capability requirements (<i>of the assets to support the mission – estimate of supportability</i>) for each platform or system for each course of action (i.e. we determine what is needed from each asset). [PLN]	Individual asset capability requirements	Generation of individual asset capability requirements	<ol style="list-style-type: none"> 1. Define asset attributes for mission supportability for each individual asset. 	
7. The staff {LP} assesses the capability of each platform or system to meet the detailed mission capability requirements for each COA based on the system health state and prognostic health assessment information available in the shared data environment (SDE). [PLN]	Prognostic capability assessment	Provide capability assessment	<ol style="list-style-type: none"> 1. Assess platform capability against mission requirements and user defined constraints and business rules. 2. Simulate mission loads for non-standard missions. 3. Simulate non-standard mission loads for standard missions. 4. Predict failure of critical components. 	
8. If the platform can’t complete the mission unless maintenance is performed, then determine {LP} what maintenance is needed and determine if the maintenance can be performed (e.g. parts availability, schedule, etc.). [PLN]	Maintenance assessment	Provide maintenance assessment	<ol style="list-style-type: none"> 1. Determine what maintenance will be necessary. 2. Determine if the necessary maintenance can be completed. 	

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9. The logistics section {LP} evaluates predicted maintenance actions and necessary parts and supplies that will be needed during the mission. [PLN]	Anticipated maintenance/supply actions report	Provide report of needed maintenance and material required during the mission.	<ol style="list-style-type: none"> 1. Identify needed maintenance actions. 2. Identify needed maintenance parts 3. Identify needed supplies. 	
10. The logistics section {LP} verifies that both the necessary equipment and material will (or will not be) available to support the COAs. [PLN]	Maintenance / supply / personnel availability assessment	Provide equipment availability Provide material availability Provide personnel availability	<ol style="list-style-type: none"> 1. Assess equipment availability. 2. Assess material availability. 3. Assess personnel availability. 	
11. The logistics section {LP} evaluates a prioritized list of concepts of support (COS) for each COA. [PLN]	COS generation and prioritization	Provide COS generation and prioritization	<ol style="list-style-type: none"> 1. Generate list of prioritized COS based on list of evaluation criteria supplied by the commander and staff. 	
12. The logistics section presents the COS selected for each COA to the operations section. [PLN]	COS presentation	Provide COS presentation	<ol style="list-style-type: none"> 1. Generate COS presentation 	
13. The logistics section ranks the COAs based on the logistics' section ability to execute the COS selected for each COA. [PLN]	COS ranking	Provide COS ranking	<ol style="list-style-type: none"> 1. Rank the COAs based on the logistics' section ability to execute the COS selected for each COA. 	
14. <i>ASA</i> - MEB CO determines that a mechanized attack is preferable to an air assault based on limited number of Landing Zones (LZs), operational availability of aircraft and inability of CLR (-) to provide adequate fuel at FARPs and preferable to a motorized	COA ranking	Provide COA ranking	<ol style="list-style-type: none"> 1. Rank the COAs based on the all staff sections' ability to execute each COA. 	

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<p>assault due to current operational availability of motorized assets and projected degradation of motorized assets based on the length of time, distance, and terrain enroute to grid 123456</p>				
<p>15. <u>ASA</u> - MEB Commander compares ability to operationally employ his subordinate infantry battalions against enemy company-sized element based on anticipated length of time, distance, terrain to obj and planned consumption of fuel, ammunition, water, and system health during attack. Based on assessments, MEB CO selects Bn X to conduct a mechanized attack.</p>	<p>Unit selection for COA</p>	<p>Provide unit assessment of ammo, fuel, platform and crew health</p> <p>Select the unit to perform the COA based on the unit assessment compared to the selected COA and associated COS</p>		<p>Repeat steps 5-13</p>
<p>16. MEB Commander tasks Bn X to conduct a mechanized attack on enemy company-sized element in vicinity of 123456. Begin executing COS. [EXE]</p>	<p>Orders development</p> <p>Transition</p>	<p>Logistics COS receipt, viewing, input and transmission</p> <p>Generation of Annex D.</p>	<ol style="list-style-type: none"> 1. Communications, user interface, data entry/interface 2. Generate and download mission plan and monitoring requirements for platform monitoring systems 3. Document mission logistics support requirements in an enterprise system. 4. Download mission plan to monitoring systems (vehicles, FARP, etc.) 	
<p>17. MEB Commander monitors the</p>				<p>Include all ammo, fuel, health use</p>

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Narrative Steps	User Need	System Function to Support User Need	System Requirements to Accomplish Function	Discussion/Sidebar
mission execution of consolidation on Obj A and Mechanized Attack vic 123456. [ASA]				<p>cases at this point.</p> <p>This is the monitor mission execution that could lead to an assessment.</p>

Log Chain Management

This use case is another higher level narrative that pertains to the function of logistics chain management. Specifically, it documents the S&RL requirements to effectively plan, execute, assess and adapt a concept of support (COS) supporting a course of action (COA).

Narrative Steps	User Need	System Function to Support User Need	System Requirements to Accomplish Function	Discussion/Sidebar
1. During MEB attack on MEF Obj A, CLR (-) Logistics Ops Center (LOC) determines that MEB is consuming more fuel – but less ammo – than expected. [ASA]	Concept of support (COS) assessment	Assess planned COS vs. actual consumption	<ol style="list-style-type: none"> 1. Monitor fuel/ammo levels/consumption rate by type. 2. Record fuel/ammo levels/consumption rate on and off platform 3. Compare COS planned fuel/ammo levels/consumption rate against actual fuel/ammo levels/consumption rate 4. Operator/LOC notification of threshold 	
2. CLR (-) LOC determines that MEB resupply will need to be conducted 4 hours ahead of planned resupply and will need to contain more fuel and less ammo than planned [PLN]	Re-plan COS	Create new COS	<ol style="list-style-type: none"> 1. Determine new schedule and delivery location as a result of actual consumption 2. Determine new sustainment configuration as a result of actual consumption 	
3. CLR (-) CO task subordinate units to execute new COS (include more fuel – less ammo) [EXE]	Generate and send Frago	Record and transmit request	<ol style="list-style-type: none"> 1. Data entry form/format 2. Data entry capability 3. Transmission/Delivery 	
4. While this is occurring, CLR (-) is made aware of FRAGO to conduct Battalion-sized attack in vicinity of grid 123456 [ASA]	Situational awareness	Collaborative planning	<ol style="list-style-type: none"> 1. Command/log system information interface 	
5. CLR (-) provides assessment of ability – wrt fuel, ammo, water & system health -- to support Bn-sized Air Assault, Motorized	COS generation and prioritization	Provide COS generation and prioritization	<ol style="list-style-type: none"> 1. Generate list of prioritized COS based on list of evaluation criteria supplied by the commander and staff. 	

Log Chain Management

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Narrative Steps	User Need	System Function to Support User Need	System Requirements to Accomplish Function	Discussion/Sidebar
Assault, and Mechanized Attack on enemy company-sized element vicinity of grid 123456 [PLN]				
6. CLR (-) provides input to MEB CO that the Mechanized Attack is more supportable than the Motorized Assault based on current and projected operationally available platforms, and projected mission parameters. [PLN]	COS ranking	Provide COS ranking	1. Rank the COAs based on the logistics' section ability to execute the COS selected for each COA.	
7. CLR (-) provides input to MEB CO that Motorized Assault or Air Assault are less supportable based on inability to provide necessary fuel at FARPs due to early resupply and increased fuel requirements on Obj A. [PLN]	COS ranking	Provide COS ranking	1. Rank the COAs based on the logistics' section ability to execute the COS selected for each COA.	
8. MEB CO determines that Mechanized Attack by Bn X will occur nlt 0000 [EXE]	Orders development Transition	Logistics COS receipt, viewing, input and transmission Generation of Annex D.	1. Communications, user interface, data entry/interface 2. Generate and download mission plan and monitoring requirements for platform monitoring systems 3. Document mission logistics support requirements in an enterprise system. 4. Download mission plan to monitoring systems (vehicles, FARP, etc.)	
9. CLR (-) monitors execution of resupply missions for both Obj				Include all ammo, fuel, health use cases at this point.

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This use case is another higher level narrative that pertains to the function of logistics chain management. Specifically, it documents the S&RL requirements to effectively plan, execute, assess and adapt a concept of support (COS) supporting a course of action (COA).

Narrative Steps	User Need	System Function to Support User Need	System Requirements to Accomplish Function	Discussion/Sidebar
A and Bn X vicinity of grid 123456. [ASA]				This is the monitor mission execution that could lead to an assessment.

Total Life Cycle Management

This use case pertains to the use of S&RL platform health and performance data to assess and adapt the maintenance management cycle (MMC) schedule in support of total life cycle management (TLCM) activities.

Narrative Steps	User Need	System Function to Support User Need	System Requirements to Accomplish Function	Discussion/Sidebar
<p>1. Blount Island Command Planners{LP} use a planning tool to generate the maintenance management cycle (MMC) schedule based on the operational employment of each Maritime Prepositioned Squadron (MPS). [PLN] Program Managers (PMs) at Marine Corps Systems Command (SYSCOM) & BIC Planners use the MMC to calculate total lifecycle management (TLCM) for principal end items (PEIs).</p>	<p>MMC schedule report. TLCM report for principal end items.</p>	<p>Provide MMC report. Provide TLCM report.</p>	<ol style="list-style-type: none"> 1. Receive business rule (sensor thresholds) updates. 2. Receive mission context / profile 3. Platform monitoring system self-health monitoring capability. 4. Notify operator of platform monitoring system status.. 	
<p>2. Major Regional Contingency (MRC) results in unexpected employment of MPF. Based on enemy threat, it is decided that MAK kits will be placed on all BIC HMMWVs; this increases both the weight on suspension systems and alters vehicle performance characteristics. PMs and BIC planners {LP} are notified by the system that the weight and the performance characteristics of the vehicle have changed. [ASA]</p>	<p>Capability assessment.</p>	<p>Provide capability assessment.</p>	<ol style="list-style-type: none"> 1. Calculate health related effects of installing MAK kits 2. Compare expected performance to actual performance (with MAK Kit) 3. Update performance characteristics. 	
<p>3. PMs and BIC Planners {LP} analyze logistics data (maintenance & system health) to determine effects of adding armor kits on PEIs. [ASA] PMs and BIC Planners analyze logistics data to determine</p>	<p>TLCM assessment</p>	<p>Provide TLCM assessment report.</p>	<ol style="list-style-type: none"> 1. Query sensors. 2. From sensor data, determine current vehicle operating conditions. 3. Compare current health status with expected health status. 4. Compare current health status 	

Total Life Cycle Management

This use case pertains to the use of S&RL platform health and performance data to assess and adapt the maintenance management cycle (MMC) schedule in support of total life cycle management (TLCM) activities.

Narrative Steps	User Need	System Function to Support User Need	System Requirements to Accomplish Function	Discussion/Sidebar
<p>effects of unexpected employment, higher than expected operational use and alteration of vehicle characteristics During MRC, PMs and BIC planners {LP} determine that operational use of PEIs places 5 years worth of operational employment (time / mileage / etc), in less than 3 months. [ASA]</p>			<p>with historical status. 5. Calculate future capability.</p>	
<p>4. PMs {LP} determine that all suspension systems will need to be replaced upon retrograde from MRC. [PLN]</p>				
<p>5. BIC Planners {LP} use this info to re-plan both MMC schedule and actions / events to occur during MMC. [PLN]</p>	<p>MMC and TLCM optimizer</p>	<p>Provide MMC and TLCM optimizer results</p>	<p>1. Calculate the most efficient and or effective product-mix of platforms on each squadron for the MMC schedule. 2. Calculate the most efficient and effective way to conduct the MMC. 3. Calculate the most efficient and or effective TLCM parameters that feed into the TLCM operation picture.</p>	

Prognostics Planning

This use case pertains to the function of planning of task force elements based upon knowing the current health of equipment and the ability to predict the impact of planned mission operations on equipment health.

Narrative Steps	User Need	System Function to Support User Need	System Requirements to Accomplish Function	Discussion/Sidebar
1. The battalion commander tasks his staff to develop three (mission) courses of action (COAs) for a mission.				See COP C&C use case.
2. The logistician {OP} accesses the shared data environment (SDE) [ASA] and checks the availability and asset status of the equipment needed to support three candidate COAs (which are incomplete, under development).	Equipment availability/status report	Provide asset availability for mission.	<ol style="list-style-type: none"> 1. Determine if equipment can turn on and move? 2. Determine if personnel with the necessary qualifications are available to drive it? 3. Determine if the equipment is currently committed to something else. 	
3. Based on the commander's intent and the three candidate COAs, the staff {OPS} generates mission timelines and capability requirements (of the assets to support the mission – estimate of supportability) for each platform or system for each course of action (i.e. we determine what is needed from each asset). [PLN]	Individual asset capability requirements	Generation of individual asset capability requirements	<ol style="list-style-type: none"> 1. Define asset attributes for mission supportability for each individual asset. 	
4. The staff {LP} assesses the capability of each platform or system to meet the detailed mission capability requirements for each COA based on the system health state and prognostic health assessment information available in the shared data environment (SDE). [PLN]	Prognostic capability assessment	Provide capability assessment	<ol style="list-style-type: none"> 1. Assess platform capability against mission requirements and user defined constraints and business rules. 2. Simulate mission loads for non-standard missions. 3. Simulate non-standard mission loads for standard missions. 4. Predict failure of critical components. 	
5. If the platform can't complete the mission unless maintenance is performed, then determine	Maintenance assessment	Provide maintenance assessment	<ol style="list-style-type: none"> 1. Determine what maintenance will be necessary. 2. Determine if the necessary 	

Prognostics Planning

This use case pertains to the function of planning of task force elements based upon knowing the current health of equipment and the ability to predict the impact of planned mission operations on equipment health.

Narrative Steps	User Need	System Function to Support User Need	System Requirements to Accomplish Function	Discussion/Sidebar
<p>{LP} what maintenance is needed and determine if the maintenance can be performed (e.g. parts availability, schedule, etc.). [PLN]</p>			<p>maintenance can be completed.</p>	
<p>6. The logistics section {LP} evaluates predicted maintenance actions and necessary parts and supplies that will be needed during the mission. [PLN]</p>	<p>Anticipated maintenance/supply actions report</p>	<p>Provide report of needed maintenance and material required during the mission.</p>	<ol style="list-style-type: none"> 1. Identify needed maintenance actions. 2. Identify needed maintenance parts 3. Identify needed supplies. 	
<p>7. The logistics section {LP} verifies that both the necessary equipment and material will (or will not be) available to support the COAs. [PLN]</p>	<p>Maintenance / supply / personnel availability assessment</p>	<p>Provide equipment availability</p> <p>Provide material availability</p> <p>Provide personnel availability</p>	<ol style="list-style-type: none"> 1. Assess equipment availability. 2. Assess material availability. 3. Assess personnel availability. 	
<p>8. The logistics section {LP} evaluates a prioritized list of concepts of support (COS) for each COA. [PLN]</p>	<p>COS generation and prioritization</p>	<p>Provide COS generation and prioritization</p>	<ol style="list-style-type: none"> 1. Generate list of prioritized COS based on list of evaluation criteria supplied by the commander and staff. 	
<p>9. The logistics section presents the COS selected for each COA to the operations section. [PLN]</p>	<p>COS presentation</p>	<p>Provide COS presentation</p>	<ol style="list-style-type: none"> 1. Generate COS presentation 	
<p>10. The logistics section ranks the COAs based on the logistics' section ability to execute the COS selected for each COA. [PLN]</p>	<p>COS ranking</p>	<p>Provide COS ranking</p>	<ol style="list-style-type: none"> 1. Rank the COAs based on the logistics' section ability to execute the COS selected for each COA. 	
<p>11. The battalion staff {OPS} presents the COAs to the battalion commander {OPS}. [PLN]</p>	<p>COA presentation</p>	<p>Provide COA presentation</p>	<ol style="list-style-type: none"> 1. Generate COA presentation 	

Prognostics Planning

This use case pertains to the function of planning of task force elements based upon knowing the current health of equipment and the ability to predict the impact of planned mission operations on equipment health.

Narrative Steps	User Need	System Function to Support User Need	System Requirements to Accomplish Function	Discussion/Sidebar
12. The battalion commander {OPS} selects the COA, and the decision is recorded. The COA is then turned into a detailed plan. [PLN]	Orders development	Generate platform monitoring thresholds/business rules based on selected COA.	1. Generate and download mission plan and monitoring requirements for platform monitoring systems	
13. The logistics section {LP} communicates log support requirements for the mission to combat service support personnel and assesses actual asset availability. [PLN]	Transition	Generation of Annex D.	1. Document mission logistics support requirements in an enterprise system. 2. Download mission plan to monitoring systems (vehicles, FARP, etc.)	

Prognostics Embedded Health Management

This use case describes the execution of prognostic health management in an embedded autonomic logistics system on a vehicle or other piece of equipment.

Narrative Steps	User Need	System Function to Support User Need	System Requirements to Accomplish Function	Discussion/Sidebar
1. System configuration, platform monitoring system monitoring and reporting requirements (e.g. sensitivity, granularity), and mission capability requirements are transmitted to the vehicle in order to configure/tailor the reporting to the anticipated mission context/profile which enables on-vehicle, tailored capability assessment. [EXE]	Ability to preconfigure the monitoring system	Tailor monitoring and reporting requirements of platform	<ol style="list-style-type: none"> 1. Receive business rule (sensor thresholds) updates. 2. Receive mission context / profile. 	<p>Two key requirements that are implied, but not called out by the narrative are:</p> <ol style="list-style-type: none"> 1. Ability to monitor system health. 2. Ability to send reports based on preset business rules.
2. The platform operator {OP} is notified concerning the platform monitoring system status. [ASA]	Platform monitoring system assessment	Notify operator of platform monitoring system status	<ol style="list-style-type: none"> 1. Platform monitoring system self-health monitoring capability. 2. Notify operator of platform monitoring system status. 	
3. The platform monitoring system detects an anomaly in a platform component, i.e. turbocharger. [ASA]	Notification of anomaly on the turbocharger	Detect turbocharger anomaly	<ol style="list-style-type: none"> 1. Monitor turbocharger attributes as defined by preset business rules. 2. Compare data from monitored sensors to preset business rules. 3. Detect when data from monitored sensors cross thresholds established by preset business rules. 	This use case is not only for turbochargers, but a turbocharger is used as an example component.
4. The platform monitoring system calculates health related features specified for the turbocharger in order to prepare for severity impact assessment. [ASA]	Turbocharger anomaly mission impact assessment	Calculate health related feature for the turbocharger	<ol style="list-style-type: none"> 1. Calculate health related features for the turbocharger as specified by system configuration. 	An example of a health related feature is RMS Voltage because it is a feature calculated from a raw data reading, voltage.
5. The platform monitoring system determines the current vehicle operating conditions (state).	Determine current vehicle operating conditions	Provide current vehicle operating conditions	<ol style="list-style-type: none"> 1. Query sensors. 2. From sensor data, determine current vehicle operating conditions. 	Need to know what the vehicle's operating state is...is the platform in the conditions that were originally planned, or are the conditions much different

Prognostics Embedded Health Management

This use case describes the execution of prognostic health management in an embedded autonomic logistics system on a vehicle or other piece of equipment.

Narrative Steps	User Need	System Function to Support User Need	System Requirements to Accomplish Function	Discussion/Sidebar
				than originally planned and are those conditions causing the anomaly instead of a component failure.
6. The platform monitoring system then determines the state and health of the turbocharger in the context of the vehicle operating conditions.	Contextual turbocharger health assessment	Provide contextual state and health of the turbocharger	1. Determine the state and health of the turbocharger based upon vehicle's current operating conditions and the turbocharger's related features' status.	
7. The platform monitoring system computes the time remaining until the turbocharger state or health reaches threshold of failure based on the mission conditions and transmits to the SDE.	Contextual turbocharger threshold prediction	Provide time remaining until threshold Transmit to SDE	1. Compute time remaining until the turbocharger reaches the threshold of failure, as specified in the business rules. 2. Transmit time remaining to the SDE.	
8. Operator is provided a mission impact analysis of the turbocharger anomaly.	Mission impact analysis	Provide mission impact analysis	1. Comparison of the time remaining until the turbocharger reaches the threshold of failure and the mission profile 2. Determination of the turbocharger anomaly's effect on the platforms ability to complete the mission.	
9. Based on business rules, the platform monitoring system notifies the operator {OP} and the SDE of relevant alerts. [ASA]	Operator notification SDE notification	Alert the operator Alert the SDE	1. Notify the operator of relevant alerts based on business rules. 2. Notify the SDE of relevant alerts based on business rules.	

Prognostics Supportability

This use case pertains to the function of improving logistics support fleet-wide and improving health monitoring system performance on individual platforms by leveraging fleet-wide operational data related to system health collected by autonomic logistics systems on the platforms.

Narrative Steps	User Need	System Function to Support User Need	System Requirements to Accomplish Function	Discussion/Sidebar
<p>1. A logistic total life cycle manager {OP} queries the system and obtains a summary of maintenance actions over past intervals of interest for platforms and equipment deployed to support a particular military operation. The report shows a high rate of unscheduled maintenance on AAV turbochargers. [ASA]</p>	<p>Tailorable maintenance reports</p>	<p>Provide maintenance actions report</p>	<ol style="list-style-type: none"> 1. Store maintenance data 2. Receive user defined report request 3. Provide maintenance information that matches user query 	
<p>2. The total life cycle manager {OP} queries the shared data environment (SDE) (viz. the platform monitoring system data archive) for the AAV and requests all health reports related to AAV turbochargers. [ASA] The report shows that the AAV health monitoring system is generating requests for scheduled maintenance related to the turbocharger which are within historical statistical limits for that platform. The number of unscheduled maintenance events for the turbocharger, however, are now well above historical statistics.</p>	<p>Tailorable historical platform monitoring system reports</p>	<p>Provide platform monitoring system report</p>	<ol style="list-style-type: none"> 1. Store platform monitoring system data in an archive 2. Receive user defined report request 3. Provide platform monitoring system data that matches user query 4. Calculate historical statistics for scheduled and unscheduled maintenance requests 	<p>Platform monitoring system data includes business rules.</p>
<p>3. The log support engineer {OP} next requests a report that drills down to examine the supporting data and business rules used to generate maintenance requests for the AAV turbochargers. [ASA] The engineer notices that</p>	<p>Tailorable platform monitoring system reports</p>	<p>Provide platform monitoring system report</p>	<ol style="list-style-type: none"> 1. Store platform monitoring system data in an archive 2. Receive user defined report request 3. Provide vehicle health monitoring system data that 	<p>Platform monitoring system data includes HMS data, reporting rules and alert/alarm messages.</p>

Prognostics Supportability

This use case pertains to the function of improving logistics support fleet-wide and improving health monitoring system performance on individual platforms by leveraging fleet-wide operational data related to system health collected by autonomic logistics systems on the platforms.

the reported turbocharger bearing temperatures are just below the threshold used in the business rules.			matches user query	
4. A correlation analysis of the AAV health data [ASA] shows a strong correlation between the increased turbocharger bearing temperature and increased reports of pitting and wear in road wheel bearings following a shift in the location of operations.	Correlation analysis tool	Provide correlation analysis	<ol style="list-style-type: none"> 1. Store maintenance data 2. Store platform monitoring system data in an archive 3. Receive user defined correlation analysis request 4. Perform correlation analysis 	
5. The total lifecycle manager {OP} initiates a query of health information for other Marine Corp and Army assets operating in the same region [ASA] to see if there are any correlations between the high turbocharger bearing temperatures and data from other platforms. The query shows a similar trend in Army M113 armored personnel carriers. The Army data maintenance archives, however, do not show a high rate of unscheduled maintenance. Analysis of the health monitoring system data and business rules for the Army systems show lower thresholds for Army turbocharger bearings.	Interoperability	Portal to army maintenance data	<ol style="list-style-type: none"> 1. Receive user defined correlation analysis request 2. Retrieve appropriate data from external army system. 3. Perform correlation analysis 	
6. The system suggests new thresholds for the AAV turbocharger platform monitoring algorithms. [ASA] The total lifecycle manager	Fault detection threshold optimizer	Optimize fault detection reporting thresholds	<ol style="list-style-type: none"> 1. Calculate optimum reporting threshold to provide earlier detection of faults while maintaining an acceptable false alarm rate. 	

Prognostics Supportability

This use case pertains to the function of improving logistics support fleet-wide and improving health monitoring system performance on individual platforms by leveraging fleet-wide operational data related to system health collected by autonomic logistics systems on the platforms.

<p>{LG} approves the recommended thresholds to provide earlier detection of the turbocharger bearing faults while maintaining an acceptable false alarm rate.</p>			<p>2. Receive total lifecycle manager user input.</p>	
<p>7. The analysis of the fleet-wide health data [ASA] results in a recommendation by the total lifecycle manager {LG} to temporarily alter the business rules for reporting AAV turbocharger faults to provide adequate prediction horizons for ordering the necessary parts and scheduling the repairs.</p>	<p>Tailorable business rules</p>	<p>Tailor reporting requirements</p>	<p>1. Receive business rule updates.</p>	
<p>8. In addition, new monitoring and reporting requirements are implemented by the total lifecycle manager {LG} to look for correlations in reports of bearing faults across the fleet and faults associated with turbochargers and air filters. [ASA] These monitoring and reporting algorithms will increase the responsiveness of the system to emerging maintenance trends to identify the root cause of the increase in turbocharger failures.</p>	<p>Ability to input new reporting requirements</p>	<p>Provide capability to update reporting requirements.</p>	<p>1. Receive updated reporting requirements.</p>	
<p>Alternate Flow</p>				
<p>1. The same analysis by the total life cycle manager {OP} of fleet-wide logistics data [ASA] shows an increase in orders for shipment of LAV differentials</p>	<p>Tailorable supply reports</p>	<p>Generate parts ordered report</p>	<p>1. Store supply data 2. Receive user defined report request 3. Provide supply information</p>	

Prognostics Supportability

This use case pertains to the function of improving logistics support fleet-wide and improving health monitoring system performance on individual platforms by leveraging fleet-wide operational data related to system health collected by autonomic logistics systems on the platforms.

<p>from the sea base to theater, but no record of actual LAV differential replacements in the maintenance records. The total life cycle manager determines {LG} that the LAV platform monitoring systems are generating false alarms of differential problems causing unnecessary orders for repair parts that are clogging the supply chain. [ASA]</p>	<p>Tailorable maintenance reports</p> <p>Correlation analysis tool</p>	<p>Generate maintenance report</p> <p>Perform correlation analysis</p>	<p>that matches user query</p> <ol style="list-style-type: none"> 4. Store maintenance data 5. Receive user defined report request 6. Provide maintenance information that matches user query 7. Correlate supply parts requests to maintenance actions to determine level of false alarms. 	
<p>2. Analysis of health data from the LAVs and other equipment currently operating in the same region and taking part in similar missions show consistent terrain and operating profiles for the different platforms. [ASA] The correlated data between LAVs and MTRVs [ASA] show that both LAVs and MTRVs operating in the region are measuring higher than expected engine torque at rate speeds, but the LAVs are exceeding pre-set vibration level thresholds (causing the excessive parts ordering in #1).</p>	<p>Correlation analysis tool</p>	<p>Perform correlation analysis</p>	<ol style="list-style-type: none"> 1. Store operating information (region, missions, terrain) 2. Store maintenance data 3. Store vehicle health monitoring system data in an archive 4. Receive user defined correlation analysis request 5. Provide graphical and statistical correlation report across platforms 	
<p>3. Support engineers from the LAV differential manufacturer recommend changing the differential health monitoring algorithm to increase the acceptable vibration levels at</p>				

Prognostics Supportability

This use case pertains to the function of improving logistics support fleet-wide and improving health monitoring system performance on individual platforms by leveraging fleet-wide operational data related to system health collected by autonomic logistics systems on the platforms.

higher torque.				
4. The total life cycle manager {LG} updates the health monitoring system and shared data environment with new business rules and software for the LAV and establishes new reporting thresholds, which are downloaded to the platforms in the field. [ASA]	Tailorable business rules	Tailor reporting requirements	<ol style="list-style-type: none"> 1. Receive business rule updates. 2. Receive new monitoring and reporting software 	

Macro Fuel

This use case pertains to monitoring, assessing, and adapting to battlefield fuel consumption of a MEB.

Narrative Steps	User Need	System Function to Support User Need	System Requirements to Accomplish Function	Discussion/Sidebar
<p>1. Platforms, Tankers, Forward Arming and Refueling Points (FARPs), collapsible fuel tanks, Fuel System Supply Points (FSSPs), and the tactical petroleum terminal automatically report fuel levels [ASA] based on previously established business rules.</p>	<p>Macro fuel level monitoring</p>	<p>Report macro level fuel supply quantities.</p> <p>Provide method to report fuel level off platform</p>	<p>1. Monitor fuel levels.</p> <p>2. Record fuel levels on platform based on business thresholds.</p> <p>3. Report fuel levels off platform based on business thresholds.</p> <p>4. Aggregate fuel level information based on business rules.</p>	<p>This use case is related to the fuel quantity use case and adds additional higher level macro fuel functionality requirements.</p>
<p>2. The logistics combat element (LCE) {OPS, LG} monitors [ASA] and compares planned fuel levels against actual fuel levels [EXE] on a macro level for the MEB's entire area of operations (AO).</p>	<p>Macro fuel level assessment</p> <p>Presentation of assessment</p>	<p>Evaluate and compare macro level fuel supply quantities to planned quantities.</p> <p>Presentation of results.</p>	<p>1. Remotely monitor fuel levels.</p> <p>2. Compare planned fuel levels against actual fuel levels on a macro level for the MEB's entire AO.</p> <p>3. Present comparison results.</p>	
<p>3. Analysis shows a higher consumption rate than expected, resulting in fuel levels below the levels required to support planned operations in the AO. [ASA]</p>	<p>Alert of unplanned fuel consumption</p>	<p>Provide alerts.</p>	<p>1. Provide alerts based upon business rules.</p>	
<p>4. The results of the planned vs. actual comparison for the MEB are updated on the COP. [ASA]</p>	<p>COP presentation</p>	<p>Provide COP presentation</p>	<p>1. Generate COP presentation</p>	<p>Focus is incorporation of logistics information (planned vs actual fuel) into COP</p>
<p>5. Based on business rules, The results of the planned vs. actual comparison are available/ reported to the command element (CE). [ASA]</p>	<p>Presentation of LOGSTAT report</p>	<p>Presentation of results.</p>	<p>1. Present comparison results</p>	<p>Human notification? The method of notification could be handled by the system – i.e. text message.</p> <p>Happens at watch turn over. Parallel event to actual flow.</p>
<p>6. The CE determines that the planned amount of fuel deliveries to the AO needs to be</p>	<p>Assess viability of current COA based on assessment of concept</p>	<p>Assessment of viability of concept of support</p>	<p>1. Determine state of current concept of support (against orig. goals)</p>	

Macro Fuel

This use case pertains to monitoring, assessing, and adapting to battlefield fuel consumption of a MEB.

Narrative Steps	User Need	System Function to Support User Need	System Requirements to Accomplish Function	Discussion/Sidebar
increased. [EXE]	of support		<ol style="list-style-type: none"> 2. Determine impact of deviation (comparison of fuel actual vs planned) in concept of support on COA 3. Determine new concept of support 	
7. The CE sends a request to the Seabase requesting more fuel. [EXE]	Logistics management system.	Provide electronic method of requesting fuel resupply.	<ol style="list-style-type: none"> 1. Generate request. 2. Send request. 	
8. The Seabase coordinates fulfillment of the request and delivers the requested fuel. [EXE]	Logistics management system.	Provide electronic method of logistics chain management.	<ol style="list-style-type: none"> 1. Enable logistics chain management (See Log OA requirements). 	
9. Platforms, Tankers, Forward Arming and Refueling Points (FARPs), collapsible fuel tanks, Fuel System Supply Points (FSSPs), and the tactical petroleum terminal automatically reports the fuel resupply according to preset business rules. [ASA]	Macro fuel level monitoring	<p>Report macro level fuel supply quantities.</p> <p>Provide method to report fuel level off platform</p>	<ol style="list-style-type: none"> 1. Monitor fuel levels. 2. Record fuel levels on platform based on business thresholds. 3. Report fuel levels off platform based on business thresholds. 4. Aggregate fuel level information based on business rules. 	
10. The LCE, CE, and Seabase {OP} are notified that the request for supply has been fulfilled [ASA].	Macro fuel resupply alert	Assess macro level fuel supply quantities.	<ol style="list-style-type: none"> 1. Provide alerts based upon business rules. 	

Fuel Quantity

This use case performs tactical fuel monitoring, reporting, and metered re-supply to task force elements based upon knowing their levels and consumption rates in near-real-time.

Narrative Steps	User Need	System Function to Support User Need	System Requirements to Accomplish Function	Discussion/Sidebar	Parallel Narrative Steps	User Need	System Function to Support User Need	System Requirements to Accomplish Function	Discussion/Sidebar
1. The platform operator {OPS} is alerted that a threshold is reached. [ASA]	Alert that fuel level has reached a level/consumption rate by type based on a business rule	Compare fuel levels/consumption rate of monitored assets to thresholds set by business rules. Provide alert that fuel has reached a threshold set by business rules. Provide fuel quantity/consumption rate by type.	1. Monitor fuel levels/consumption rate by type. 2. Record fuel levels/consumption rate on and off platform 3. Operator notification of threshold						
2. The Patrol Leader {OPS}, and other relevant entities (in this scenario, the Bn S-4 and the LCE Operations center) {LG, OPS} are alerted that a threshold is reached [ASA]	Alert that fuel level has reached a level/consumption rate by type based on a business rule	Compare fuel levels/consumption rate of monitored assets to thresholds set by business rules. Provide alert that fuel has reached a threshold set by business rules. Provide fuel quantity/consumption rate by type.	1. Monitor fuel levels/consumption rate by type. 2. Patrol Leader notification on threshold						
3. The patrol leader {OPS} reviews the alert on his command display and validates the information. [ASA]	Threshold alert	Alert user that a threshold has been reached.	1. Adjustable threshold triggering system actions 2. Assess fuel level by comparing to preset business rule. 3. Notification of threshold	Focus is incorporation of logistics information into MAGTF C2 Capset5					
4. The patrol leader {OPS} queries system for impact on mission [ASA]	Determine fuel usage impact on objective	Impact Analysis	1. Compute ability to operationally employ platform in time and space based on current fuel status and environmental conditions.	With this amount of fuel will I reach the objective?					
5. The patrol leader {OPS} requests fuel status of other vehicles in the patrol [ASA]	Determine fuel inventory within patrol	1. Provide fuel levels of selected assets 2. Impact Analysis	1. Monitor fuel levels 2. Present information 3. Compute ability to operationally employ platforms in time and	With this amount of fuel will I reach the objective?	P1. The Bn S-4 and the LCE Operations center {OPS, LG} obtain the platform fuel	Determine fuel status of selected assets	Provide fuel levels of selected assets	1. Monitor fuel levels of selected assets 2. Present information	Focus is incorporation of logistics information into MAGTF C2 Capset4 <i>(Note: The following</i>

Fuel Quantity

This use case performs tactical fuel monitoring, reporting, and metered re-supply to task force elements based upon knowing their levels and consumption rates in near-real-time.

Narrative Steps	User Need	System Function to Support User Need	System Requirements to Accomplish Function	Discussion/Sidebar	Parallel Narrative Steps	User Need	System Function to Support User Need	System Requirements to Accomplish Function	Discussion/Sidebar
			space based on current fuel status and environmental conditions.		status on the command display. [ASA]				steps are initiated here and proceed during this activity. They are aimed at enabling a more proactive supply response, rather than waiting for a fuel request and scrambling to respond.) P1 stands for Parallel step #1.
6. The patrol leader is presented with option to send rapid request. [EXE]	Generate and send request	Record and transmit request	1. Data entry form/format 2. Data entry capability 3. Transmission/Delivery		P2. The GCE and the LCE operations center {OPS, LG} anticipate that requests for supply are forthcoming [EXE].	Anticipate fuel re-supply demands	Provide prediction of future re-supply requests	1. Calculate time remaining until fuel threshold crossing of selected assets. 2. Present information	(includes time of previously threshold crossings).
7. The battalion GCE S-4 {LG} receives and verifies completeness and accuracy of the request for supply from the patrol leader on the command display. [ASA]	Information sharing from command system to log system	Interface/data input from command system into log system	1. Command/log system interface and data integrity checks	i.e. Net-centric tactical service	P3. LCE operations center {OPS, LG} obtains the organic fuel stocks situation view. [ASA]	Determine fuel resupply resources	Provide assessment of fuel stocks	1. Monitor fuel inventory, location, and availability by type. 2. Present information.	
8. The battalion GCE S-4 {LG} compares this information with other units (assessment). [ASA]	Determine fuel inventory within battalion	Provide fuel levels of selected units	1. Monitor fuel levels 2. Means for selecting units of interest 3. Present information	User defines/selects which units will be included in view	P4. The decision support tool generates distribution options, distribution schedule, risk assessment, and other factors in anticipation of the need for support. [EXE]	COS generation, ranking (against COA) and prioritization (among COS alternatives)	1. Assess COS generation, ranking and prioritization. 2. Information Presentation	1. Generate list of prioritized COS based on list of evaluation criteria supplied by the commander and staff. 2. Rank the COAs based on the logistics' section ability to execute the COS selected for each COA. 3. Present Information	

Narrative Steps	User Need	System Function to Support User Need	System Requirements to Accomplish Function	Discussion/Sidebar	Parallel Narrative Steps	User Need	System Function to Support User Need	System Requirements to Accomplish Function	Discussion/Sidebar
9. The battalion GCE S-4 {LG} looks organically to see if any actions are possible (cross-leveling, use of auxiliary fuel or access to fuel cache). [ASA]	COS generation, ranking (against COA) and prioritization (among COS alternatives)	1. Assess COS generation, ranking and prioritization. 2. Information Presentation	1. Generate list of prioritized COS based on list of evaluation criteria supplied by the commander and staff. 2. Rank the COAs based on the logistics' section ability to execute the COS selected for each COA. 3. Present Information						
10. The battalion GCE S-4 determines (human decision) that a fuel re-supply is necessary.									
11. The battalion GCE S-4 {OPS} generates and sends a request for supply (fuel) to the LCE Operations Center {LG}. [ASA]	Generate and send request	Record and transmit request	1. Data entry form/format 2. Data entry capability 3. Transmission/Delivery						
12. The LCE operations center {LG} develops the concept of support (COS) [EXE] for the LCE CO {OPS}.	COS generation, ranking (against COA) and prioritization (among COS alternatives)	1. Assess COS generation, ranking and prioritization. 2. Information Presentation	1. Generate list of prioritized COS based on list of evaluation criteria supplied by the commander and staff. 2. Rank the COAs based on the logistics' section ability to execute the COS selected for each COA. 3. Present Information	1. Decision support tool to compare projected request against available resources at a variety of locations including inventory, personnel, and transportation and develop potential logistics courses of action. a) Feeds into the decision support tool: i. Mission Enemy Terrain Weather Troops and Fire					

Narrative Steps	User Need	System Function to Support User Need	System Requirements to Accomplish Function	Discussion/Sidebar	Parallel Narrative Steps	User Need	System Function to Support User Need	System Requirements to Accomplish Function	Discussion/Sidebar	
				<p>Support Available – Time Space and Logistics (METT-TSL)</p> <ul style="list-style-type: none"> ii. Ammunition inventory by type and location iii. Personnel availability by type, location, quantity and qualification iv. Transportation availability by type, location, and quantity <p>b. Outputs from the decision support tool: potential logistics courses of action addressing:</p> <ul style="list-style-type: none"> i. Ammunition supply origin ii. Assets (vehicles, aircraft, etc) needed to execute resupply iii. Route to be taken iv. Personnel to be used v. Location of delivery vi. Point of contact vii. Impact on future logistics requirements viii. Supported unit’s ability to receive the resupply. <ul style="list-style-type: none"> c. COS risk analysis is performed using commander’s evaluation criteria. d. COSs are compared to each other. e. Tool will rank the COSs. 						
13. Using collaboration tools [EXE], the	Coordination / negotiation capability	Collaboratively review COS	1. Interactive and dynamic exchange of information and negotiation process	(Collaboration can involve negotiation between logistics and						

Fuel Quantity

This use case performs tactical fuel monitoring, reporting, and metered re-supply to task force elements based upon knowing their levels and consumption rates in near-real-time.

Narrative Steps	User Need	System Function to Support User Need	System Requirements to Accomplish Function	Discussion/Sidebar	Parallel Narrative Steps	User Need	System Function to Support User Need	System Requirements to Accomplish Function	Discussion/Sidebar
GCE S-4 {OPS} and LCE {LG} Operations Center negotiate concept of support (COS).			between supporting and supported units (order fulfillment)	operational impacts/activities.)					
14. The LCE CO {OPS} decides which COS to execute (human decision) and orders the LCE operations center to execute the approved COS. Order execution is recorded. [ASA]	Select COS, disseminate	Record and transmit order execution. Deliver mission orders to executing units.	4. Data entry form/format 5. Data entry capability 1. Transmission/Delivery						
15. The LCE {OPS} performs order, capacity, production, and execution management to fulfill the request. [EXE]	Order Fulfillment	Perform LCM	See Log OA						
16. Fuel is delivered as agreed. Both the amount of fuel delivered to the platform and remaining on the convoy are automatically recorded and reported by the LCE. [ASA]	Reporting and confirmation of delivery	Record amount of fuel delivered to platform. Record amount of fuel remaining on convoy. Report amount of fuel delivered to platform. Report amount of fuel remaining on convoy.	1. Monitor Fuel levels 2. Report Fuel Levels						
17. Platform monitoring systems automatically	Fuel level	Monitor fuel level Report fuel resupply	1. Monitor Fuel levels 2. Report Fuel Levels						

Fuel Quantity

This use case performs tactical fuel monitoring, reporting, and metered re-supply to task force elements based upon knowing their levels and consumption rates in near-real-time.

Narrative Steps	User Need	System Function to Support User Need	System Requirements to Accomplish Function	Discussion/Sidebar	Parallel Narrative Steps	User Need	System Function to Support User Need	System Requirements to Accomplish Function	Discussion/Sidebar
record and report fuel re-supply on the platform. [ASA]									
18. The platform operator {OPS} is notified that a threshold is reached [ASA]	Notification that fuel level has reached a level/consumption rate by type based on a business rule	Notify platform operator	1. Present Information						
19. The Patrol Leader {OPS}, and other relevant entities (in this scenario, the Bn S-4 and the LCE Operations center) {LG, OPS} are alerted that a threshold is reached [ASA]	Alert that fuel level has reached a level/consumption rate by type based on a business rule	Compare fuel levels/consumption rate of monitored assets to thresholds set by business rules. Provide alert that fuel has reached a threshold set by business rules. Provide fuel quantity/consumption rate by type.	1. Monitor fuel levels/consumption rate by type. 2. Patrol Leader notification on threshold						
20. The impact of the fuel re-supply operation is assessed including the remaining fuel – macro fuel {OPS}. [EXE]	(See Macro Fuel Use Case)								
21. The LCE convoy returns to CSSA verifies {OPS} fulfillment [ASA]	Confirm Order Fulfillment	OMP_Verify OMP_Expense / Liquidate	(See Log Chain Manager)	is this two steps					
22. The LCE and administratively closes the order [EXE].	Order Close-out	OMP_Close Order	(See Log Chain Manager)						

Fuel Quality

This use case identifies the type and quality of fuel and communicates the fuel existence and test results through the command chain.

Narrative Steps	User Need	System Function to Support User Need	System Requirements to Accomplish Function	Discussion/Sidebar
1. Patrol Leader discovers unidentified fuel cache.				
2. Patrol Leader issues message to Mission Commander indicating existence and location of fuel cache.				
3. Patrol Leader analyzes unknown fuel. [EXE]	Characterize fuel a. Type b. Quality c. Determine vehicle compatibility d. Quantity Provide recommendation to user regarding use of fuel	Fuel analysis report Platform compatibility analysis report	1. Characterize the fuel 2. Compare identified fuel with known fuel data. 3. Provide recommendation to user. 4. Record fuel characteristics: - Type - Quality - Quantity	
4. Patrol Leader alerts Mission Commander to fuel cache and ID and shares information with Battalion S-2. [ASA]	Discovered fuel alert	Provide discovered fuel alert	1. Alert to users based on business rules.	The users are not confined to S&RL, users includes Intel and C2.
5. Battalion Commander issues authorization for use shared throughout the chain of command. [ASA]	Operator notification	Provide operator notification	1. Notify operator of authorization for use.	
6. Patrol Leader refuels as necessary. The amount of fuel delivered to the platform, the remaining fuel in the fuel cache, and the amount of fuel on the platform are automatically				See fuel quantity use case for requirements.

Fuel Quality

This use case identifies the type and quality of fuel and communicates the fuel existence and test results through the command chain.

Narrative Steps	User Need	System Function to Support User Need	System Requirements to Accomplish Function	Discussion/Sidebar
recorded and reported. [ASA]				
7. The platform operator {OPS} is notified of the updated fuel status of the vehicle: [ASA]				See fuel quantity use case for requirements.
8. The common operating picture is updated. [ASA]				See fuel quantity use case for requirements.
Alternate Flow				
1. Patrol Leader discovers unidentified fuel cache.				
2. Patrol Leader issues message to Mission Commander indicating existence and location of fuel cache.				
3. Patrol Leader analyzes unknown fuel. [EXE]	Characterize fuel a. Type b. Quality c. Determine vehicle compatibility d. Quantity Provide recommendation to user regarding use of fuel	Fuel analysis report Platform compatibility analysis report	1. Characterize the fuel 2. Compare identified fuel with known fuel data. 3. Provide recommendation to user. 4. Record fuel characteristics: - Type - Quality - Quantity	
4. Patrol Leader alerts Mission Commander to fuel cache and ID and shares information with Battalion S-2. [ASA]	Discovered fuel alert	Provide discovered fuel alert	1. Alert to users based on business rules.	The users are not confined to S&RL, users includes Intel and C2.
5. Battalion Commander issues authorization for destruction. [ASA]	Operator notification	Provide operator notification	1. Notify operator of authorization for destruction.	
6. Fuel is destroyed.				

Ammo Quantity

This use case performs ammo re-supply to task force elements based upon knowing their ammo status (type and count) and consumption rates in near-real-time.

Narrative Steps	User Need	System Function to Support User Need	System Requirements to Accomplish Function	Discussion/Sidebar	Parallel Narrative Steps	User Need	System Function to Support User Need	System Requirements to Accomplish Function	Discussion/Sidebar
1. The platform operator {OPS} is alerted that a threshold is reached [ASA]	Alert that ammo level has reached a level/consumption rate by type based on a business rule	Compare ammo levels/consumption rate of monitored assets to thresholds set by business rules. Provide alert that ammo has reached a threshold set by business rules. Provide ammo quantity/consumption rate by type.	1. Monitor ammo levels/consumption rate by type. 2. Record ammo levels/consumption rate on and off platform 3. Operator notification of threshold						
2. The Patrol Leader {OPS}, and other relevant entities (in this scenario, the Bn S-4 and the LCE Operations center) {LG, OPS} are alerted that a threshold is reached [ASA]	Alert that ammo level has reached a level/consumption rate by type based on a business rule	Compare ammo levels/consumption rate of monitored assets to thresholds set by business rules. Provide alert that ammo has reached a threshold set by business rules. Provide ammo quantity/consumption rate by type.	1. Monitor ammo levels/consumption rate by type. 2. Patrol Leader notification on threshold						
3. The patrol leader {OPS} reviews the alert on his command display and validates the information. [ASA]	Threshold alert	Alert user that a threshold has been reached.	1. Adjustable threshold triggering system actions 2. Assess ammo level by comparing to preset business rule. 3. Notification of threshold	Focus is incorporation of logistics information into MAGTF C2 Capset5					
4. The patrol leader {OPS} queries system for impact on mission [ASA]	Determine ammo usage impact on mission	Impact Analysis	1. Compute ability to operationally employ platform in time and space based on current ammo status and environmental conditions.	With this amount of ammo will I accomplish the mission?					
5. The patrol leader {OPS} requests ammo status of other	Determine ammo inventory within patrol	Provide ammo levels of selected assets Impact Analysis	1. Monitor ammo levels 2. Present information 3. Compute ability to operationally employ	With this amount of ammo will I accomplish the mission?	P1. The Bn S-4 and the LCE Operations center {OPS, LG}	Determine ammo status of selected assets	Provide ammo levels of selected assets	3. Monitor ammo levels of selected assets 4. Present information	Focus is incorporation of logistics information into MAGTF C2 Capset4

Ammo Quantity

This use case performs ammo re-supply to task force elements based upon knowing their ammo status (type and count) and consumption rates in near-real-time.

Narrative Steps	User Need	System Function to Support User Need	System Requirements to Accomplish Function	Discussion/Sidebar	Parallel Narrative Steps	User Need	System Function to Support User Need	System Requirements to Accomplish Function	Discussion/Sidebar
vehicles in the patrol [ASA]			weapons platforms in time and space based on current ammo status and projected consumption based on threat conditions.	Threat conditions gets into information exchanges with the intel side.	obtain the platform ammo status on the command display. [ASA]				(Note: The following steps are initiated here and proceed during this activity. They are aimed at enabling a more proactive supply response, rather than waiting for a ammo request and scrambling to respond.) P1 stands for Parallel step #1.
6. The patrol leader is presented with option to send rapid request. [EXE]	Generate and send request	Record and transmit request	1. Data entry form/format 2. Data entry capability 3. Transmission/Delivery		P2. The GCE and the LCE operations center {OPS, LG} anticipate that requests for supply are forthcoming [EXE].	Anticipate ammo re-supply demands	Provide prediction of future re-supply requests	3. Calculate time remaining until ammo threshold crossing of selected assets. 4. Present information	(includes time of previously threshold crossings).
7. The battalion GCE S-4 {LG} receives and verifies completeness and accuracy of the request for supply from the patrol leader on the command display. [ASA]	Information sharing from command system to log system	Interface/data input from command system into log system	1. Command/log system interface and data integrity checks	i.e. Net-centric tactical service	P3. LCE operations center {OPS, LG} obtains the organic ammo stocks situation view. [ASA]	Determine ammo resupply resources	Provide assessment of ammo stocks	3. Monitor ammo inventory, location, and availability by type. 4. Present information.	
8. The battalion GCE S-4 {LG} compares this information with other units (assessment). [ASA]	Determine ammo inventory within battalion	Provide ammo levels of selected units	1. Monitor ammo levels 2. Means for selecting units of interest 3. Present information	User defines/selects which units will be included in view	P4. The decision support tool generates distribution options, distribution schedule, risk assessment, and other factors in anticipation of the need for support. [EXE]	COS generation, ranking (against COA) and prioritization (among COS alternatives)	3. Assess COS generation, ranking and prioritization. 4. Information Presentation	4. Generate list of prioritized COS based on list of evaluation criteria supplied by the commander and staff. 5. Rank the COAs based on the logistics' section ability to execute the COS selected for each COA. 6. Present Information	

Ammo Quantity

This use case performs ammo re-supply to task force elements based upon knowing their ammo status (type and count) and consumption rates in near-real-time.

Narrative Steps	User Need	System Function to Support User Need	System Requirements to Accomplish Function	Discussion/Sidebar	Parallel Narrative Steps	User Need	System Function to Support User Need	System Requirements to Accomplish Function	Discussion/Sidebar
9. The battalion GCE S-4 {LG} looks organically to see if any actions are possible (cross-leveling, use of auxiliary ammo or access to ammo cache). [ASA]	COS generation, ranking (against COA) and prioritization (among COS alternatives)	Assess COS generation, ranking and prioritization. Information Presentation	1. Generate list of prioritized COS based on list of evaluation criteria supplied by the commander and staff. 2. Rank the COAs based on the logistics' section ability to execute the COS selected for each COA. 3. Present Information						
10. The battalion GCE S-4 determines (human decision) that an ammo re-supply is necessary.									
11. The battalion GCE S-4 {OPS} generates and sends a request for supply (ammo) to the LCE Operations Center {LG}. [ASA]	Generate and send request	Record and transmit request	1. Data entry form/format 2. Data entry capability 3. Transmission/Delivery						
12. The LCE operations center {LG} develops the concept of support (COS) [EXE] for the LCE CO {OPS}.	COS generation, ranking (against COA) and prioritization (among COS alternatives)	Assess COS generation, ranking and prioritization. Information Presentation	1. Generate list of prioritized COS based on list of evaluation criteria supplied by the commander and staff. 2. Rank the COAs based on the logistics' section ability to execute the COS selected for each COA. 3. Present Information	1. Decision support tool to compare projected request against available resources at a variety of locations including inventory, personnel, and transportation and develop potential logistics concept of support. a) Feeds into the decision support tool: i. Mission Enemy Terrain Weather					

Ammo Quantity

This use case performs ammo re-supply to task force elements based upon knowing their ammo status (type and count) and consumption rates in near-real-time.

Narrative Steps	User Need	System Function to Support User Need	System Requirements to Accomplish Function	Discussion/Sidebar	Parallel Narrative Steps	User Need	System Function to Support User Need	System Requirements to Accomplish Function	Discussion/Sidebar
				<p>Troops and Fire Support Available – Time Space and Logistics (METT-TSL)</p> <ul style="list-style-type: none"> ii. Ammunition inventory by type and location iii. Personnel availability by type, location, quantity and qualification iv. Transportation availability by type, location, and quantity b. Outputs from the decision support tool: potential logistics courses of action addressing: <ul style="list-style-type: none"> ix. Ammunition supply origin x. Assets (vehicles, aircraft, etc) needed to execute resupply xi. Route to be taken xii. Personnel to be used xiii. Location of delivery xiv. Point of contact xv. Impact on future logistics requirements xvi. Supported unit’s ability to receive the resupply. f. COS risk analysis is performed using commander’s evaluation criteria. g. COSs are compared to each other. h. Tool will rank the COSs. 					
13. Using collaboration	Coordination / negotiation	Collaboratively review COS	1. Interactive and dynamic exchange of information	<i>(Collaboration can involve negotiation</i>					

Ammo Quantity

This use case performs ammo re-supply to task force elements based upon knowing their ammo status (type and count) and consumption rates in near-real-time.

Narrative Steps	User Need	System Function to Support User Need	System Requirements to Accomplish Function	Discussion/Sidebar	Parallel Narrative Steps	User Need	System Function to Support User Need	System Requirements to Accomplish Function	Discussion/Sidebar
tools [EXE], the GCE S-4 {OPS} and LCE {LG} Operations Center negotiate concept of support (COS).	capability		and negotiation process between supporting and supported units (order fulfillment)	<i>between logistics and operational impacts/activities.)</i>					
14. The LCE CO {OPS} decides which COS to execute (human decision) and orders the LCE operations center to execute the approved COS. Order execution is recorded. [ASA]	Select COS, disseminate	Record and transmit order execution. Deliver mission orders to executing units.	1. Data entry form/format 2. Data entry capability 3. Transmission/Delivery						
15. The LCE {OPS} performs order, capacity, production, and execution management to fulfill the request. [EXE]	Order Fulfillment	Perform LCM	See Log OA						
16. Ammo is delivered as agreed. Both the amount of ammo delivered to the platform and remaining on the convoy are automatically recorded and reported by the LCE. [ASA]	Reporting and confirmation of delivery	Record amount of ammo delivered to platform. Record amount of ammo remaining on convoy. Report amount of ammo delivered to platform. Report amount of ammo remaining on convoy.	1. Monitor Ammo levels 2. Report Ammo Levels						
17. Platform monitoring systems	Ammo level	Monitor ammo level Report ammo	1. Monitor Ammo levels 2. Report Ammo Levels						

Ammo Quantity

This use case performs ammo re-supply to task force elements based upon knowing their ammo status (type and count) and consumption rates in near-real-time.

Narrative Steps	User Need	System Function to Support User Need	System Requirements to Accomplish Function	Discussion/Sidebar	Parallel Narrative Steps	User Need	System Function to Support User Need	System Requirements to Accomplish Function	Discussion/Sidebar
automatically record and report ammo re-supply on the platform. [ASA]		resupply							
18. The platform operator {OPS} is notified that a threshold is reached	Notification that ammo level has reached a level/consumption rate by type based on a business rule	Notify platform operator	1. Present Information						
19. The Patrol Leader {OPS}, and other relevant entities (in this scenario, the Bn S-4 and the LCE Operations center) {LG, OPS} are alerted that a threshold is reached [ASA]	Alert that ammo level has reached a level/consumption rate by type based on a business rule	Compare ammo levels/consumption rate of monitored assets to thresholds set by business rules. Provide alert that ammo has reached a threshold set by business rules. Provide ammo quantity/consumption rate by type.	1. Monitor ammo levels/consumption rate by type. 2. Patrol Leader notification on threshold						
20. The impact of the ammo re-supply operation is assessed including the remaining ammo {OPS}. [EXE]	(See Macro Fuel Use Case for concepts to be used for Ammo)								
21. The LCE convoy returns to CSSA verifies {OPS} fulfillment [ASA]	Confirm Order Fulfillment	OMP_Verify OMP_Expense / Liquidate	(See Log Chain Manager)	is this two steps					
22. The LCE and administratively closes the order [EXE].	Order Close-out	OMP_Close Order	(See Log Chain Manager)						