

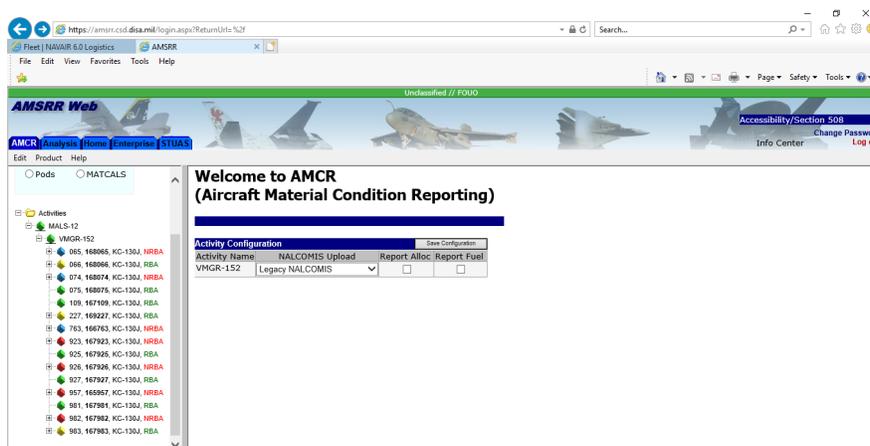
AIRCRAFT MATERIAL CONDITION REPORTING (ANALYSIS PHASE)

1. Introduction

I will be analyzing the aircraft readiness reporting system the Navy and Marine Corps uses to report “daily” status of aviation assets as well as outstanding high priority supply requisitions. The web-based application is called the Aviation Management Supply and Readiness Reporting (AMSRR); however, daily aircraft and material reporting is a sub function of the AMSRR and is called, Aircraft Material Condition Reporting (AMCR). The AMSRR website is linked to a database for retrieval of historical AMCR information through spreadsheets, reports, charts, and graphs. The AMCR output options of the AMSRR web site helps aviation leaders identify trends in aviation maintenance and supply, make acquisition and sun down decisions, and provides quick access to readiness and supply information for situation updates to higher.

2. Description of current systems

As mentioned in the introduction, the current readiness reporting system is a sub function of the AMSRR web based application and is called the Aircraft Material Condition Reporting (AMCR). Multiple users within aviation units manually update, on a daily basis, the current system; then updates are saved and pushed to the next level in the chain of command. A graphic of the web layout is presented below.



The screenshot shows the AMSRR Web interface. The main content area is titled "Welcome to AMCR (Aircraft Material Condition Reporting)". Below the title is an "Activity Configuration" table. The table has columns for "Activity Name", "Report Alloc", and "Report Fuel". The first row shows "VMGR-152" with "Legacy NALCOMIS" selected in a dropdown menu, and checkboxes for "Report Alloc" and "Report Fuel".

Activity Name	Report Alloc	Report Fuel
VMGR-152	Legacy NALCOMIS	<input type="checkbox"/>

On the left side of the interface, there is a navigation menu with "Activities" expanded, showing a list of aircraft units with their respective IDs and status indicators (e.g., VMGR-152, 065, 168065, KC-130J, NREB).

The screenshot displays the AMSRR Web interface. On the left, a tree view shows aircraft status for various squadrons (e.g., MAL5-12, VMGR-152). The main content area is divided into two sections: 'Supply Documents' and 'Maintenance Discreps'.

Supply Documents Table:

Update	DocNum	Previously Reported	Complete	Report	Nomen	NIN	Part Number	Proj Code	EXREP
Update	8285GT98	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	DETECTOR,ICE	014348904	0871HM3	730	No resp
Update	8285GT99	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	DETECTOR,ICE	014348904	0871HM3	730	No resp
Update	8326GT44	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	VALVE, BUTTE	007981672	321502-4-1	730	No resp

Maintenance Discreps Table:

Update	Maintenance Action	Previously Reported	Complete	Report	MATCON	Reason	Status	Start Date
Update	ANTI ICE VALVE	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No MATCON code	No reason code	AJP	11/26/2018
Update	ICE DETECTOR X2	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	No MATCON code	No reason code	AJP	10/12/2018
Update	PMI CONFIGURATION	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	PMCMRBA	M1	M1	7/8/2018

(Web, 2018)

As you can see each aircraft's status is displayed along with supply and maintenance information. A single user from aviation maintenance (aircraft squadron) and aviation supply (logistics squadron) units initiate the AMCR update process each day. Normally the daily update process consumes over two hours of person hours for each. Updates can occur concurrently.

2.1 System objectives and constraints

The overall objective of the system is to provide the highest level of command in Navy and Marine Corps aviation asset readiness numbers to support decision-making. The system answers the question of "Are my aircraft ready to fight and win?" The system is constrained by not providing real time readiness and supply information. Data input is mostly manual "garbage in; garbage out". In addition, the system is only updated once a day therefore; the information accessible is only as good as the last time it was update. Aviation readiness is in a state of constant change so access to "real time" readiness information should be the standard. Furthermore, most of the data is manually inputted and can be manipulated by whomever is inputs it, which can skew readiness numbers.

2.2 Problems with current system

As stated above the AMCR system has multiple problems. The most apparent are: time required to update, manual data entry, and amount of updates per day. In addition, the database is filled with information transcribed from other information systems. The data needed for accurately reporting readiness is already available through the Information Technology, Maintenance Information Systems (MIS), already used within Navy and Marine Corps aviation. As of now, the personnel who update the AMCR mostly transcribe data from the MISs to the AMCR web site. They do this by "hand jamming" updates and then routing updates to higher. The AMSRR system needs to be more collaborative with the other MIS systems so updates can be more timely and accurate.

3. Expected impact of a new system

There are 74 Marine Corps Flying Squadron, and 15 Marine Aviation Logistics Squadrons and many more in the Navy. Each "duty" day at least one person from each of the aforementioned Marine flying and logistics squadrons spends around two hours updating their respective AMCR. That accounts for roughly 23,000 hours inputting transcribed data into the AMCR system (equation $(74+15)260=23,140$, assuming

260 duty days). Reengineering the AMCR system to receive more updates from the in use MIS systems would save the Marine Corps approximately 23,000 person hours. Did I mention the personnel making the daily inputs are usually key players within the flying squadron maintenance department or logistics squadron?

3.1 Impact on the firm's organization structure

The Navy and Marine Corps organizational structure would not require change. In fact, the key players currently making AMCR updates would be more readily available to lead their respective sections, and have a better quality of life, which ultimately will positively affect aviation readiness.

3.2 Impact on the firm's operations

The Navy and Marine Corps operations would not be affected by the purpose AMCR change.

3.3 Impact on the firms resources

The Navy and Marine Corps aviation enterprise would benefit from this change. As mentioned above key leaders would have more face time to lead their respective units, allowing thinking that is more critical, resource acquisition, and better decision making. With better decisions comes better resource acquisition and aviation asset readiness.

3.4 Economic and Noneconomic return

Economic return on implementing this change is best summarized as aviation and material readiness increase. As previously, stated, key leaders would have more time to make aviation and material readiness decisions. More time allows for better decisions.

4. The scope of recommended system design project

The overall scope of the project is to redesign the current AMSRR web app AMCR subsystem to have collaborative inputs from the current Intermediate maintenance activity (IMA) MIS and Organizational maintenance Activity (OMA) MIS (operated by the SPAWARE company). This redesign project must allow the end user a “one click” or “automatic” update option in order to provide more timely and accurate updates to higher command.

4.1 Tasks to be performed

- Link IMA and OMA MISs to AMCR for high priority supply requisitions, and maintenance updates on downing and partial mission capable discrepancies.
- Create “one click” AMCR update
- Create “automatic: AMCR update

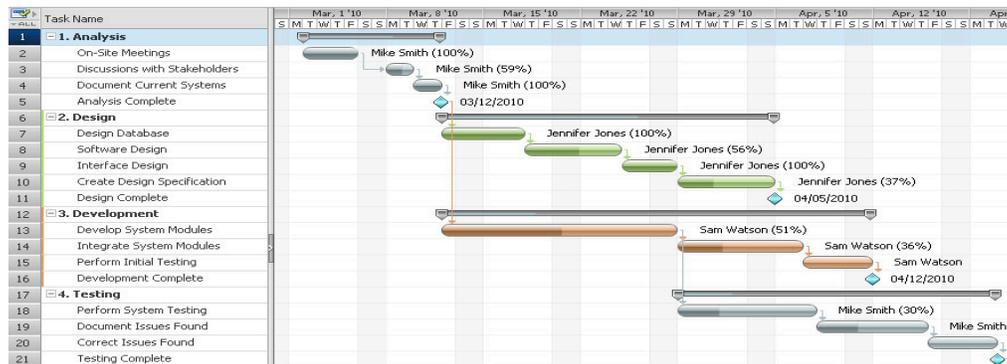
4.2 Human resource requirements

Current employees of the AMSRR web application team would need tasked to be part of a project management team complete with a project manager. Once the team is comprised, they would need to

collaborate with the end users and SPAWARE Company in order to redesign the AMCR subsystem to meet scope.

4.3 Schedule of work

A Gantt chart will be used to depict the schedule of work. The chart can be used to determine what order project events need to take place, what task can be done concurrent with others, what is the critical path, what team member oversees what task, and duration of the project. An example is below:



(Margaret, 2013)

4.4 Estimated cost

Cost estimation will be completed by a professional cost evaluation service. The service will be required to estimate cost to redesign the AMCR system to meet scope. Cost will be revealed to the customer before the design phase begins.

5. Identify end-user information needs

The end user desires “one click” or “automatic” AMCR update ability. The data required to update the AMCR is already available from SPAWARE systems currently in use at the OMA and IMA. Functionality to make manual updates needs to remain in order to correct OMA and IMA data discrepancies, better articulate supply statuses, and maintenance discrepancies.

6. Summary

The analysis of this project yields the following: The current AMCR system is antiquated and is in need of redesign in order to allow AMSRR web app AMCR subsystem user to have “one click” or “automatic” updates. The updates must contain real time inputs from the current Intermediate maintenance activity (IMA) MIS and Organizational maintenance Activity (OMA) MIS (operated by the SPAWARE company). This will allow the end user to provide more timely and accurate updates to higher.

References

Margaret. (2013, 11 24). *How to create a Gantt Chart in Excel*. Retrieved from Legal Design Lab: <http://www.legaltechdesign.com/2013/11/how-to-create-a-gantt-chart-in-excel/>

Web, A. (2018, 11 29). *AMCR*. Retrieved from AMSRR Web: <https://amsrr.csd.disa.mil/login.aspx?ReturnUrl=%2f>

AIRCRAFT MATERIAL CONDITION REPORTING (SYSTEM DESIGN PHASE)

1. Introduction

Reengineer the Aviation Management Supply and Readiness Reporting (AMSRR) web based application sub function, Aircraft Material Condition Reporting (AMCR), to link / collaborate with Organizational and Intermediate maintenance level MISs operated by SPAWARE in order to allow the end user to have “one click” or “automatic” AMCR update ability.

2. System objectives and constraints

Establish a positive data link between the following MISs operated by SPAWARE: Optimized Organizational Maintenance Activity (OOMA) and Naval Aviation Logistics Command Management Information System- Intermediate Maintenance Activity (NALCOMIS-IMA)

3. Possible system alternatives

The only alternative is to discontinue use of the AMCR system and redesign OOMA and NALCOMIS-IMA systems to collaborate data in order to form readiness reports that meet higher command information requirements.

4. The recommended design project

Link AMCR web based application data with OOMA and NALCOMIS-IMA data to allow end user “one click” AMCR update option. Keep current functionality for manual updates to refine updates before sending to higher.

4.1 Tasks to be performed

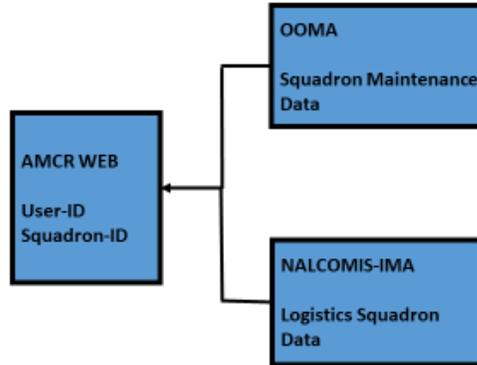
- Reengineer AMCR web application design to have “one click” update option
- Design AMCR software to establish link / interface with OOMA database
- Design AMCR software to establish link /interface with NALCOMIS-IMA database
- Design AMCR software to receive OOMA and NALCOMIS-IMA data
- Create Design specification
- Complete Design

4.2 System Specifications

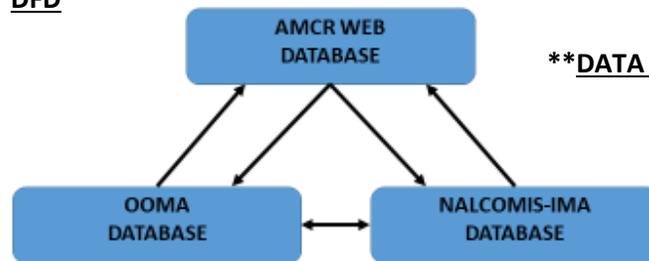
The most important feature will be the addition of a “one click” option to the current AMCR web page to allow for automatic data uploads / updates from the OOMA and NALCOMIS-IMA systems. Further system specifications will be established via the AMSRR web business analyst and the customer.

4.3 System Design to include: DFD's, ERD's, Flowcharts as needed.

System design requires a one AMCR web to many OOMA and NALCOMIS-IMA databases. Data must be requested to OOMA and/or NALCOMIS-IMA and then data is pushed back to AMCR by OOMA and/or NALCOMIS-IMA. The individual user of the AMCR system is linked with appropriate OOMA and NALCOMIS=IMA databases based on his or her login credentials. See below ERD and DFD examples:

ERD

➔ = 1:M (ARROW POINTS TO "1" SIDE OF ONE TO MANY RELATIONSHIP)

DFD

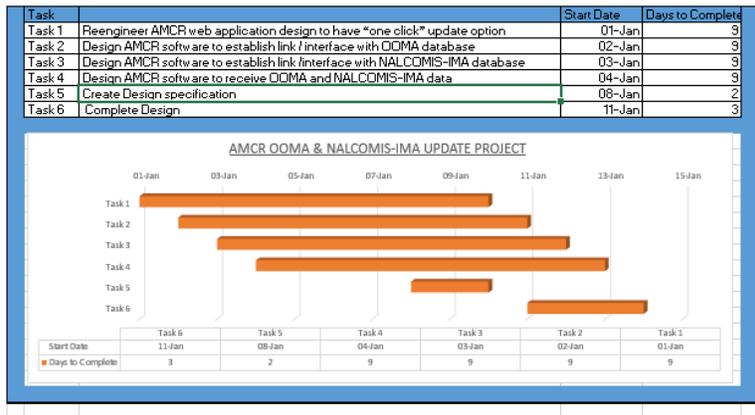
****DATA FLOWS IN ALL DIRECTIONS**

4.4 Human resource requirements

- PROJECT DIRECTOR
- PROJECT MANAGER
- USER TEAM (AT LEAST 4: AMCR, OOMA, NALCOMIS-IMA, SENIOR AVIATION LEADER)
- APPLICATION TEAM (AT LEAST 4: WEB DESIGNER, CODER, SOFTWARE DEVELOPER, SPAWARE LIAISON, TESTER)
- TECHNICAL TEAM (AT LEAST 5: HARDWARE, SOFTWARE, DATABASE, PROCEDURES, TESTING/ TROUBLESHOOTING)

4.5 Schedule of work

SCHEDULE OF WORK



4.6 Estimated cost

ESTIMATED COST
SYSTEM DESIGN AMCR UPDATE

DIRECT COST		REMARKS
Project Management Team Wages	\$33,600	80 Person Hours X 15 person = 1,200 HRS (wage average \$28.00 per hour)
Office Supplies	\$500	
Computer Equipment	\$5,000	
Travel to SPAWARE / End User integration	\$8,000	
Subcontract for Business Analyst and Estimat	\$2,000	
INDIRECT COST		REMARKS
Office Space Rent	\$1,400	14 days at \$100 per day
Total Project Cost		
Total Project Cost	\$50,500	

5. Expected impact of the system

System should not be degraded more than 12 hours during final implementation. Update can be pushed during off-shift hours to limit impacts on customer.

5.1 Impact on the firm's organization structure

Job security. As stated previously the data being input into the AMCR system is already available via OOMA and NALCOMIS-IMA. The customer could request development of SPAWARE systems to produce decision-making tools current AMCR produces. Therefore, this must be a success to ensure the customer's continues use of this application / firm.

5.2 Impact on the firm's operations

There will be negligible impacts on this firm's operation. Some members of the current team will be pulled from regular work to make up the project management team; however, there are currently no projects in work.

5.3 Impact on the firm's resources

A database that replicates current AMCR application needs created in order to develop and implement the proposed change. In order to establish the test database / system a server and accompanying hardware will be required as well as a space large enough for the team to work out of.

6. Summary

In order to reengineer the Aviation Management Supply and Readiness Reporting (AMSRR) web based application sub function, Aircraft Material Condition Reporting (AMCR), to link / collaborate with Organizational and Intermediate maintenance level MISs a project management team will need developed to update current information system to meet customer scope. It is imperative the firm meets customer demands due to potential solutions from other vendors.