
U.S. AFRICA COMMAND
10th
UNITED STATES AFRICA COMMAND
ANNIVERSARY
2008 - 2018
10 Years of Partnership: Going Further Together

Life Cycle Systems Management & Acquisition

Force Management

Develop a capable combat force within constrained resources.

We purchased three models of the MRAP from South Africa, but accepted risk due to the urgency of the requirement and did not give proper consideration to each step of the life cycle model.

Separation

Release/remove people & equipment from military control; dispose of facilities or real property.

Proper separation was not considered and the cost of bringing back the MRAP from deployed locations was too high so we put them in the FMS program and started a program to cut them into scrape metal.

Acquisition

Obtain people, equipment, money, & facilities

Because of the urgency of the situation we rushed through the capability process and did not fully understand the requirement. This required us going back to the capability process at a later time.

Development

Increase force capabilities; bring people & equipment to a more advanced state.

Little consideration was given to how to develop the MRAP in development so many capabilities have been added throughout its life cycle.

Training

Instill discipline, instruction, & practice designed to create efficiency & proficiency

We accepted risk and didn't take the time, initially, to consider what training would be required, such as operator and maintenance training, which resulted in increased risks and costs.

Sustainment

Provide for people, organizations, & equipment by furnishing means of funds.

There was insufficient capacity for production of replacement parts and because much of sustainment was an after thought issues such as maintenance procedures and future funding had to be dealt with increased risk and costs.

Distribution

Allot people & equipment to organizations according to priorities

We distributed the MRAP with little thought as to who could use them. As a result many units had to leave their MRAPs parked because the environment they were in did not support MRAP use.

Deployment

Project a combat force rapidly to any place in the world to satisfy a national requirement

We knew where the greatest need was, but did not consider the cost of redeployment or future use.

Consideration for developing an Acquisition Strategy

Is your acquisition strategy based on:

Threat: What is the threat the military must prevent or defeat and is the objective to destroy, disrupt or degrade the threat?

Policy: What strategic objectives is the military expected to accomplish? Is the military capable of serving both domestic and international goals and interests?

Resources: What resources are dedicated to the readiness of the military (personnel, budget, equipment)? Is the level of resources sustainable? What is the impact of increases/decreases on military readiness?

Domestic Issues: How does the military serve the people and national institutions? What role does the military play in responding to national disasters?

Each of these considerations needs to be addressed when building an acquisition strategy to ensure the most effective and responsible force.

“Capabilities-Based Acquisition”

Focusing acquisition planning on determining the essential capabilities required to accomplish the missions directed by strategic guidance can significantly improve defense institutional effectiveness, efficiency and sustainability:

- Do your acquisitions accomplish strategic goals within acceptable risk and available resources as determined by civilian and military leaders?
- Do your acquisitions possesses the required capabilities to adapt and conduct a range of military operations?
- Are your acquisitions capable of accomplishing ALL missions to standards mutually agreed upon by both civilian and military leaders?.
- Are your acquisitions not just focused on current threats and force requirements, but examine how they change over time to meet a broad range of military missions that could include:
  - Defense against external adversaries to secure and protect national borders/resources?
  - Internal Defense against criminality, terrorism, insurgency and instability (to reinforce police)?
  - Response to disasters - natural and man-made disasters?
  - Participation in multinational operations - peace, stability or disaster response?

Life Cycle Construct

DOCTRINE – The way we fight

ORGANIZATION – How we organize to fight

TRAINING – How we prepare to fight

MATERIAL – How we equip the force

LEADERS – How to prepare and educate the force

PERSONNEL – How we source the force

FACILITIES – How we support the force with installations

POLICIES – How we provide strategic guidance

A construct to define & validate requirements

Integrated Product Support Elements

Product Support Management

Plan, manage, and fund product support across all IPS Elements, from design through disposal.

Sustaining Engineering

Ensures continued operational readiness of a system as the system ages or encounters premature failures.

Supply Support

Consists of all management actions, procedures, and techniques necessary to determine requirements to acquire catalog, receive, store, transfer, issue and dispose of spares, repair parts, and supplies.

Maintenance Planning & Management

Establishes maintenance concepts and requirements for the life of the system, for hardware and software

Packaging, Handling, Storage & Transportation (PHST)

The combination of resources, processes, procedures, design, considerations, and methods to ensure that all system equipment, and support items are preserved, packaged, handled, and transported properly,

Technical Data

Consists of recorded information of scientific or technical nature.

Integrated Product Support Elements

Support Equipment

Consists of all equipment (mobile or fixed) required to support the operation and maintenance of a system.

Training & Training Support

Consists of the policy, processes, procedures, techniques , planning, and provisioning for the training base including equipment used to train civilian and military personnel to acquire, operate, maintain, and support a system.

Manpower & Personnel

It is essential to identify and acquire personnel (military and civilian) with the skills and grades required to operate maintain, and support systems over their lifetime. Early identification is essential.

Facilities & Infrastructure

The permanent and semi-permanent real property assets required to support a system. It includes facilities fo training, equipment storage, maintenance, supply storage, and ammunition storage.

Computer Resources

Facilities, hardware, software, documentation, manpower, and personnel needed to operate and support mission critical computer hardware and software systems.

Life Cycle Sustainment Problem

Your military is procuring 64 Cougar vehicles over the next three years.

- What logistical challenges will you need to plan for before these vehicles arrive?
- How will sustain them throughout their life cycle?
- How will you ensure the sustainment requirements for these vehicles are funded?
- What documents can you use to help plan for the sustainment of these vehicles?
- What additional cost are required during a system's life cycle?
    - Personnel
    - Training
    - Maintenance

Problem Statement

Develop a Life Cycle Model (Years 0-20) highlighting the cost associated with the below procurement to show the total cost of ownership for 64 Cougars

The Army is procuring **64 Cougar vehicles** and will take receipt of them over three years (**16 vehicles year 0, 16 vehicles year 1, 32 vehicles year 2**) The **procurement cost ($700,000) will be paid at the time of delivery.** Each Cougar company will operate 16 vehicles for a total of **4 Cougar companies** with **64 vehicles**. The Army will decommission in years 18-20 (**16 vehicles year 18, 16 vehicles year 19, 32 vehicles year 20**)

Personnel - The personnel turnover rate is **25% per year (.25x344=86)**
2 operators (1NCO/1Enlisted) plus a gunner (1Enlisted) per vehicle (**64x3=192**)
Maintenance Team per company staffed with 1 officer, 3 NCOs, and 10 enlisted (**14x4=56**)
Company headquarters (HQ) will have four officers, 5 NCOs and 15 enlisted (**24x4=96**)

Salary per Person per Year
Officer: $130,000
NCO:$100,00
Enlisted: $60,000

Training

	Operators	
	Basic	Advanced
NCOs	2 weeks	4 weeks
Enlisted	2 weeks	8 weeks

Maintenance Personnel
Basic (All): 2 weeks
Advanced (Officers and NCOs): 4 weeks
Advanced (enlisted): 8 weeks

HQ Personnel
Basic (All): 1 week
Advanced (Officers and NCOs): 1 week

Training Costs (including per diem and travel)
Basic: $1600 / person / week
Advanced: $3000 / person / week

Problem Statement

Operations Maintenance

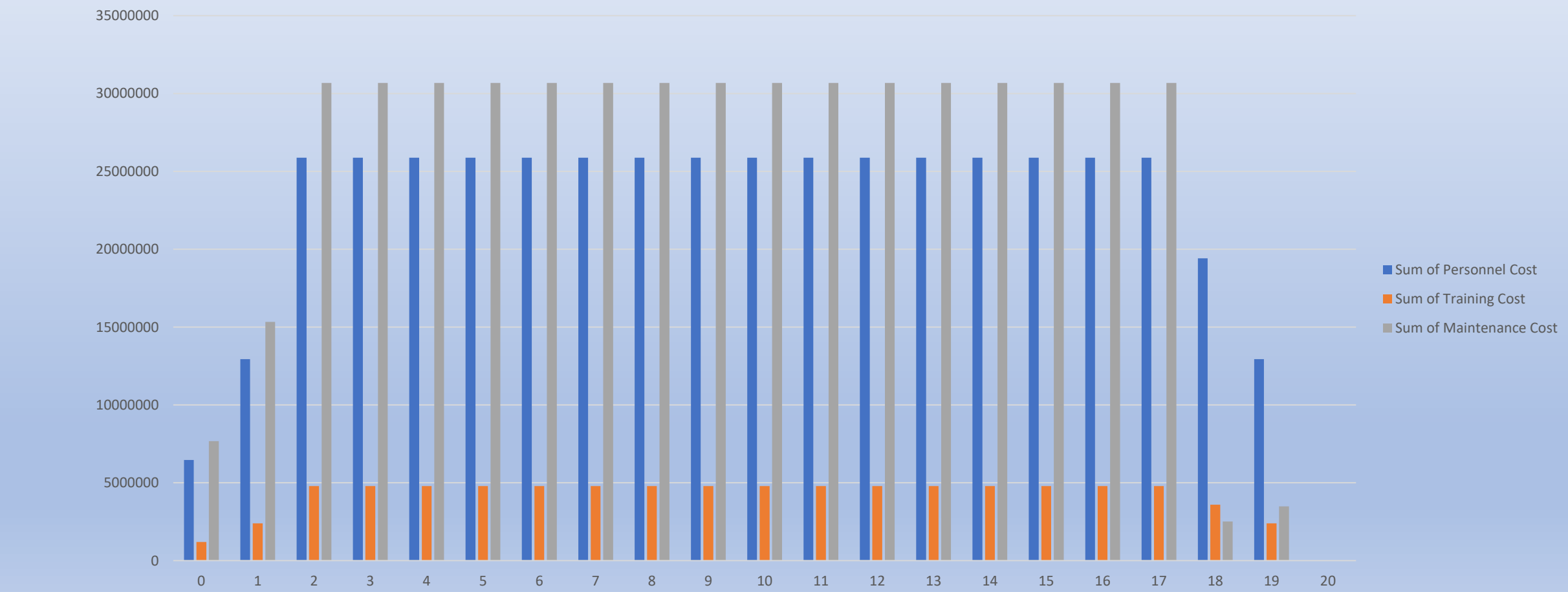
- Each Cougar will operate an average of **240 hrs per year** (approximately **2,400 miles per year**), and the **operating cost** (including Petroleum, Oil and Lubricant (POL)) is estimated to be **$100 per hour**.
- Average repair cost per faulty component is **$5,000** plus transportation cost of **$200** per failure.
- Each company maintenance center requires **$500,000** investment for the facility installation and test equipment. Initial set spares will be delivered when the vehicles are delivered and facility and the test equipment costs will be charged at the same time.
- Depot overhaul will be done every 5 years. It is expected to take three months (**90days**) and costs **$50,000** including transportation.
- For major components (listed below) we assume that fault isolation and swap with a spare takes an average of **2 days**.

Cougar components	MTBF (op hrs)	Unit Cost	# of units per sys-tem	Repair TAT (days)
LASER SENSOR UNIT	500	$50,000	1	40
CONTROL DISPLAY UNIT	500	$25,000	1	40
AXLE	2,000	$25,000	2	40
ENGINE	1,000	$40,000	1	40
TRASMISSION	1,500	$30,000	1	40

Cougar Life Cycle Model

Row Labels	Sum of Personnel Cost	Sum of Training Cost	Sum of Maintenance Cost
0	$6,470,000	$1,198,400	$7,668,400
1	$12,940,000	$2,396,800	$15,336,800
2	$25,880,000	$4,793,600	$30,673,600
3	$25,880,000	$4,793,600	$30,673,600
4	$25,880,000	$4,793,600	$30,673,600
5	$25,880,000	$4,793,600	$30,673,600
6	$25,880,000	$4,793,600	$30,673,600
7	$25,880,000	$4,793,600	$30,673,600
8	$25,880,000	$4,793,600	$30,673,600
9	$25,880,000	$4,793,600	$30,673,600
10	$25,880,000	$4,793,600	$30,673,600
11	$25,880,000	$4,793,600	$30,673,600
12	$25,880,000	$4,793,600	$30,673,600
13	$25,880,000	$4,793,600	$30,673,600
14	$25,880,000	$4,793,600	$30,673,600
15	$25,880,000	$4,793,600	$30,673,600
16	$25,880,000	$4,793,600	$30,673,600
17	$25,880,000	$4,793,600	$30,673,600
18	$19,410,000	$3,595,200	$2,512,000
19	$12,940,000	$2,396,800	$3,480,000
20	$0	$0	$0
Grand Total	**$465,840,000**	**$86,284,800**	**$519,774,800**

Cougar Life Cycle Model



Life Cycle Costing

- R&D
- Testing
- Production
- Facilities
- Operations
- Maintenance
- Personnel
- Environmental compliance
- Disposal

Cost of a program over its full life

Summary

- It is essential to consider each step of the life cycle model when developing a capability
- An acquisition strategy should consider at minimum: Threat, Policy, Resources, and Domestic Issues
- Using a capability based acquisition strategy can be most effective and responsible
- Planning for the sustainment of capabilities is a continuous process that must be injected in every step and decision of the acquisition process
- The Integrated Produce Support (IPS) Elements are the functional components which make up the required product support infrastructure for equipment and should be considered when planning for an acquisition to ensure sustainment throughout the equipment's life cycle.

Notional Life Cycle Costs