

# Mission Emphasis and the Determination of Needs for New Weapon Systems

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Research Group: Lean Advancement Initiative (LAI)

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## Motivation / Problem

The process to determine needs for new weapon systems has produced some notable successes



And some results that were not well aligned perceived military needs



Military strategy is heavily influenced by the weapons procured. These weapons are affected by decisions made even before the concept exploration phase. Many of those decisions are made external to the documented requirements generation process. With budget pressures and ever-increasing costs for new weapon systems, determining the military needs that actually should be met, and advancing feasible ideas to successfully meet those needs, is critical.

## Key Questions

1. How can undocumented inputs to the determination of needs for new aircraft be understood in the overall process, and how do they influence the selection of new systems?
2. What influences can be exerted on the “dominant mission emphasis” under which the Air Force operates in order to meet objectives?

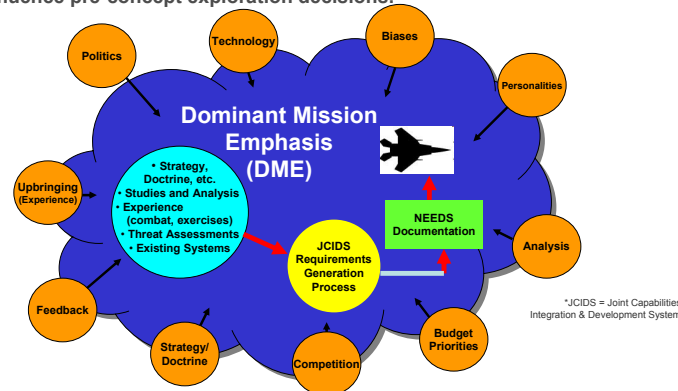
## Methodology

Analysis of historical case studies of USAF fighter aircraft.

- >Historical:
  - >Evidence shows that the phenomenon is time independent.
  - >Security, legal, and access issues are minimized.
  - >Success or failure of a program can be determined.
- >Case Studies:
  - >Most appropriate (long cycle times, few cases, how / why questions)

## The Research

When dealing with very complex problems with a large number of variables, the human brain seeks ways to bound the problem. One way this is done in the development of weapons is by emphasizing a selected mission on which development efforts are focused. This “Dominant Mission Emphasis” (DME) incorporates the undocumented inputs that influence pre-concept exploration decisions.



During the early history of the Air Force a DME of strategic nuclear bombardment influenced the design of fighters.



As factors arose that decreased the validity of that DME, it gave way to a new one of close-in air-to-air fighters with a multirole capability.



## Results

- For a change in DME to occur it requires changing conditions, and a recognition that conditions have changed.
- Recognition of the need for a change in DME depends on the ability of someone or some person or group to convince enough decision makers that conditions have changed.
- Leadership turnover (“regime change”) was not required in order to effect a change in DME, but happened as a result of it.
- Analysis is only one of many inputs into establishing a DME, and therefore only one input into influencing the development of a new weapon system.
- Strategy is interrelated with the DME. It influences, as well as being influenced by it.

## Application

Conditions exist today which call into question the validity of the close-in air-to-air, multirole fighter DME. As war has shifted from large-scale conventional combat to antiterrorism efforts, counter-insurgency operations, and nation building there have been calls for an emphasis on development assistance in a balanced approach with kinetic operations.



An understanding of how undocumented inputs influence the DME can help decision makers determine if a change in DME is necessary, and if so how to facilitate it. This will lead to a more rational approach to determining needs for new weapons.

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