



Risk, Uncertainty, and Trouble: Escaping the RUT of Program Instability

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2009*



Agenda

- Appropriations
 - Purpose, Amount, and Time
- Risk -- examples in O&M, Acquisition
- Risk Uncertainty and Trouble
- Ethics
- Decision Support
- Sources & GAO Excerpts



Appropriations

- O&M -- 3400/3500
- R&D -- 3600
- Procurement -- 3010/3020/3080
- MILCON & MFH
- Accepting a “project” schedule
 - Base Year (BY) -- \$B, \$M, \$K
 - Then Year (TY) composite rate (outlay profile)
 - 11% 42% 34% 9% 4%



Risk

- Cost Risk – How much?
- Technical Risk – What are we doing?
- Schedule Risk -- When? How long?



AAFES in Cheyenne Mt

- August 2004; Mess Attendant contract
- New proposal --\$500K over budget
- Dining Facilities in 2 locations
- 3 people without separate rations
- A captive clientele



Making Light Bulbs





A-12



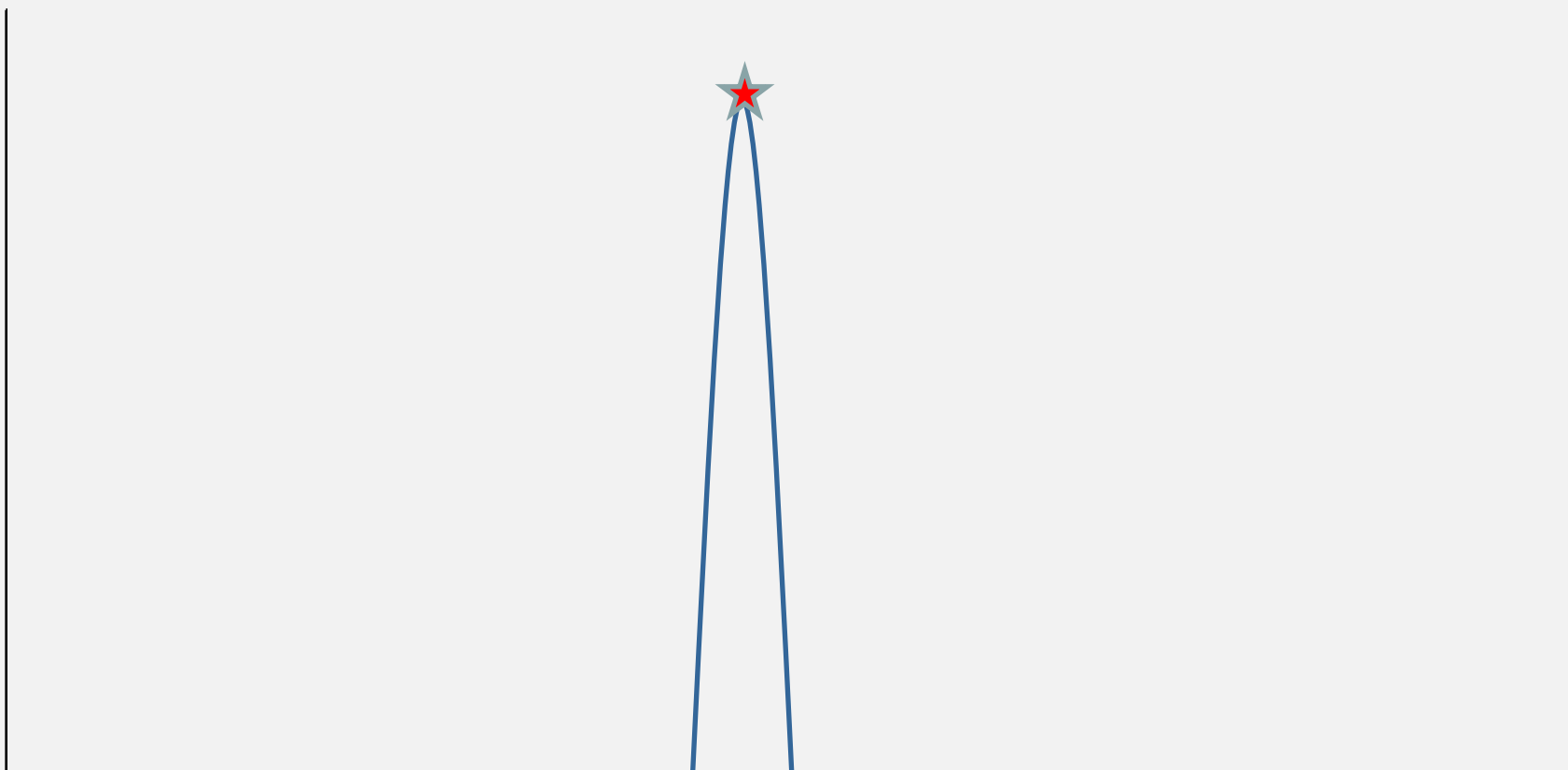


Narrow, Normal, Certain





Narrow, Normal, Certain



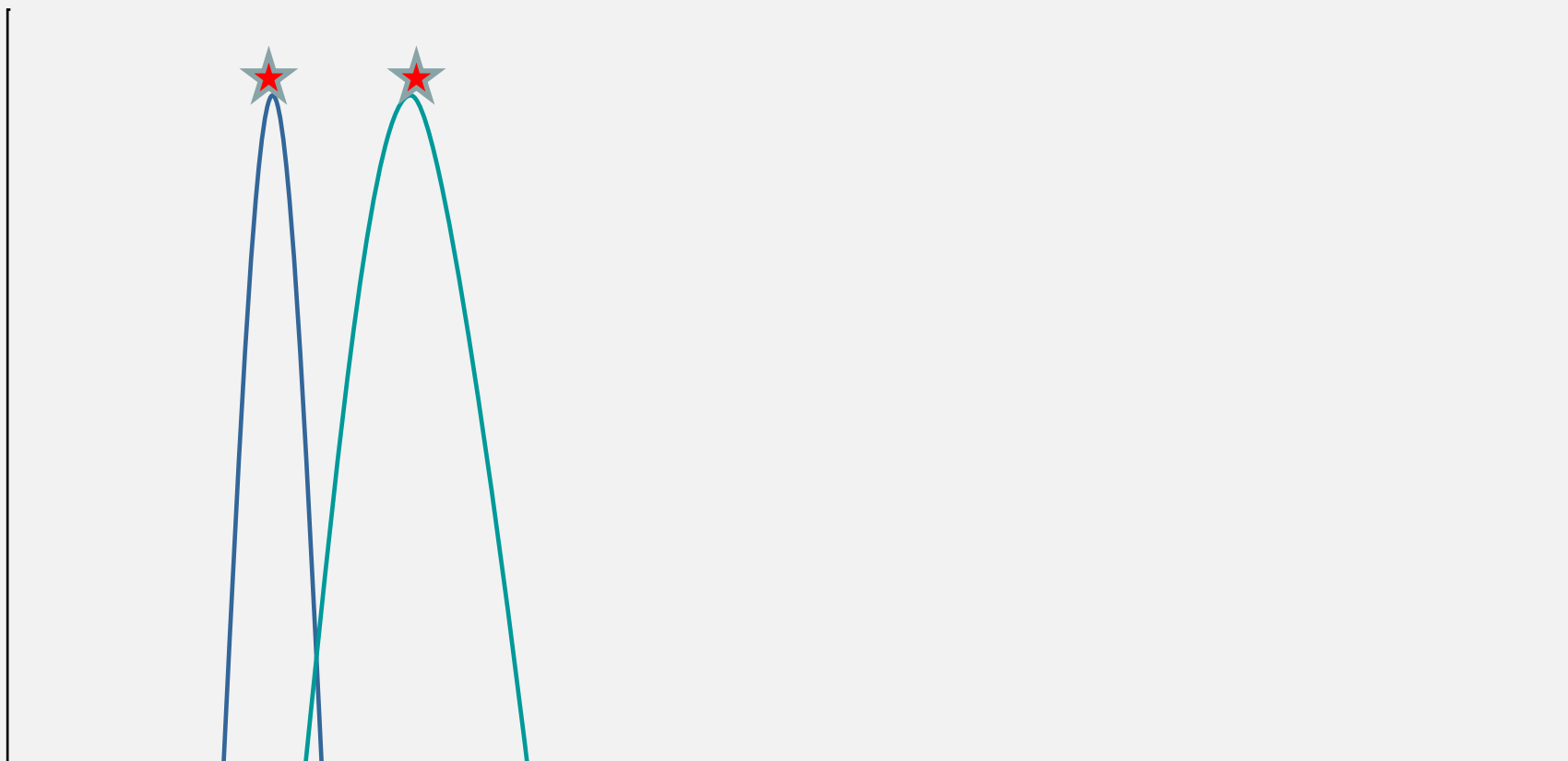


2 Different Processes



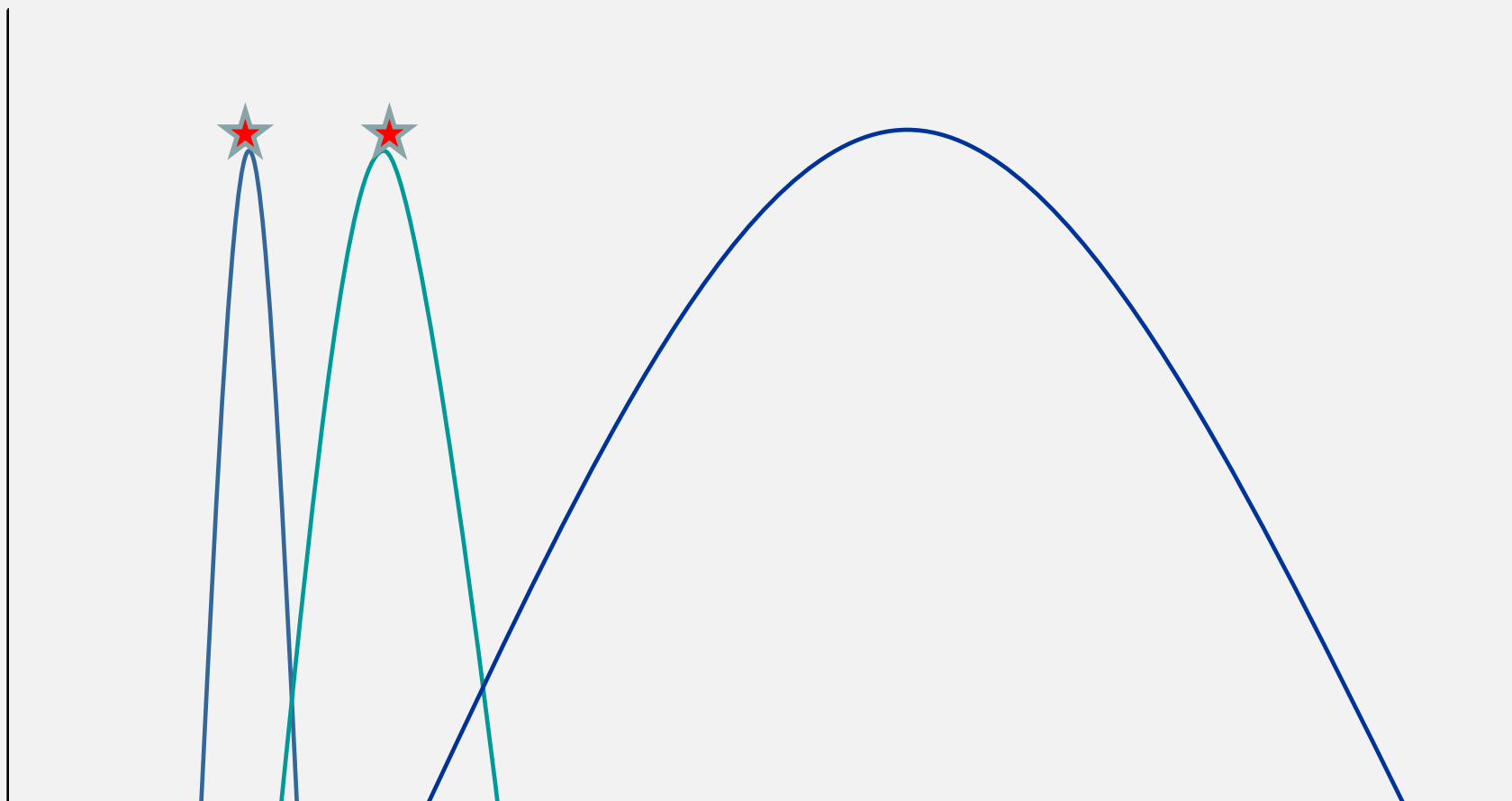


2 Different Owners



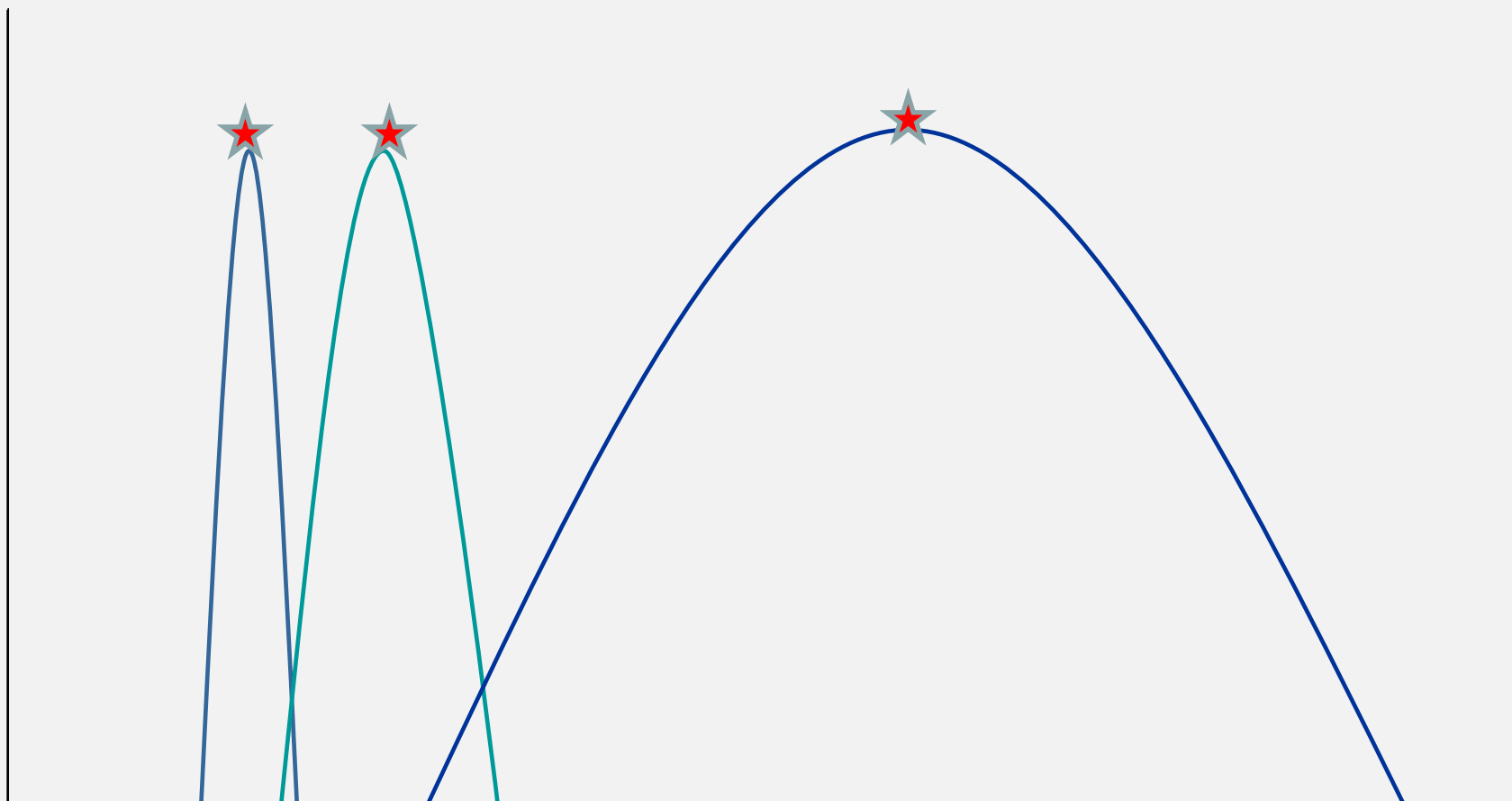


3 Different Processes



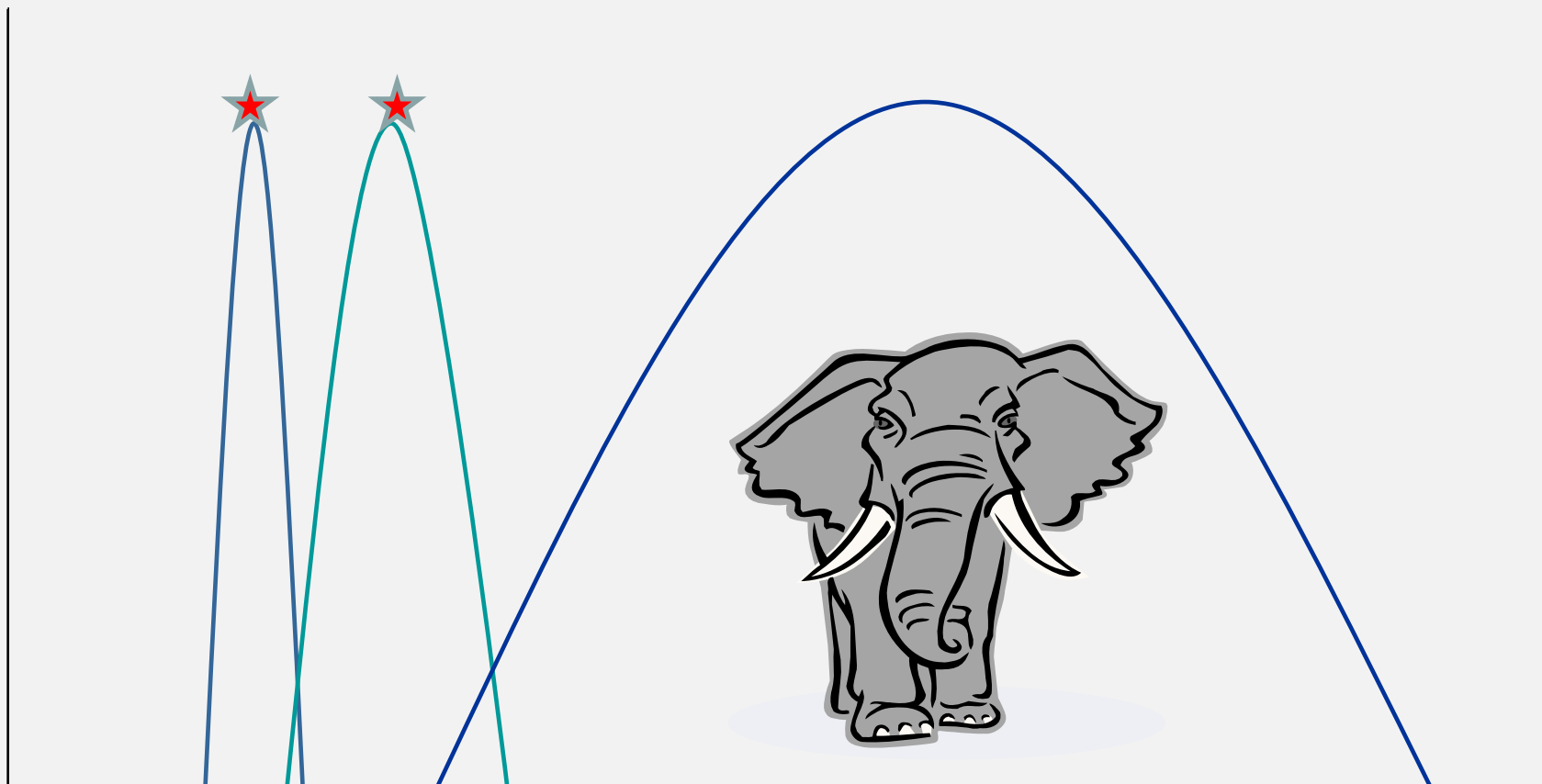


What Do We Communicate?



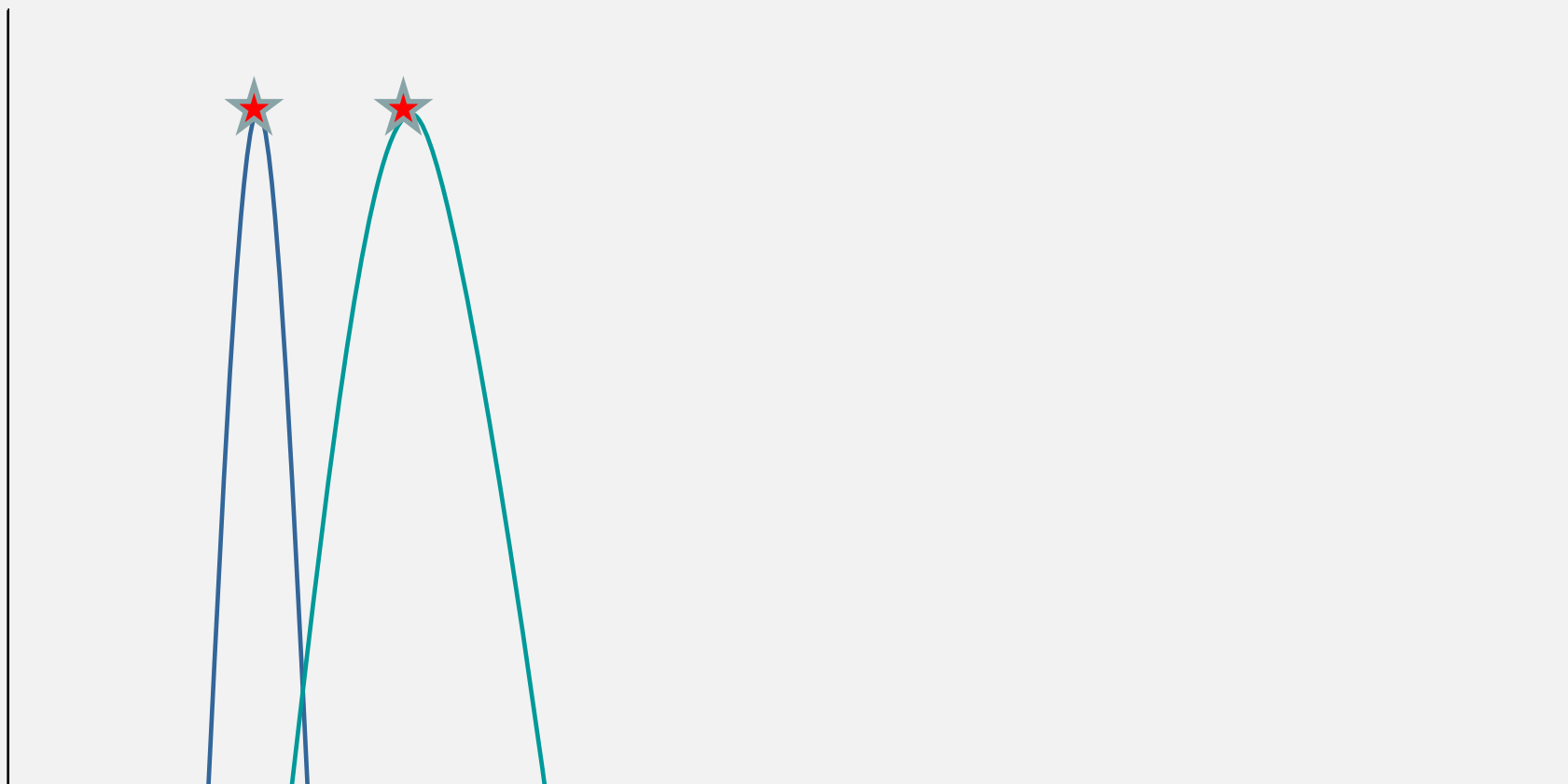


The elephant in the room



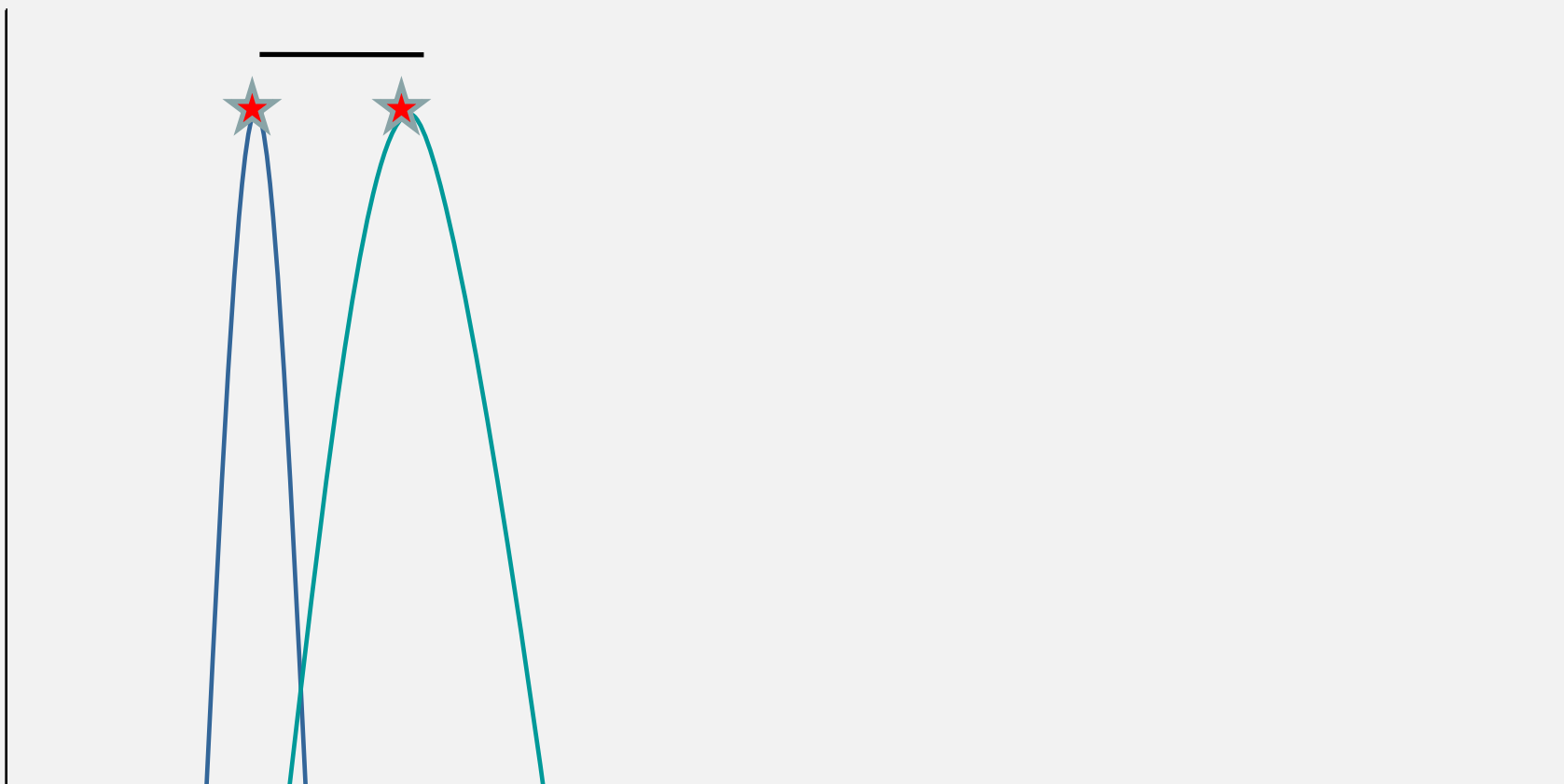


Making the Elephant Disappear



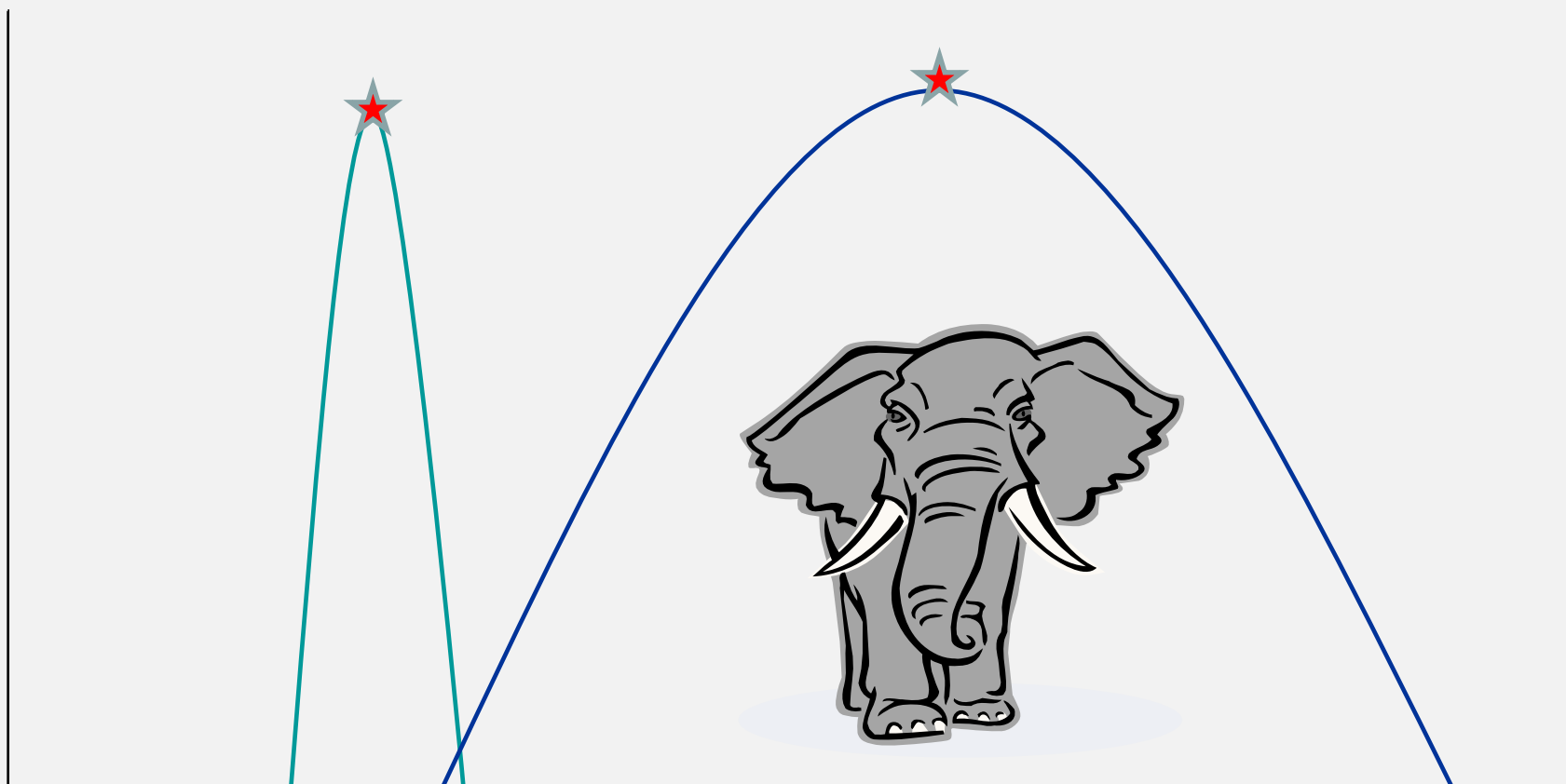


HQ Budget Drill



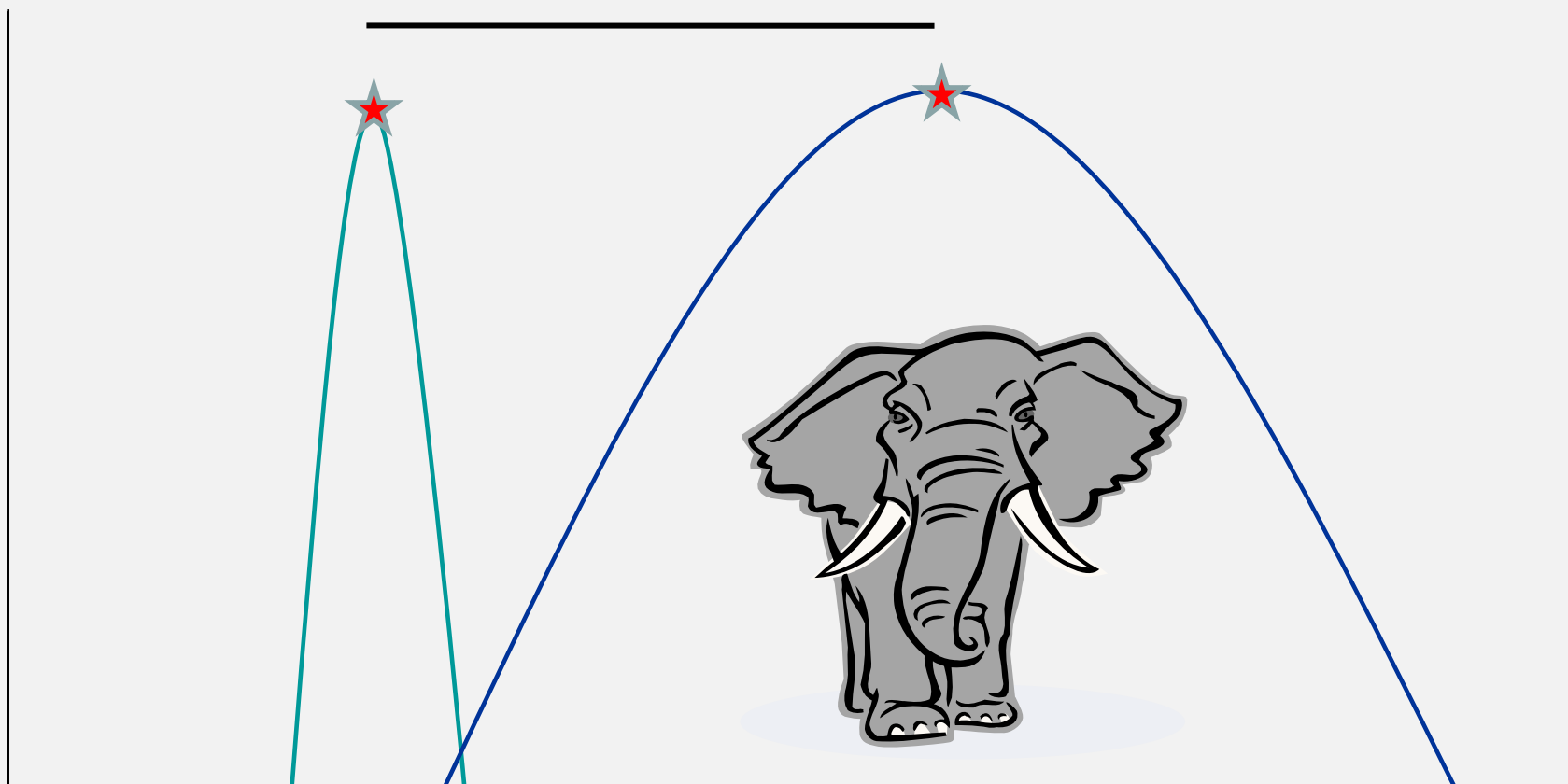


Not Gone at the Working Level



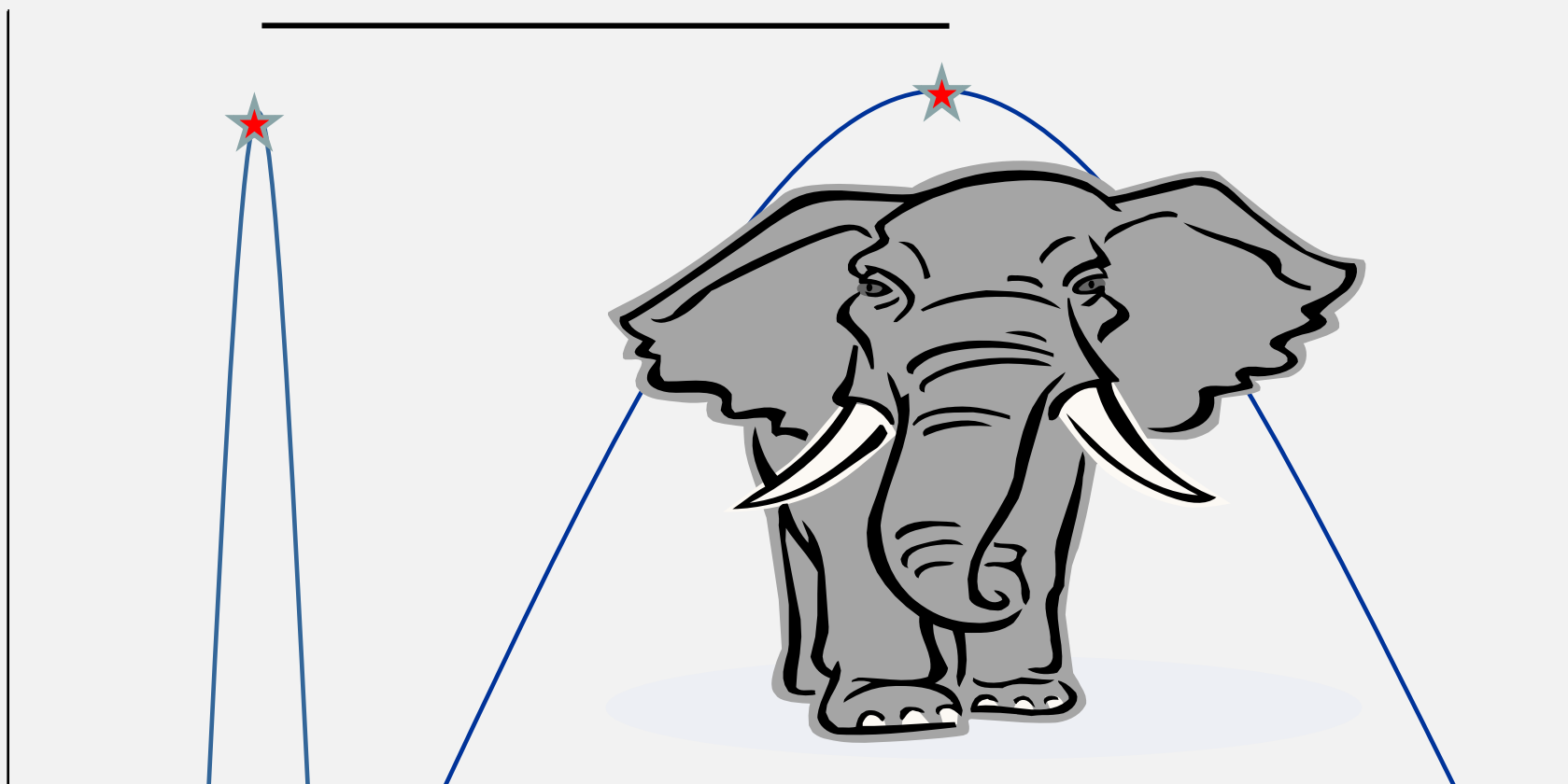


Accepted Risk



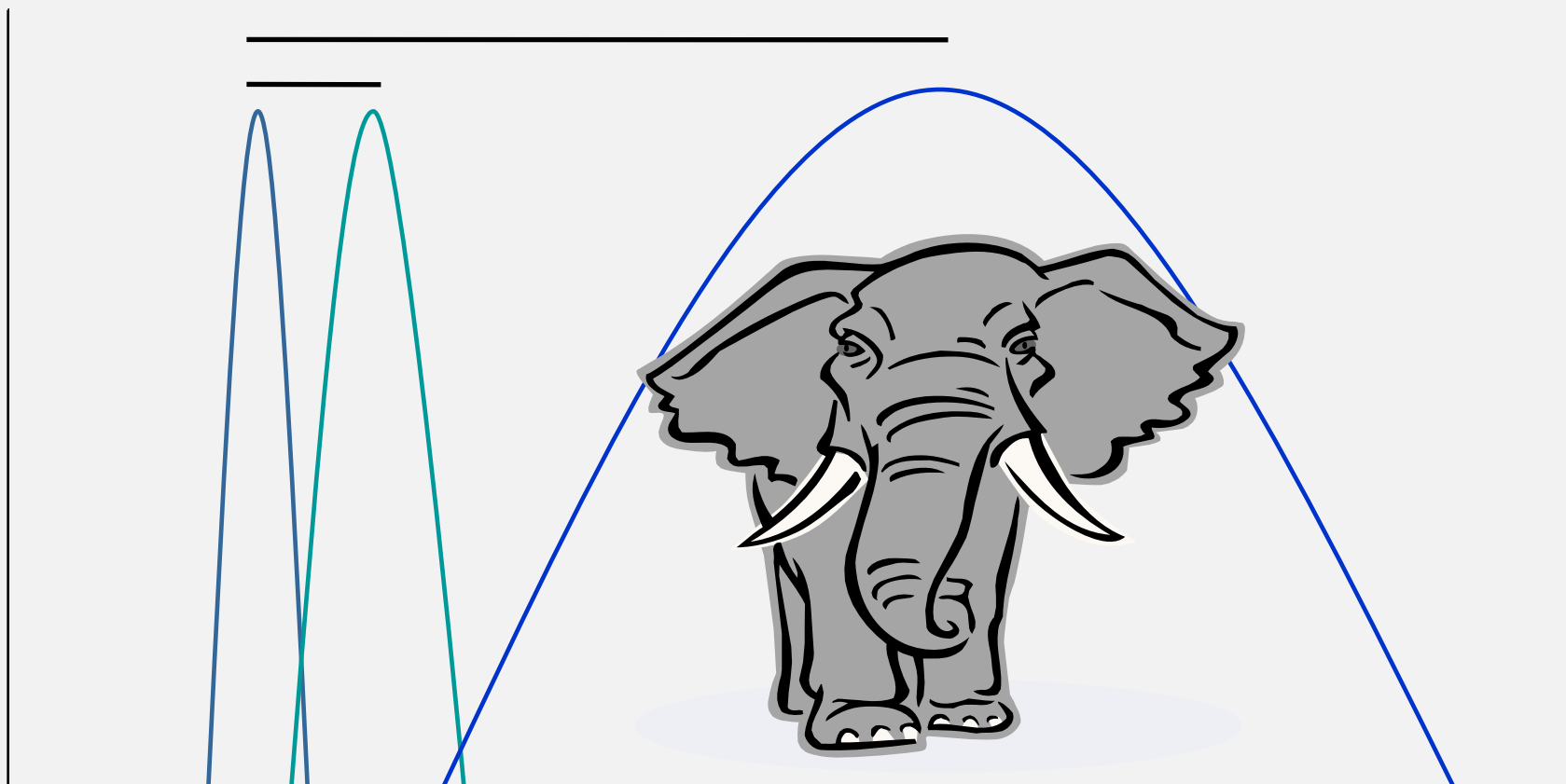


Unexpected Risk



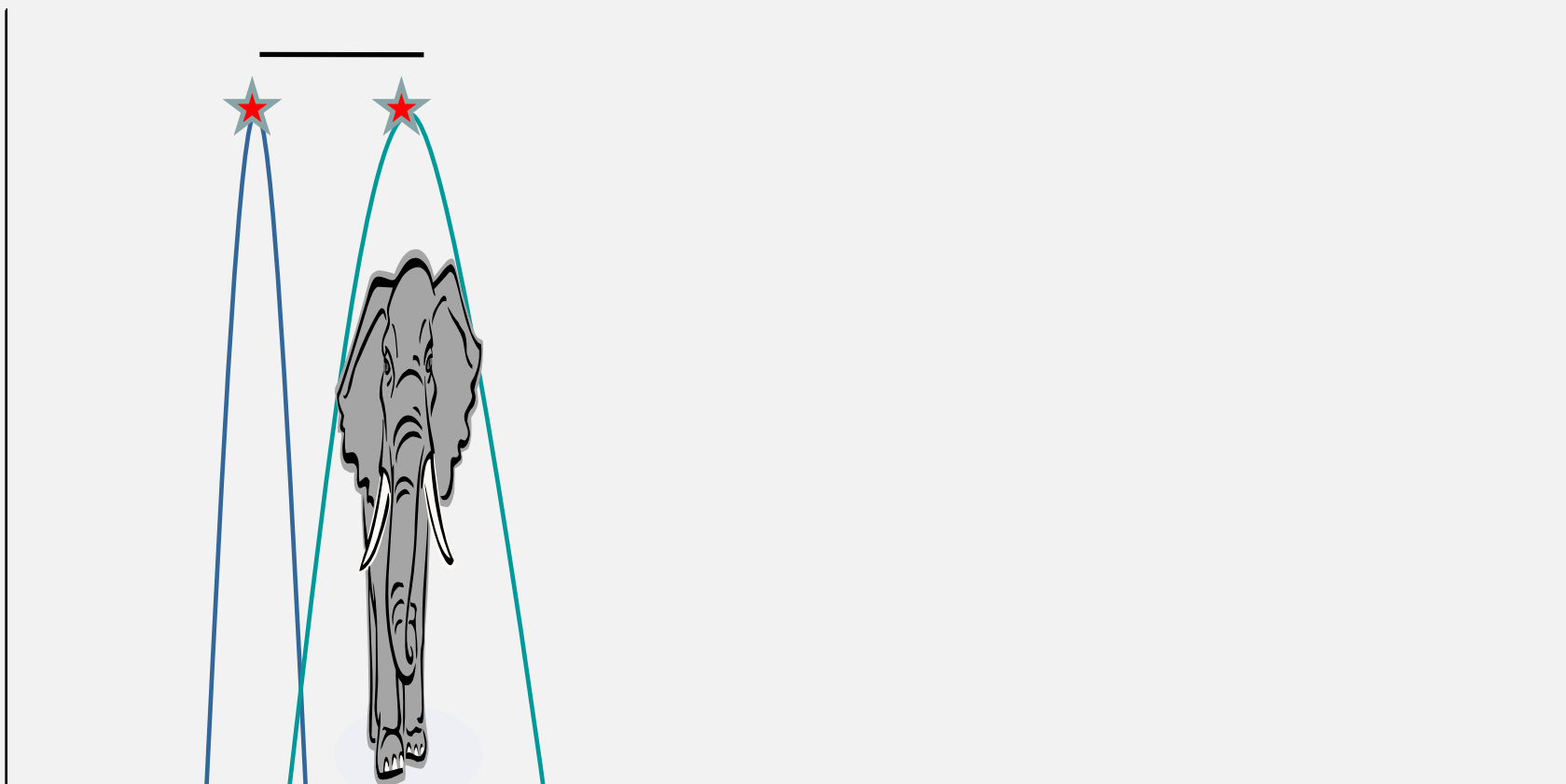


Little Big Problem





Using Mirrors



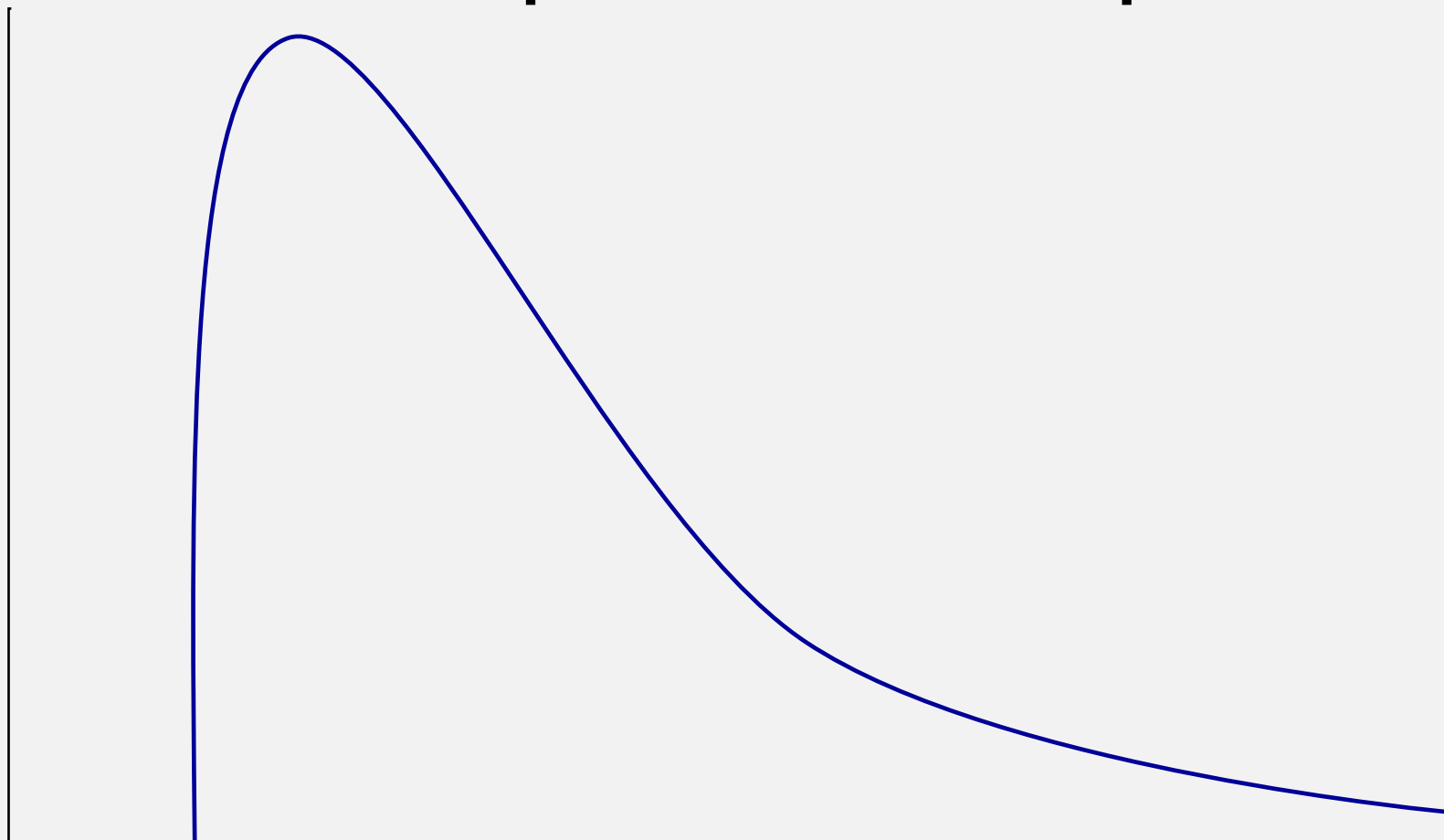


Estimates –v- Reality



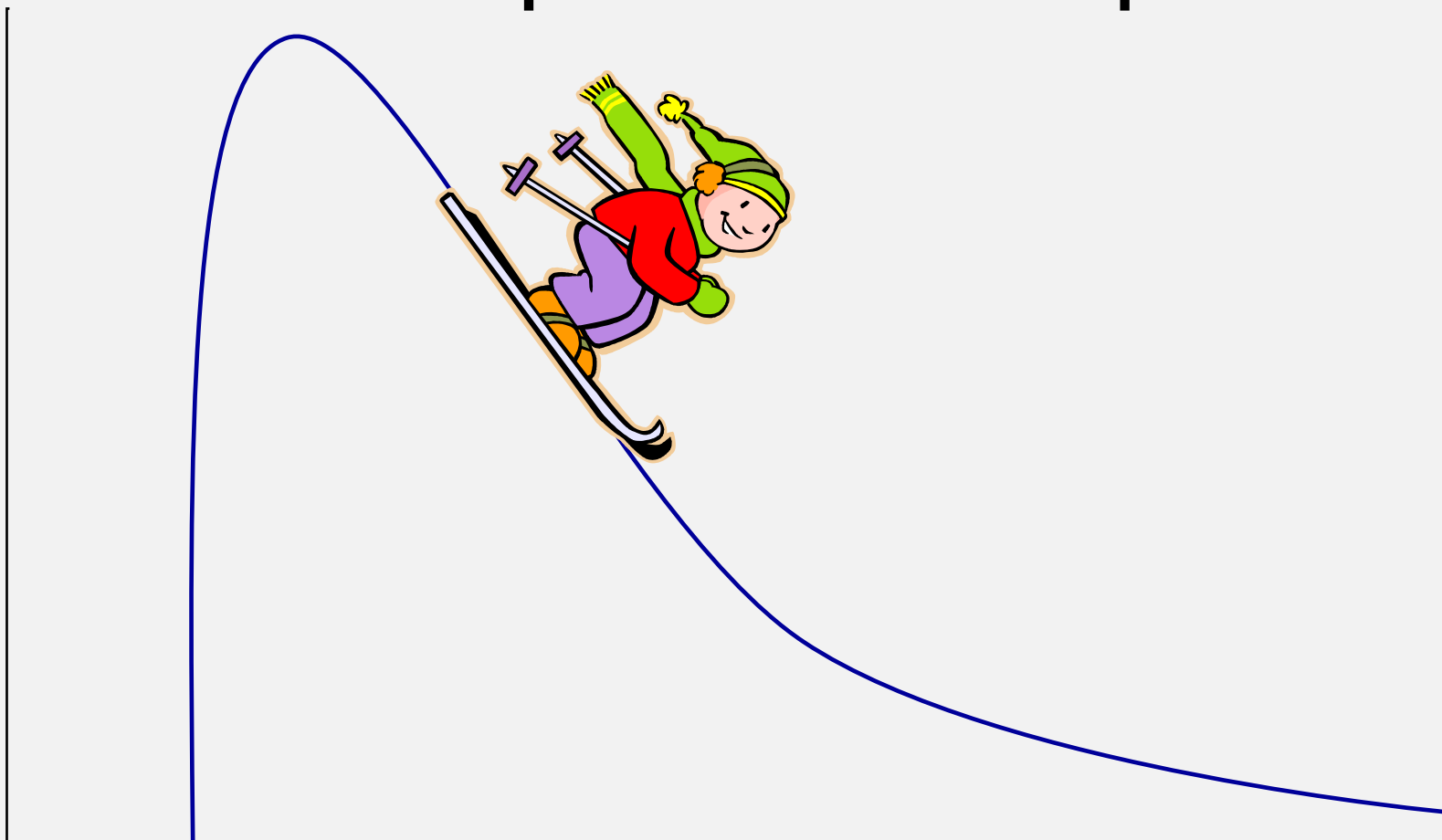


Classic Weapons Development



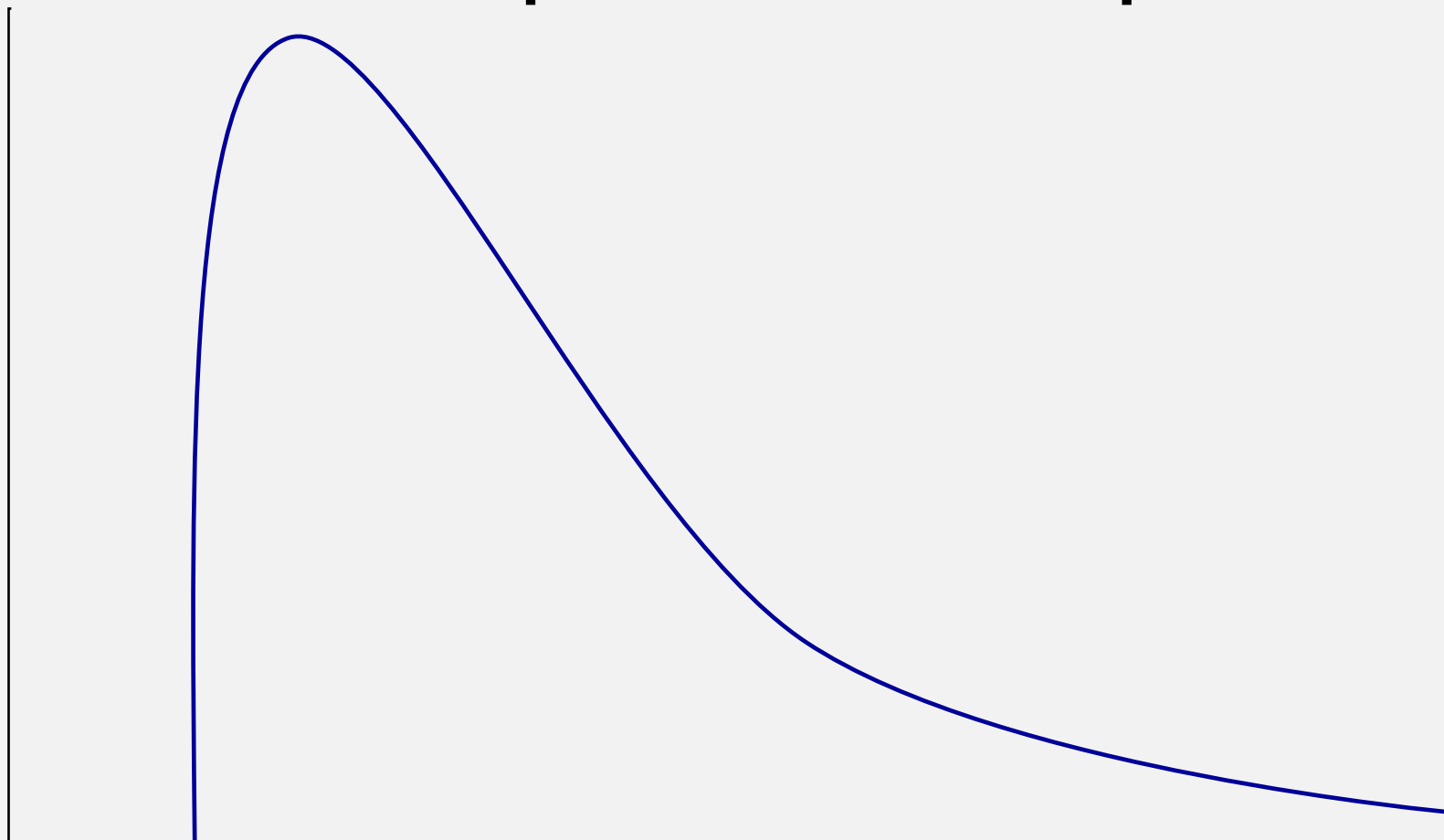


Classic Weapons Development



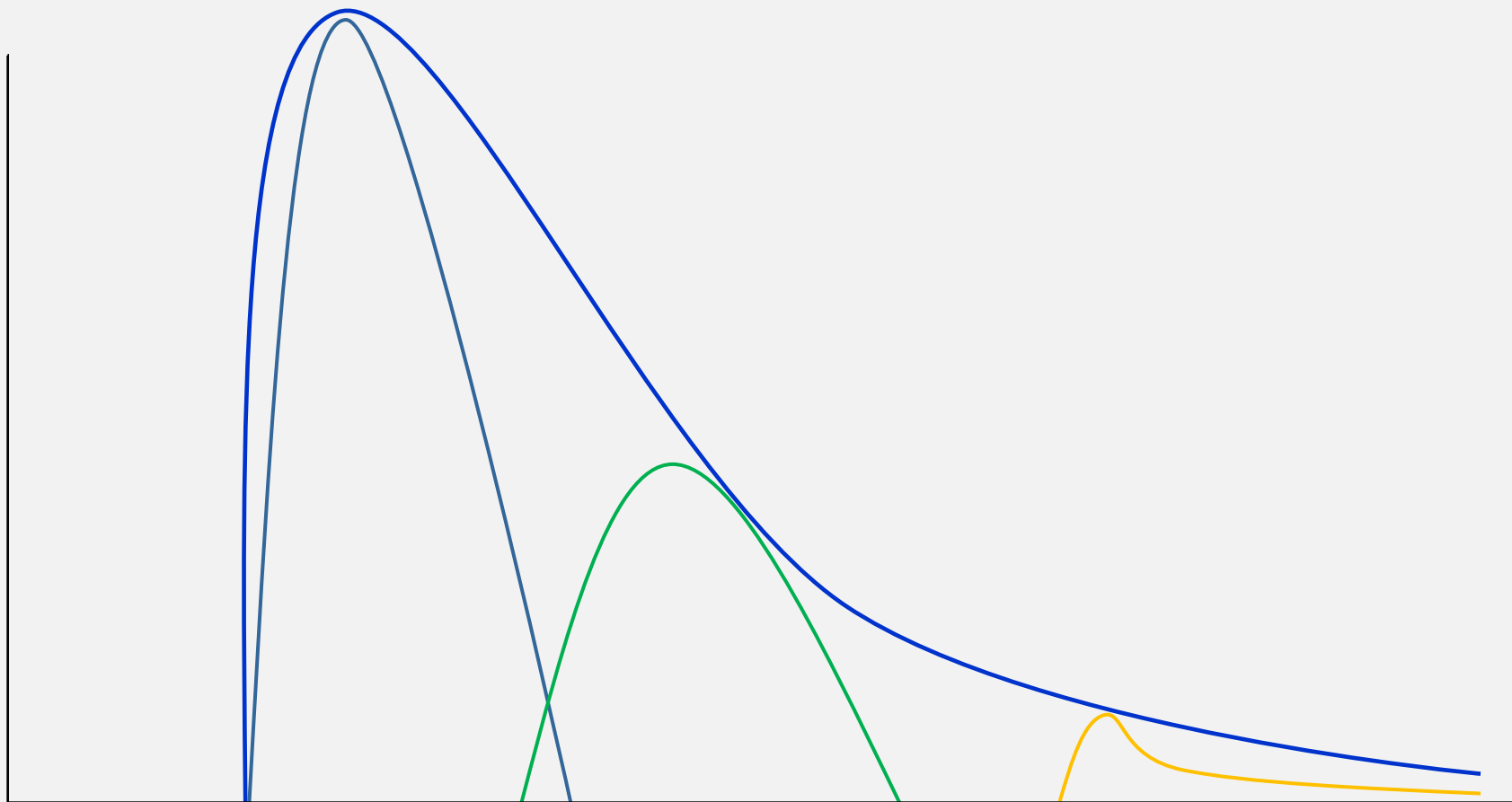


Classic Weapons Development



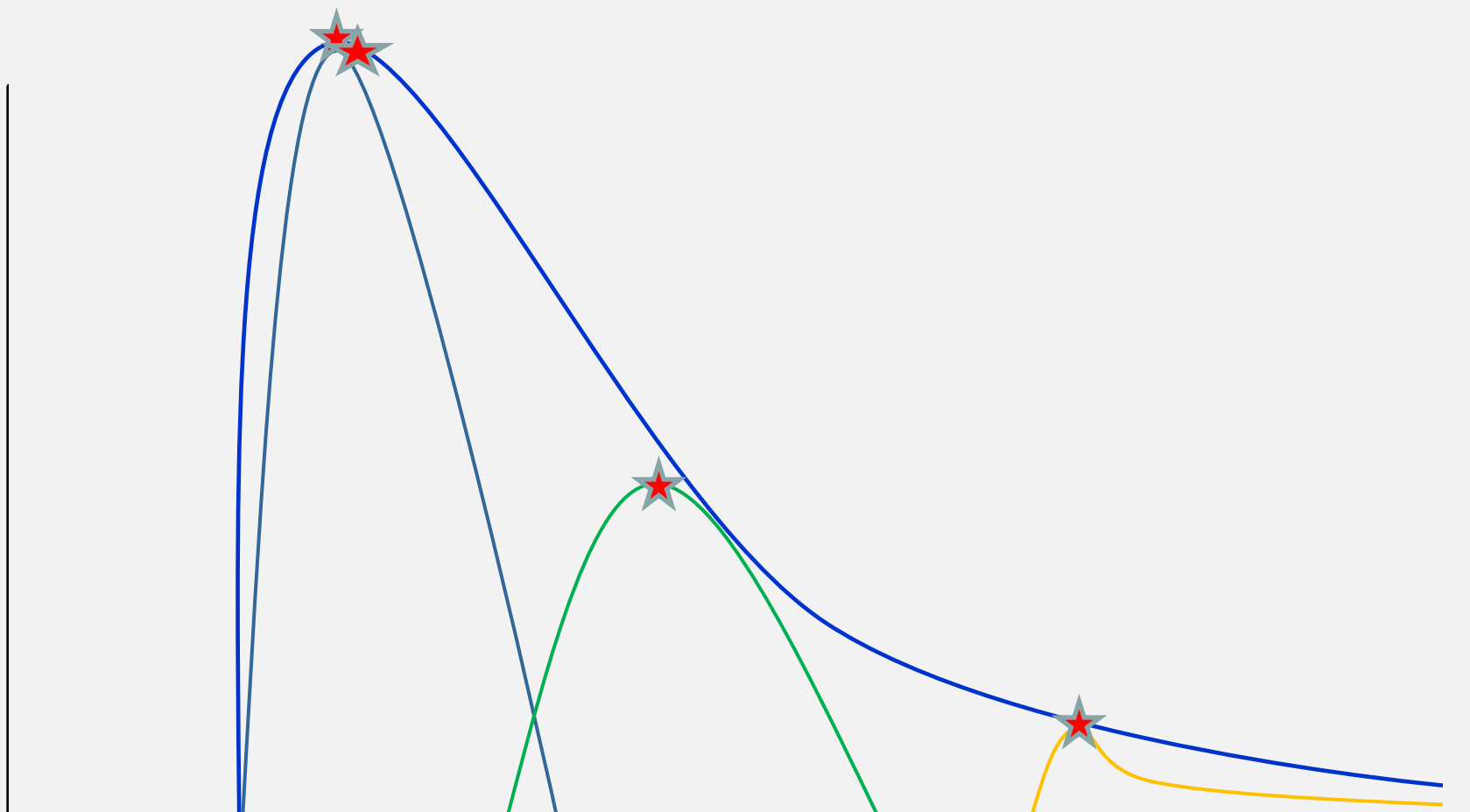


Classic Weapons Development



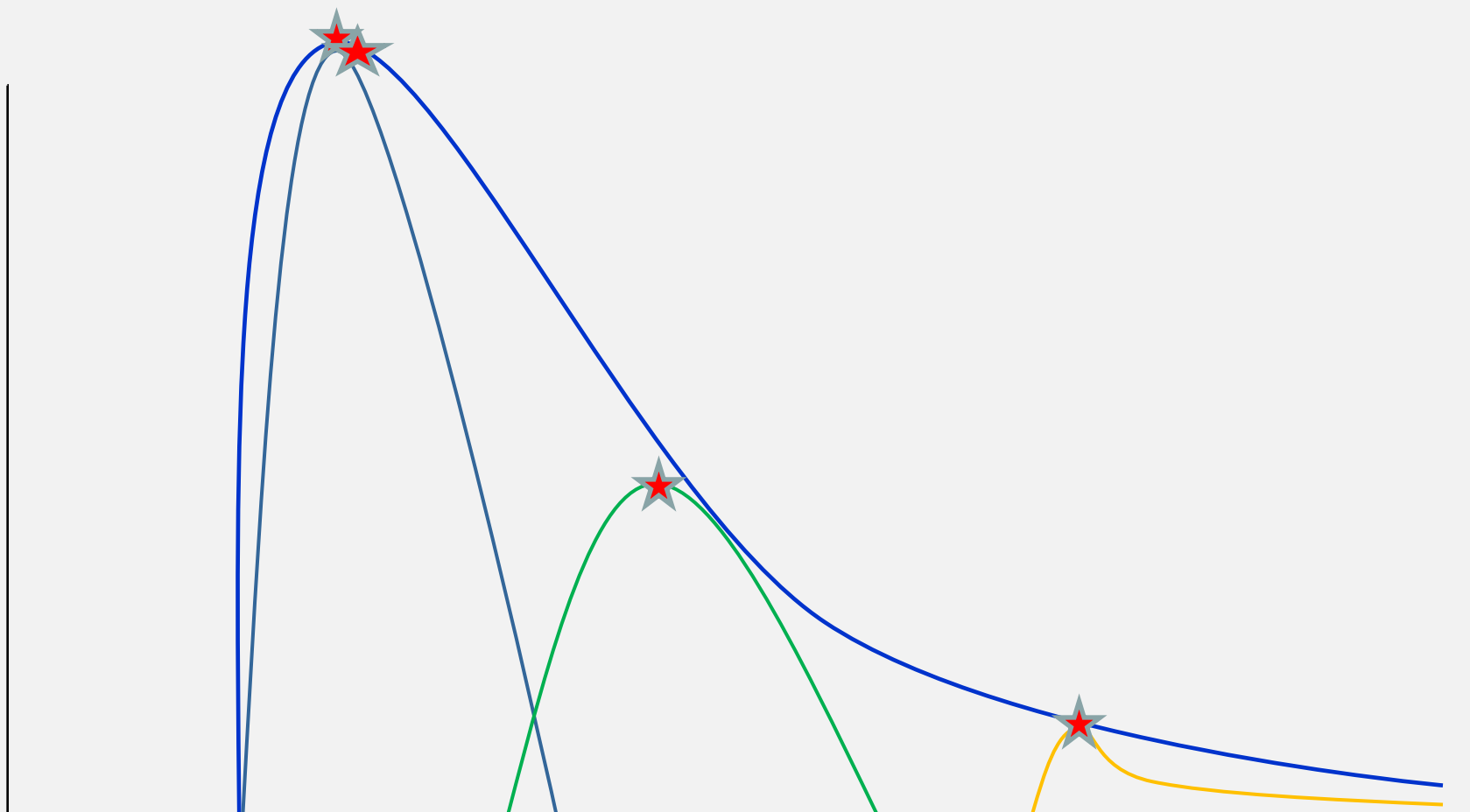


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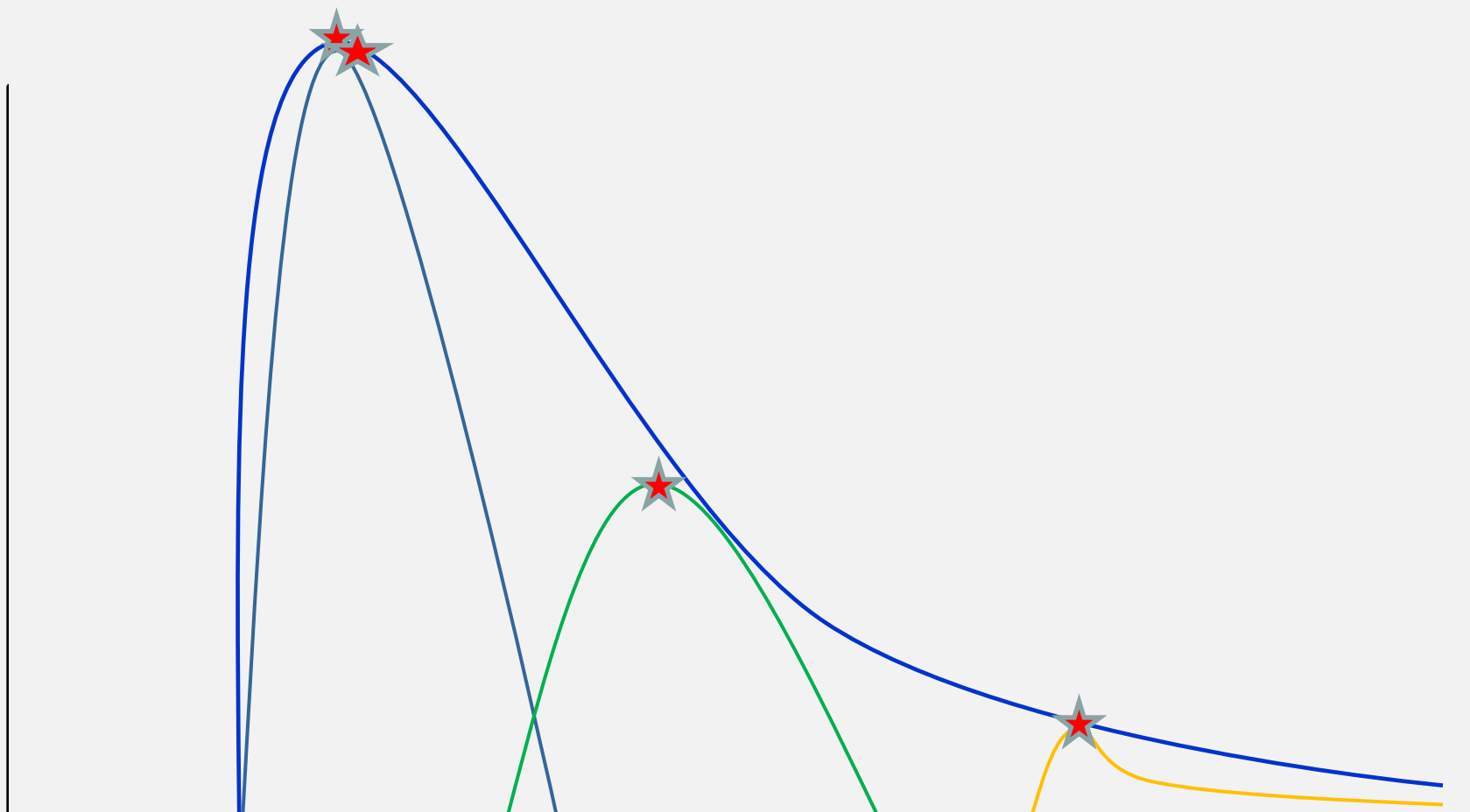


What-if Drills



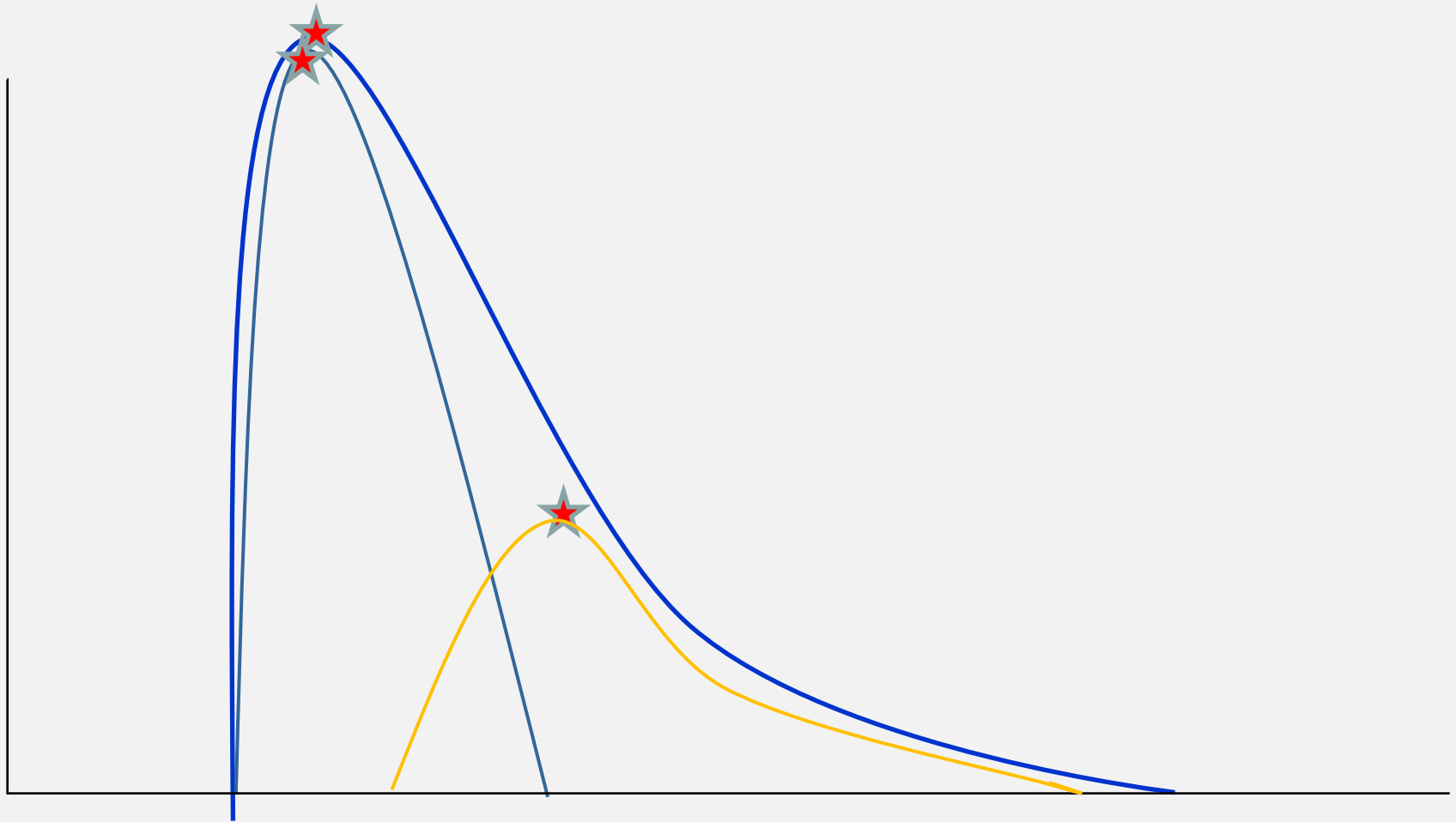


Classic Weapons Development





Classic Weapons Development





Classic Weapons Development





GAO-08-619, July 2008

GAO

United States Government Accountability Office

Report to the Committee on Armed
Services, U.S. Senate

July 2008

DEFENSE ACQUISITIONS

A Knowledge-Based
Funding Approach
Could Improve Major
Weapon System
Program Outcomes



GAO-08-619



GAO-08-619, July 2008

- Cost estimates that lack knowledge and rely heavily on assumptions have inherently high levels of risk and uncertainty
- DOD's flawed funding process is largely driven by decision makers' willingness to accept unrealistic cost estimates and DOD's commitment to more programs than it can support.

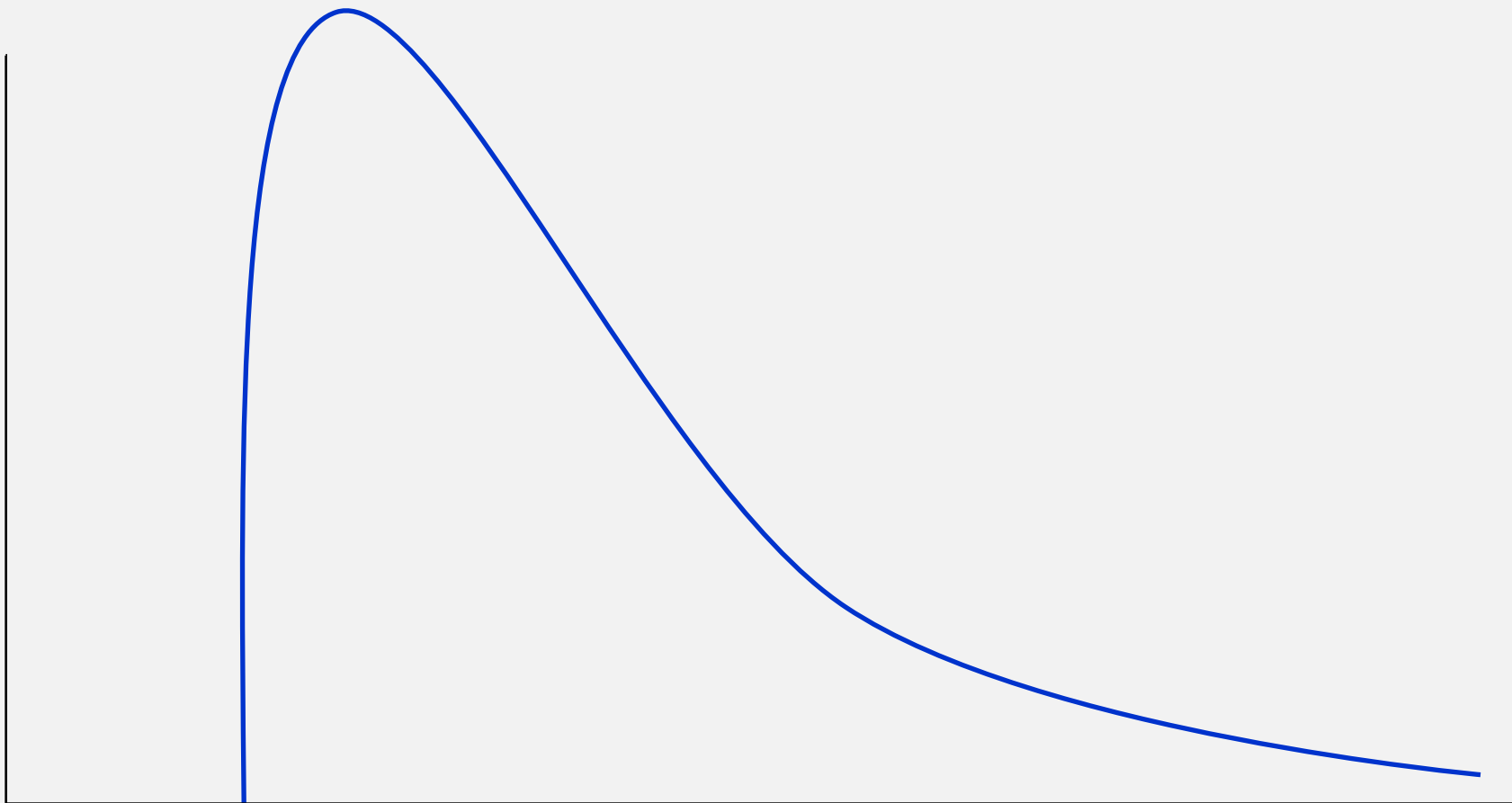


Risk Uncertainty and Trouble

- It is a disservice to present a decision-maker with an estimate for a new groundbreaking weapon system (at a high confidence with only a small increase in funding) And it is foolhardy for a decision-maker to accept that estimate.

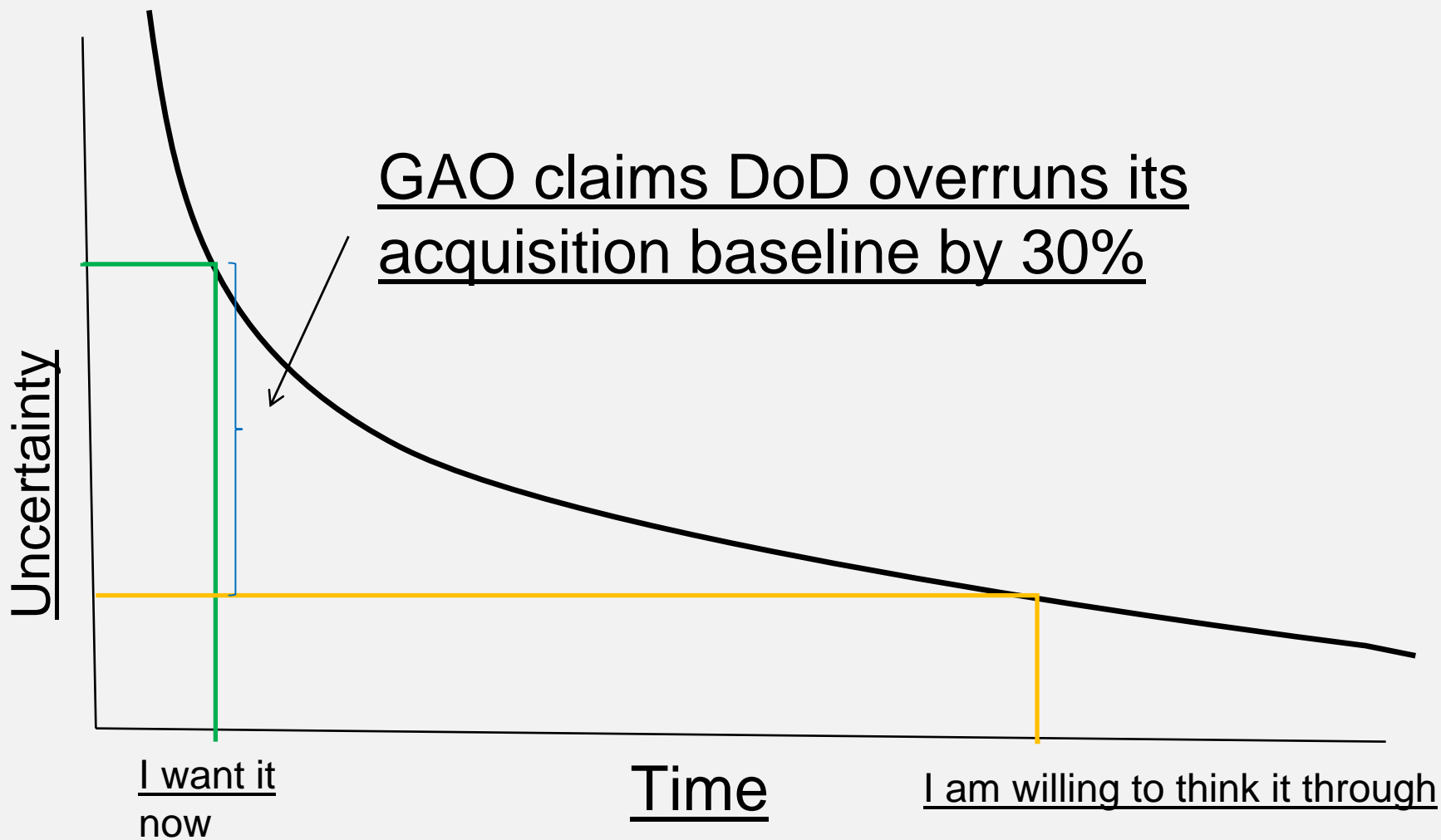


Classic Weapons Development



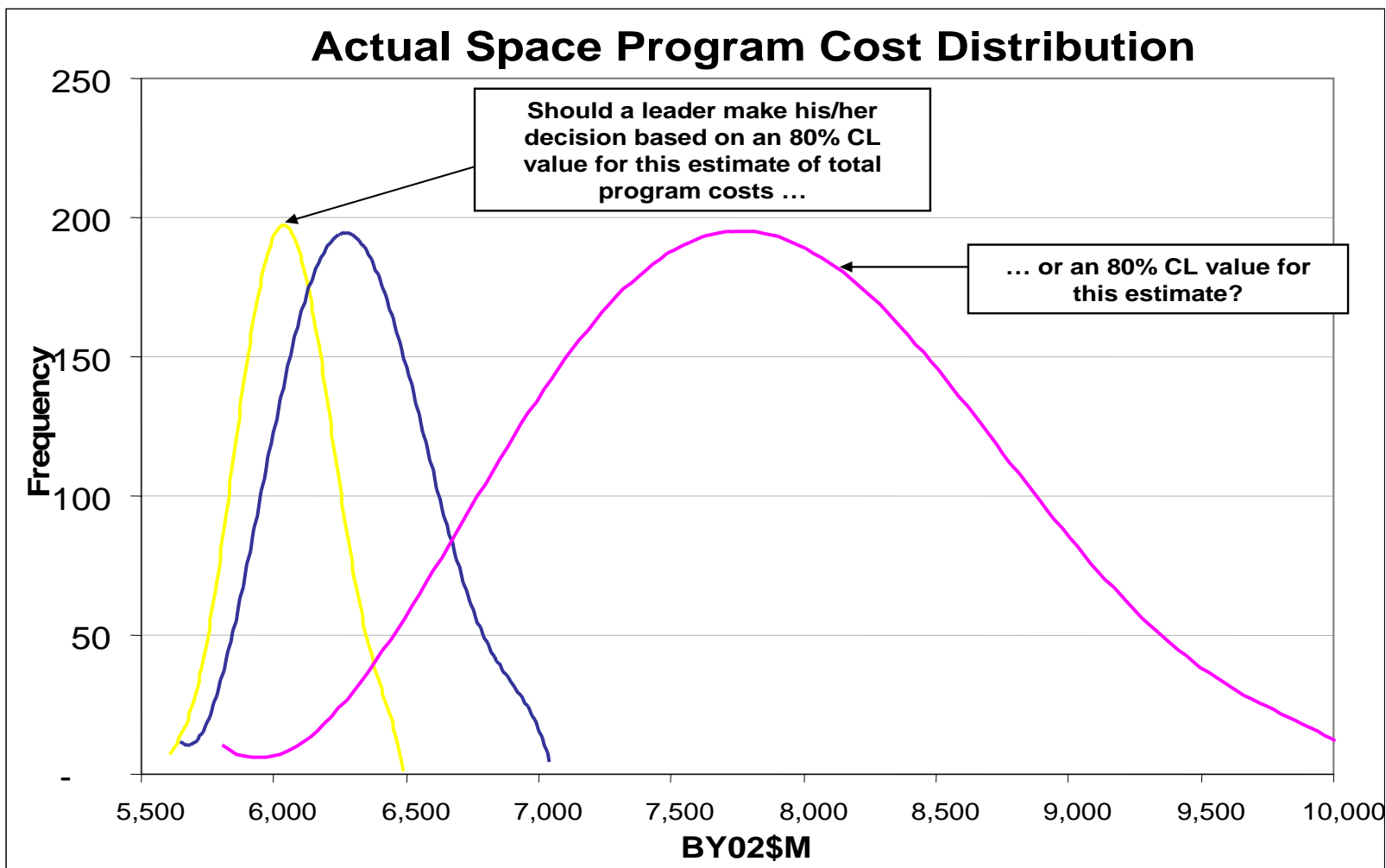


Knowledge-based Acquisition



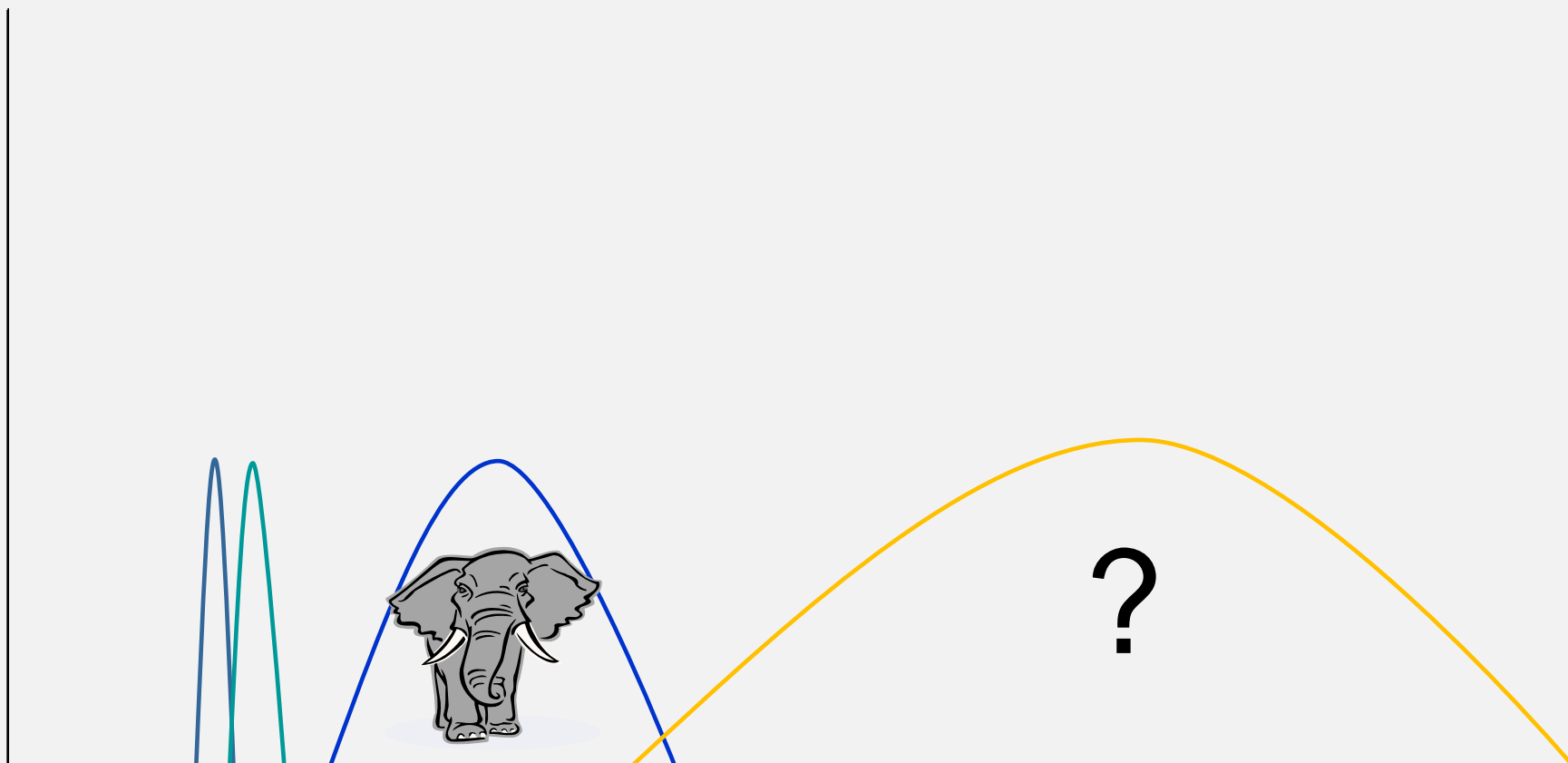


Risk, Uncertainty & Trouble





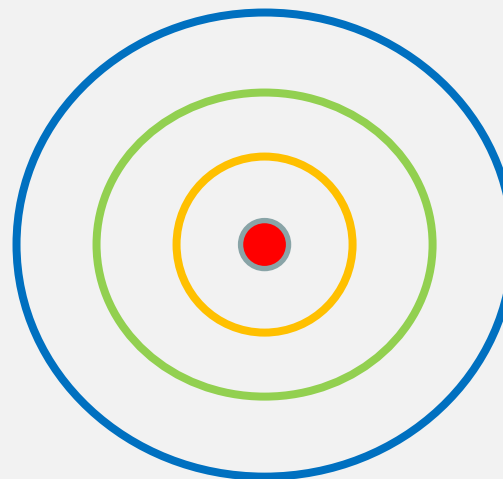
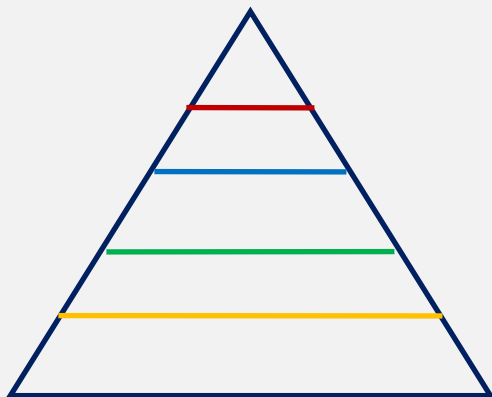
Estimates -v- Reality





Why?

- Personal
 - Money, sex, power, envy, greed & sloth
- Professional – sense of entitlement?
 - Misplaced loyalty to the mission?
 - Group think?



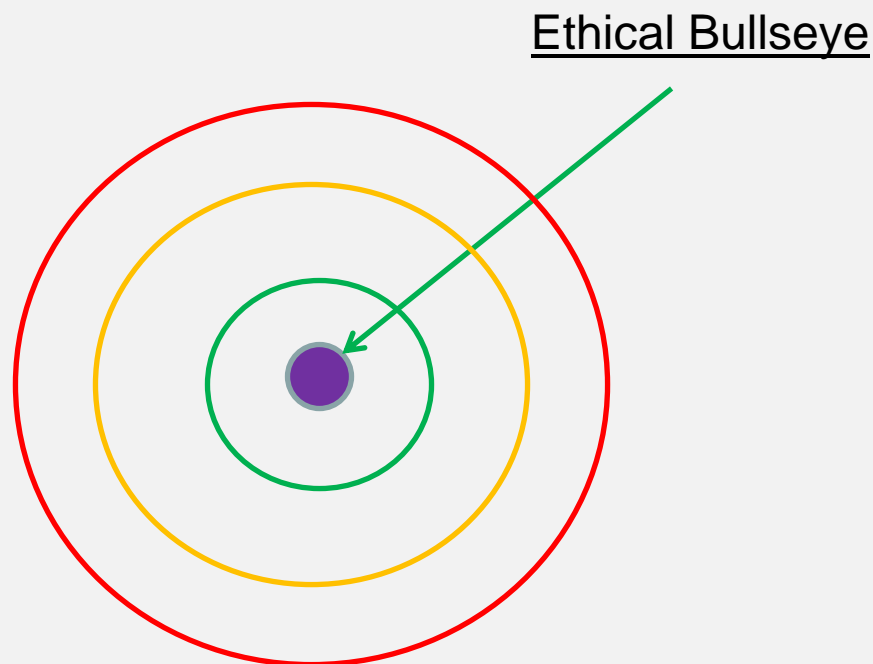


Defending the Chain of Command

- “Our role is to provide Ground Truth, so leaders can make an informed decision”
- “. . . convince ourselves we can do it”
 - » Lt Gen Ted Bowlds

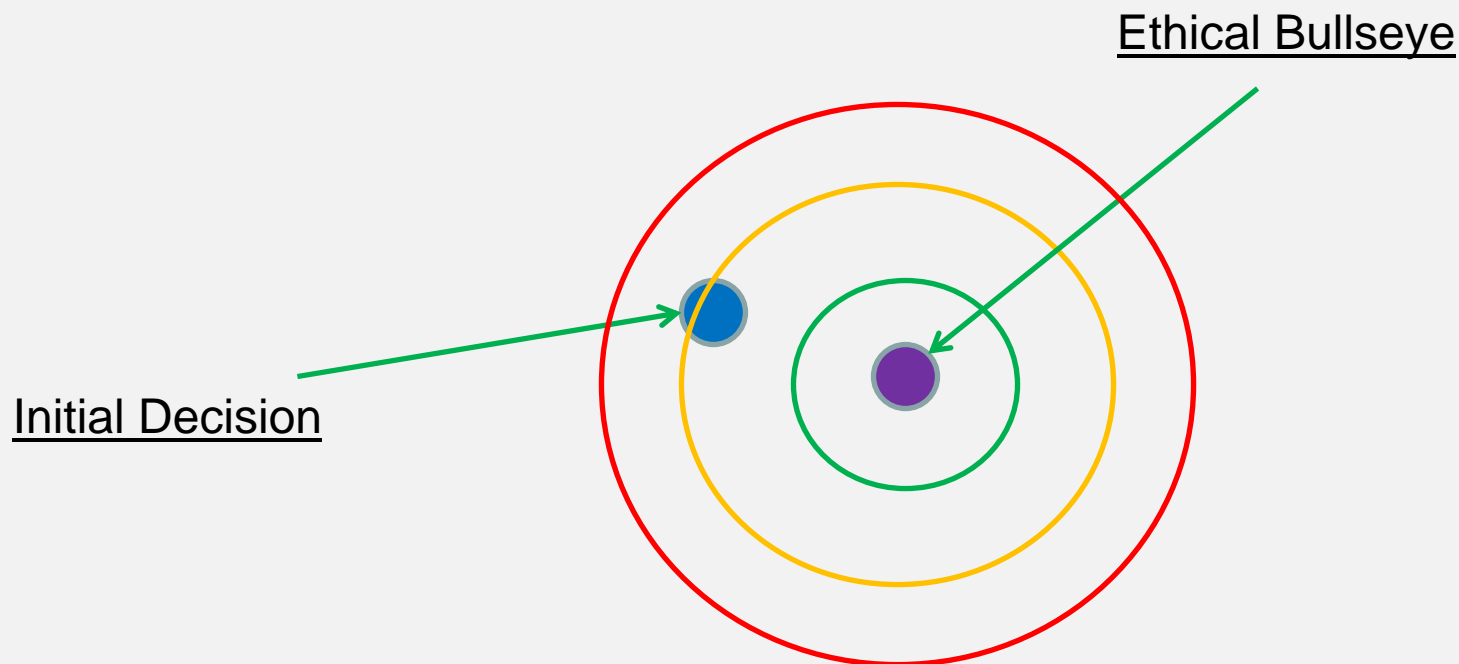


The Danger of Compromise





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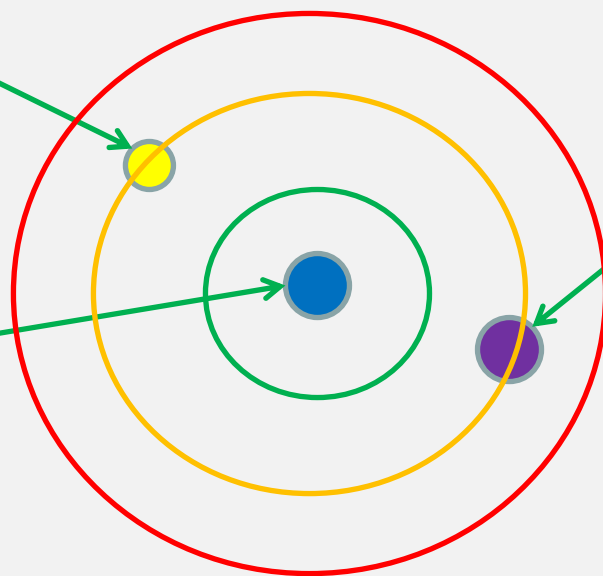


The Danger of Compromise

2nd generation decision:
Subordinate's action

Ethical Bullseye

Initial Decision



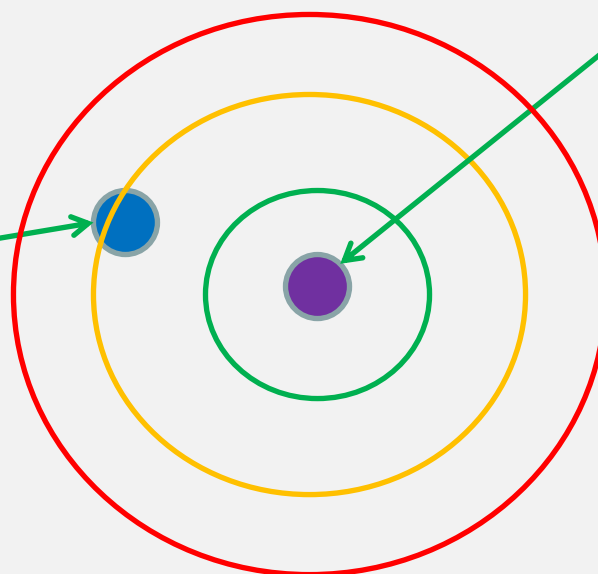


The Danger of Compromise

2nd generation decision:
Subordinate's action

Ethical Bullseye

Initial Decision



ACTUAL
AIMING RING



How Do We Mentor Ethics?

1. Discuss Ethical Concepts
2. Be Vigilant for Warning Signs
3. Correct Misconduct

Integrity - Service - Excellence



Top 11 List - Rationalization

1. What's the worst thing they can do to us
2. That's the way we've been doing it for years
3. Don't ask a question if you can't stand the answer
4. Not enough time for a legal review
5. It's a stupid rule
6. Boss said to make it happen
7. Warfighter needs it now
8. I saw someone else do it that way
9. No harm, no foul
10. We're thinking outside the box
11. It's for a good cause



Rationalized Standards put Core Values & AF Rules at Risk

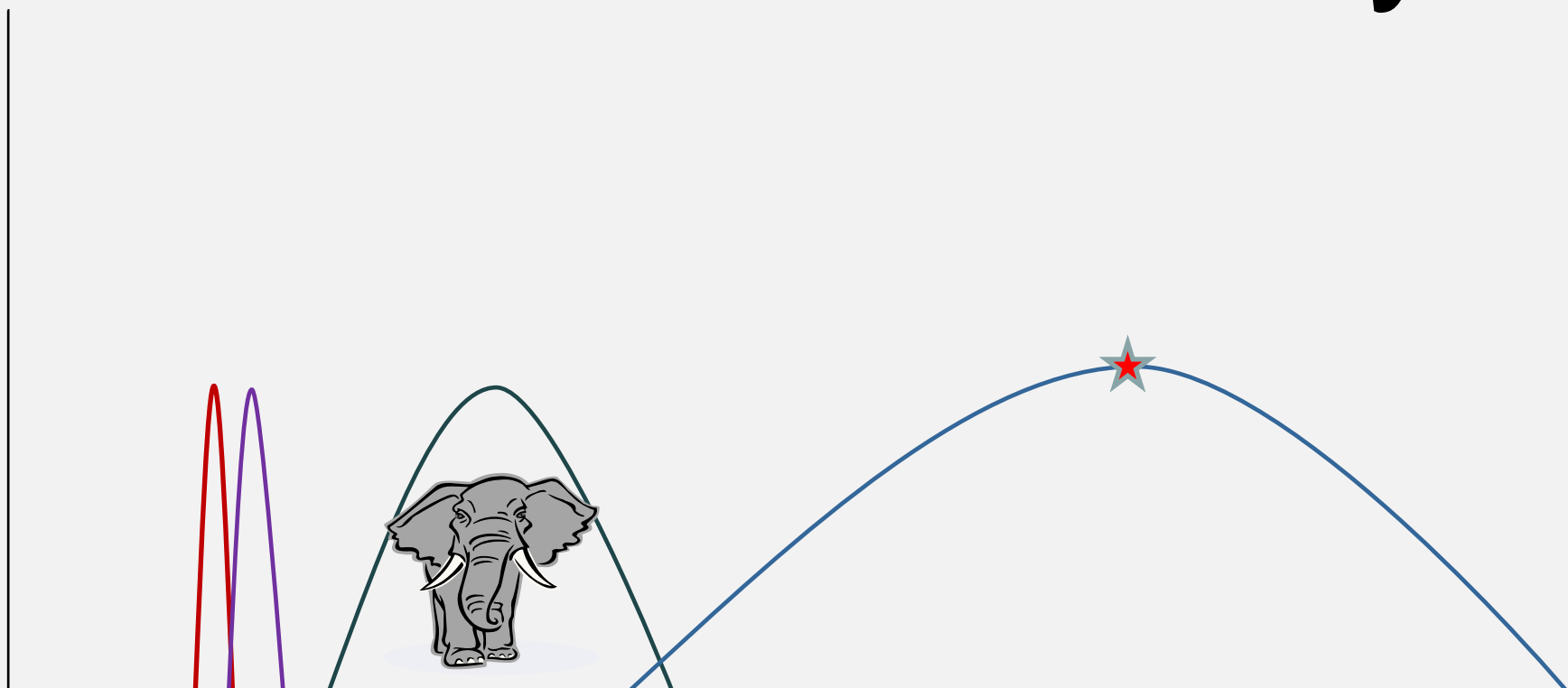


Adapting to Decision Support

- Earlier in the Process
 - BEFORE the decision is made
 - “Must be brilliant because the Boss likes it”
- More Math, Law, Policy, Objective Analysis
- More Risk and Uncertainty
- More Public Speaking
 - A little bit scarier than death to many

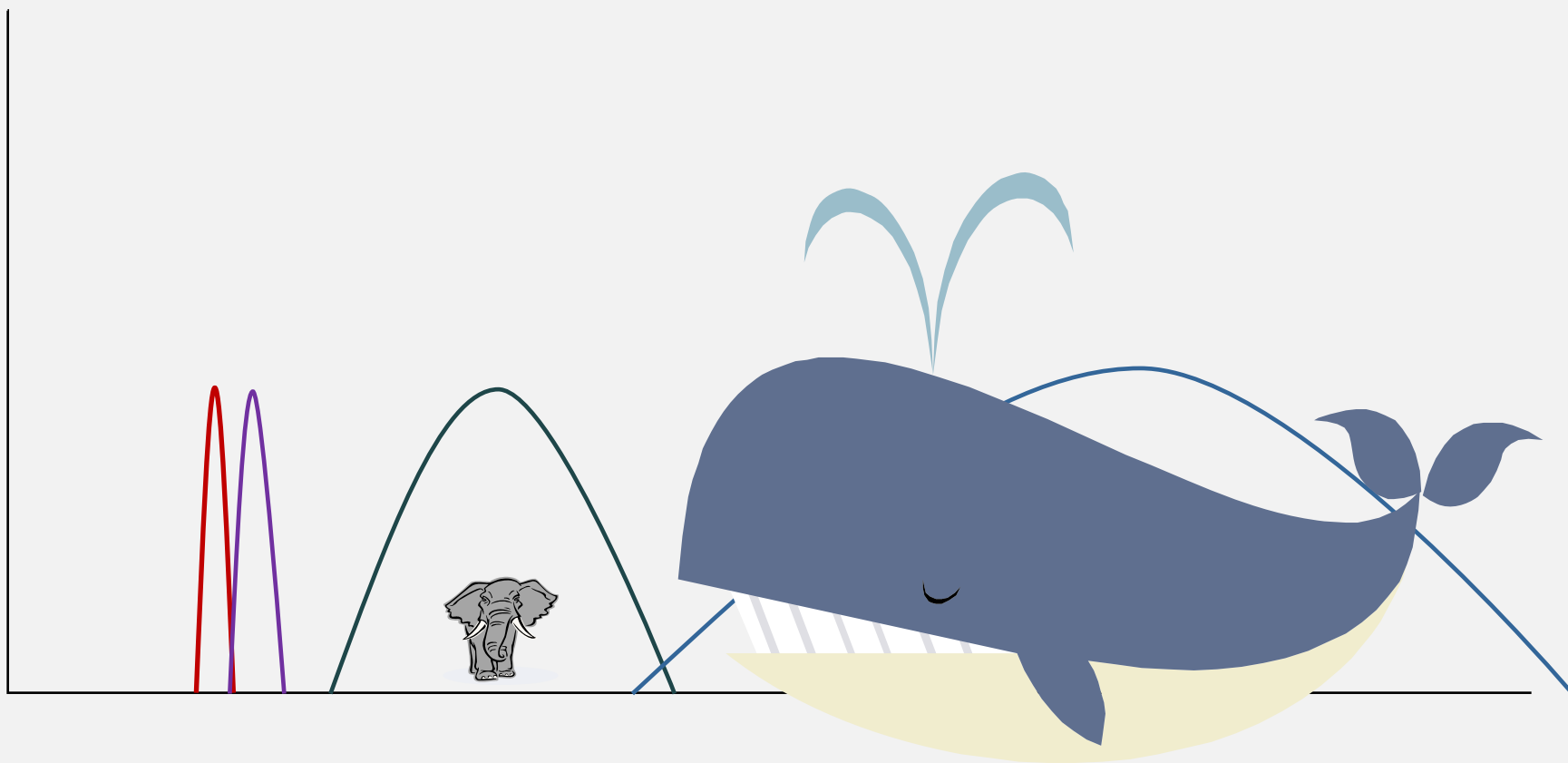


Estimates -v- Reality





Questions?





Sources

- Risk, Uncertainty and Trouble
 - <http://www.dau.mil/pubs/damtoc.asp>
 - Nov/Dec 08 Defense AT&L Magazine
 - The National Estimator, Fall 2008
 - Air Force Comptroller, Summer 2008
- Looking at the Root Cause of Problems
 - http://www.dau.mil/pubs/dam/2008_05_06/shim_mj08.pdf
 - Army History of Acquisition
- Adapting to Decision Support
 - Armed Forces Comptroller, Spring 2009



GAO-08-619, July 2008

- A Knowledge-Based Funding Approach Could Improve Major Weapon System Program Outcomes
- DOD often does not commit full funding to develop its major weapon systems when they are initiated, despite the department's policy to do so. For a majority of the weapon system programs GAO reviewed, costs have exceeded the funding levels initially planned for and reflected in the Future Years Defense Program (FYDP)—DOD's investment strategy. To compensate for these shortfalls, DOD makes unplanned and inefficient funding adjustments, like moving money from one program to another, deferring costs into the future, or reducing procurement quantities.



GAO-08-619, July 2008

- DOD's flawed funding process is largely driven by decision makers' willingness to accept unrealistic cost estimates and DOD's commitment to more programs than it can support. DOD often underestimates development costs—due in part to a lack of knowledge and optimistic assumptions about requirements and critical technologies. At the same time, DOD's continued failure to balance its needs with available resources promotes unhealthy competition among programs for funding. This creates incentives for service and program officials to establish requirements that make their particular weapon systems stand out, with less consideration of the resources needed to develop them. Ultimately, DOD tends to push the need for funding to the future rather than limit program length or adjust requirements.



- Inaccurate cost estimates are often the result of limited knowledge about requirements and technologies. Our best practices work has shown that conducting early disciplined analysis, such as systems engineering, builds knowledge that enables a developer to identify and resolve gaps between requirements and available resources before beginning product development.



- The successful commercial companies that GAO has previously reviewed achieve adequate and stable funding for product development programs by following a disciplined, knowledge-based approach to estimating program costs; using manageable development cycles to increase the predictability of funding needs and the likelihood of program success; and using portfolio management practices to make decisions about which programs to pursue. Once programs are approved, these companies firmly commit to fully fund them.



- Cost estimates that lack knowledge and rely heavily on assumptions have inherently high levels of risk and uncertainty. Conducting quantitative risk and uncertainty analysis provides a way to assess the variability in an estimate. Using this type of analysis, cost estimators can model such effects as a schedule slipping or a key technology failing to materialize, thereby identifying a range of likely costs around an estimate. Presenting decision makers with the range of likely costs around an estimate provides insight into the amount of cost, schedule, and technical risks they are being asked to accept and conveys a level of confidence associated with achieving the proposed estimate. A range of costs also provides a basis for deciding how much funding a program needs to be successful.



- In developing cost estimates, the services and the CAIG often do not present decision makers with the range of costs around an estimate. Instead, they present a single, or point, estimate as the most probable cost, which OSD expects to be a 50 percent chance that actual program costs will be at or below the estimated value. Several recent studies have questioned DOD's approach and recommended establishing estimates with higher levels of confidence under the assumption that the result will be more realistic estimates.



- For example, the Defense Acquisition Performance Assessment Panel recommended adjusting program cost estimates to reflect “high confidence”—defined as an 80 percent chance of completing development at or below the estimated amount. Requiring a higher confidence level could provide a better basis for determining program funding, but only if the quality of the cost estimate is sound and the underlying risk and uncertainty associated with the estimate are accurately captured. If the quality of the estimate is poor to begin with, simply applying a higher confidence level to the estimate will not make it any more realistic



Findings #1 & #2

- Develop and implement a strategy to bring the department's current portfolio into balance by aligning the number of programs and the cost and schedule of those programs with available resources.
- Require that all new programs have manageable development cycles, realistic cost estimates, and have planned and programmed full funding for the entire development cycle.



Findings #3

- Require all cost estimates submitted for funding a program at milestone decisions to be reported as a range of likely costs and reflect the associated levels of risk and uncertainty. At Milestone A, require estimates that allow for a wide range of likely costs. At Milestone B, require estimates that, based on knowledge gained, are more precise—in line with best practice standards.



GAO response to DoD Reply

- In written comments on a draft of this report, DOD partially concurred with our first and second recommendations and non-concurred with the third. DOD's partial concurrences are rooted in the belief that its current policies and initiatives address our recommendations. We agree that aspects of DOD's current policies appear consistent with our recommendations, and the initiatives could contribute to better program outcomes if implemented appropriately. However, we have found no evidence of widespread adoption of these policies or any other process that would better ensure adequate funding for DOD's major weapon system acquisition programs and increase the likelihood of achieving successful outcomes.