



Technology Insertion Program for Savings (TIPS)

Net Present Value: Analyzing the Business Case





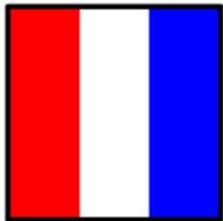
Topics

Net Present Value Course Objectives (pp. 3-5)

- **The NPV Worksheet (pp. 6-14)**
- **NPV Flow Part 1: Approaches, Assumptions (pp. 15-27)**
- **NPV Flow Part 2: Approaches, Assumptions (pp. 28-34)**
- **Sample NPV With Assumptions (pp. 35-38)**
- **Conclusions (pp. 39-40)**

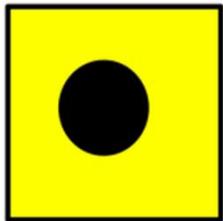


NPV Course Objective



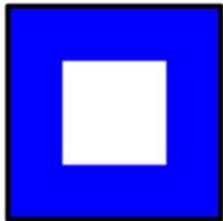
➤ NPV is a tool for quantifying Savings

- ***Savings is the key term in TIPS!***



➤ Provide the TTX team with a commonly understood, systematic process to consistently assess NPV business cases in terms of

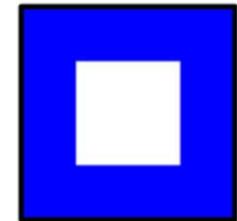
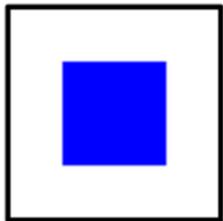
- ***TIPS Investment (over time) vs Projected Cost Savings/Cost Avoidance (over time)***



➤ Quantifiable (NPV worksheet)

➤ Qualitative (Assumptions)

- Justify “the way it can work”
- Trace SYSCOM-OPNAV/HQMC buy in



NPV Course Objective

- Navy Cost Savings (good!)
- Navy Cost Avoidance (not as good...)
- Navy SYSCOM needs (requirements, ORD, CDD) vs wants (anything else)
- Go from the Black Box model

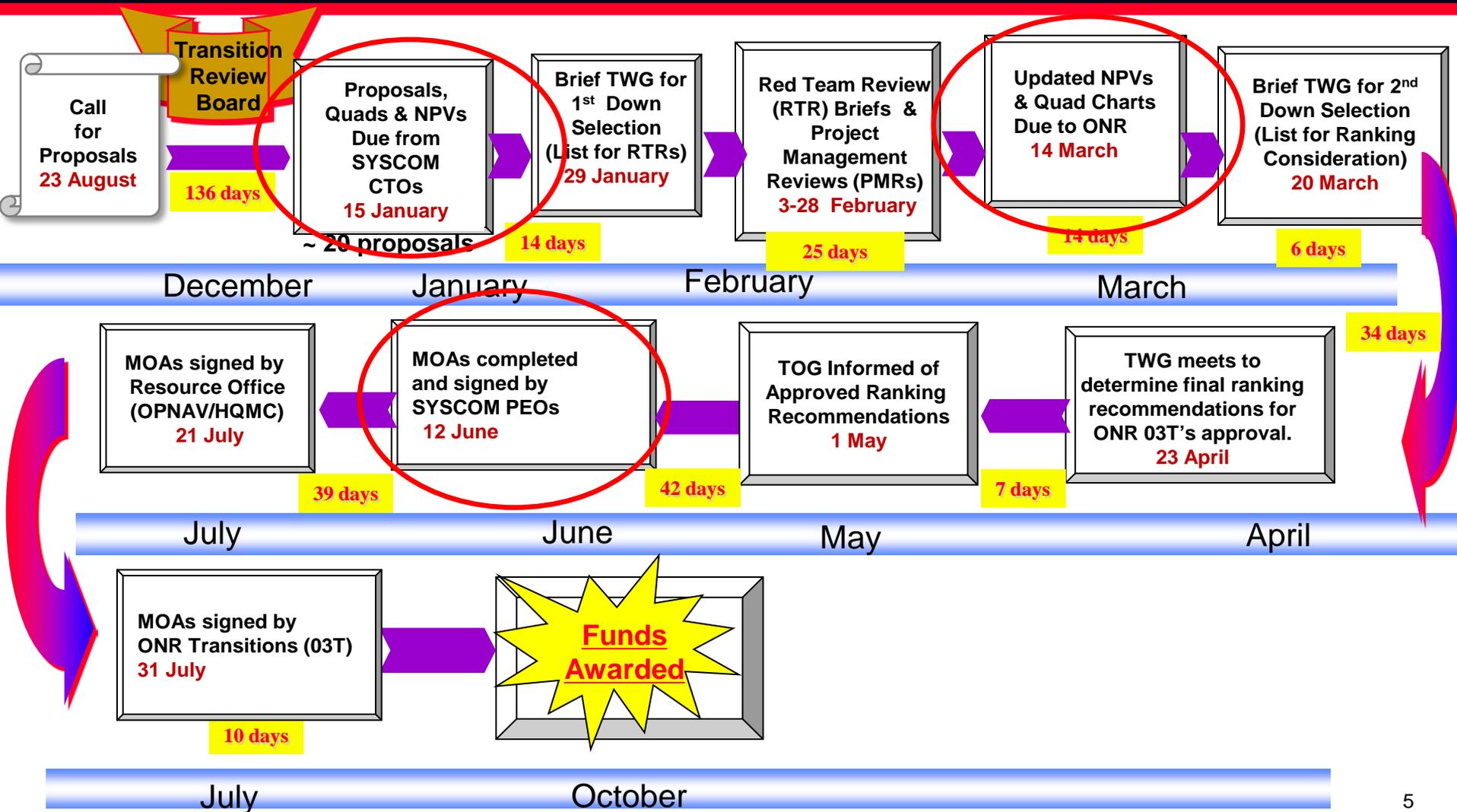


- To transparency of the NPV tool





Notional TIPS Proposal Selection Roadmap for FY15 Selections





NPV Worksheet

THE NPV WORKSHEET



Objective of NPV Worksheet

- The objective of the Net Present Value (NPV) worksheet is to provide a means to present the business case:
 - ✓ Show cost savings
 - ✓ Show Transition Funding
 - ✓ Help organize the development and presentation of the figures
 - ✓ Enable a basis for comparison between diverse proposals
- A properly presented business case should be supported by credible costing figures.
- All TIPS candidates undergo an NPV Review to develop a consistent and repeatable common basis for evaluation, to the extent possible.



NPV Defined

- **Net Present Value** is the analysis of a time series of cash flow which resolves total payoff over time against investment over time.
- NPV can be described as the “difference” between the sums of discounted:
 - cash flows (savings or cost avoidance)
 - cash outflows (cost).
- The NPV of a sequence of cash flows takes as input the cash flows of a discount rate and outputs a price (cost or savings) in current year dollars



Discount Rate

- **Discount Rate** is assigned to provide the ability to consider the value of money (funding) over time “Do you want a dollar today or a dollar tomorrow?”
- •For TIPS, the **Discount Rate** used is tied to the prevailing rate used by the federal govt. and is determined by OPM. More details are provided at the whitehouse.gov website (http://www.whitehouse.gov/omb/circulars_a094/a94_appx-c)
- •***The Discount Rate is already provided in the NPV template***
- •A **Discount Rate** is similar to the way you think of inflation— over time, money usually loses value— even though the Discount Rate includes more factors than just inflation



NPV Guidelines for Calculating Savings

- Assumptions
 - Must be reasonable
 - Must be defensible
 - Demonstrate a direct link to ROI calculation
- Precision
 - Difficult to project future cost savings
 - Excess precision is not useful
- Numbers
 - Cite real numbers
- Approaches
 - Analogy – real documented savings
 - Parametric – technology is expected to show 10% increments
 - Comparison costs- based on budget figures



Approaches

- **Analogy** or analogous estimating uses metrics such as duration, budget, weight, complexity from previous projects to estimate costs for future projects
 - Analogy is often easiest, but can be subjective
 - Analogy uses historical information and expert judgment to estimate costs
- **Parametric** estimating uses a statistical relationship between historical data and other variables i.e. square footage, duration to determine cost.
 - More accurate than analogy
 - Increases the rigor in the estimates
- **Comparison costs** (what happens without new technology, aka the “Do-Nothing Alternative/Null Alternative”) should be based on budgeted figures to estimate costs



NPV Worksheet Template

Section 1. General Information

Proposal Title	XXXXXX
Date	XXXXXX
Discount Rate	1.50% Approximate 7 Year Treasury Note

Section 2. Costs Associated with current method (without TIPS Involvement)

Fiscal Year	2015	2016	2017	2018	2019	2020	2021
Implementations	0	0	0	0	0	0	0
Funding							
DON TIPS Funding	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Acquisition Costs							
Acquisition Cost 1	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Acquisition Cost 2	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
O & M Costs							
O & M Cost 1	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
O & M Cost 2	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
A. Total Present Project Cost (using current methods)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

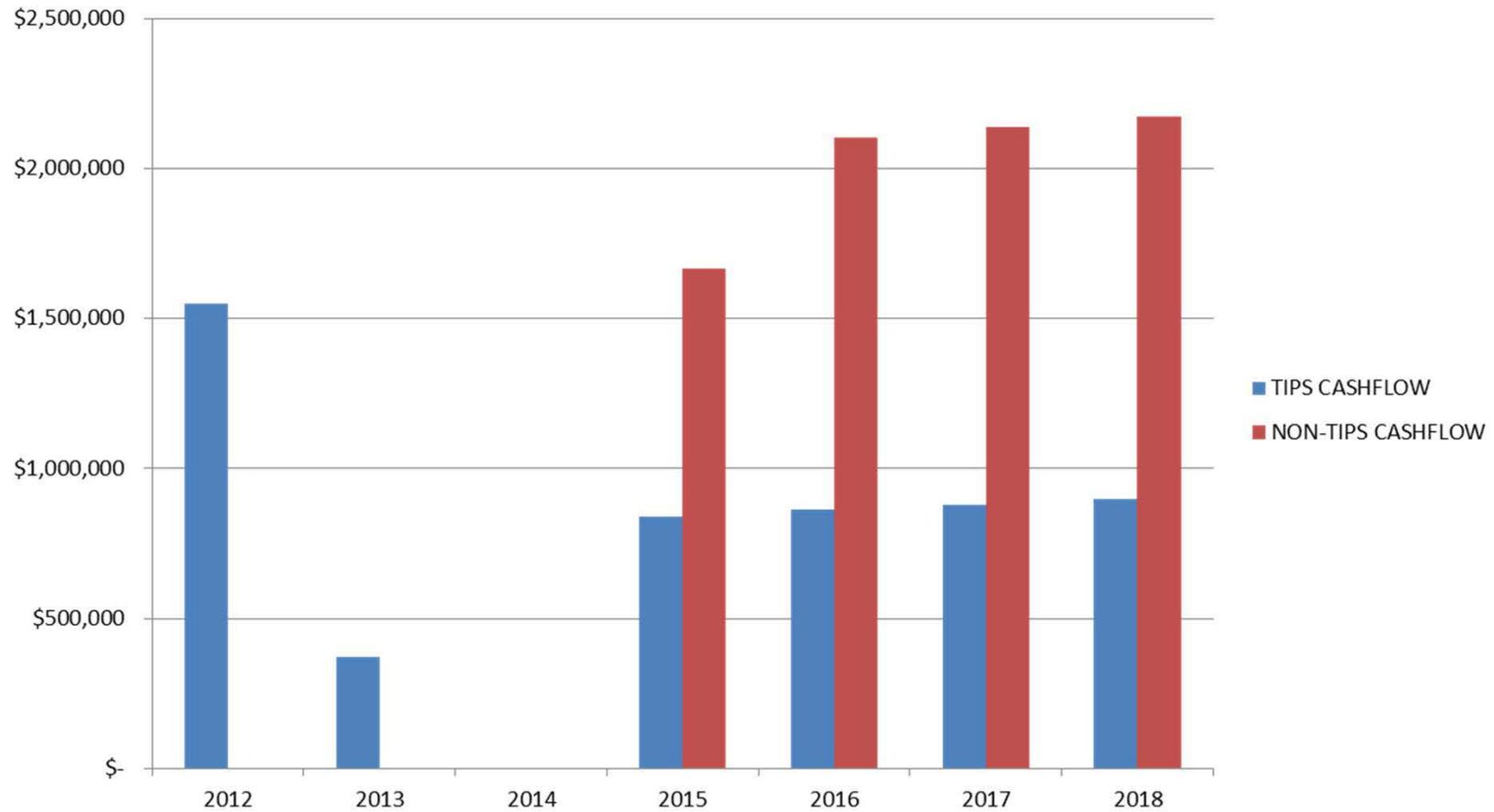
Section 3. Costs Associated with TIPS Involvement

Implementations	0	0	0	0	0	0	0
Funding							
DON TIPS Funding	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Acquisition Costs							
Acquisition Cost 1	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Acquisition Cost 2	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
O & M Costs							
O & M Cost 1	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
O & M Cost 2	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
B. Total Proposed Project Cost (with TIPS support)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -

Cost Avoidance (A - B)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Discount Factor	1.000	0.985	0.971	0.956	0.942	0.928	0.915
Present Value Cost Avoidance	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
E. Cumulative Savings	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
F. Project NPV	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
Total TIPS Investment (Discounted)	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
ROI	#DIV/0!						



Alternative Cashflows— Do-Nothing vs TIPS





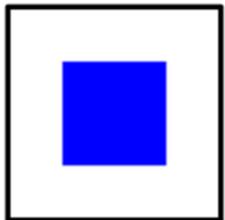
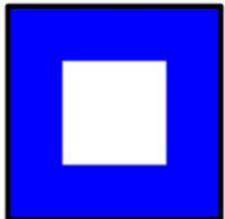
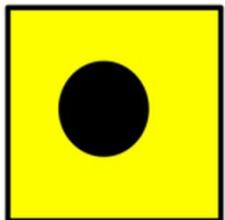
NPV Resolution of Alternative Cashflows— Do-Nothing vs TIPS



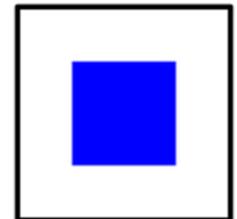


NPV FLOW: APPROACHES, ASSUMPTIONS

General Guidelines



- For actual savings to occur
 - Someone needs to not write a check
 - Corollary – nobody else writes the check instead
- Assumptions that form the basis of NPV must be justified and defensible
- A TIPS NPV is an estimation exercise, not an accounting drill
 - Cite actuals where available
 - Excess precision is not useful





Systematic Approach Necessary

- Variety of
 - Technology Domains
 - Naval Challenges
 - Programs Of Record
 - SYSCOM Objectives
- Mandate a **systematic**-- if not unitary/one-size-fits-all-- approach





Systematic Approach Five Step Program

- 1. Review & Apply TIPS Criteria**
- 2. Identify the Savings**
- 3. Consider the External, Non-TIPS Factors**
- 4. Examine Cost Assumptions**
- 5. Conduct a Summary Evaluation of the NPV**



Systematic Approach Step 1: Review & Apply TIPS Criteria

- 1. TIPS Program Criteria
 - ✓ Addresses Navy-Marine Corps need
 - ✓ Addresses a cost efficiency in maintenance, safety, training, or logistics
 - ✓ Supported by current Navy-Marine Corps infrastructure and policy
 - ✓ Can transition in ≤ 24 months
 - ✓ Technology maturity \geq TRL 6
 - ✓ Has program and fiscal support (OPNAV/HQMC)
 - ✓ \leq \$2M TIPS funding required



Systematic Approach

Quad Chart

- TIPS Funding
- TRL
- Impact
- Who's Who
- Sponsor
- Requirements

NPV Worksheet

- TIPS Funding _____
- Do-Nothing Costs _____
- TIPS Costs _____
- Savings/Avoidance _____
- NPV _____

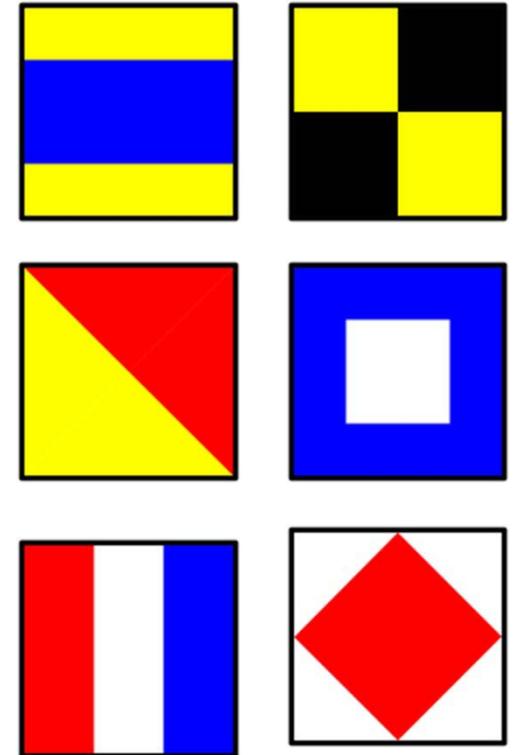
Business Case

- Savings/Avoidance basis _____



Systematic Approach Step 2: Identify Savings Using Rule Sets

- 1. TIPS Program Criteria
- 2. **Identify Type of Savings Using Rule Sets**
 - Material
 - Reduced acquisitions (# of systems/platforms)
 - Reduced maintenance/repairs/obsolescence
 - Logistics & supportability
 - Manpower
 - Safety (people or equipment)
 - Training
 - Other?
 - Consider other areas across DOTLPF





Rule Set 1: Material



- Reduction in the use of expendables
- Reduction in acquisition cost
- Reduction in production cost



Rule Set 1 (cont.): Material

- Reduction in maintenance frequency or cost per visit (supplies and personnel time).
- Inventory reduction cost.
- Obsolescence costs.
- Transportation costs.
- Acquisition and installation





Rule Set 2: Manpower

- Reduction in manning.
 - Mission funded Civilians and Military
 - Industry/Contractors
 - Working Capital Funded (Government) Civilians
- Personnel. All operational costs associated with the new technology for manning, technical assistance borne by contractors, etc. are considered an Operations and Maintenance cost for these calculations.



Rule Set 3: Safety

- Safety usually resonates with everyone— ONR, SYSCOMs, OPNAV, TCs...but it comes at a price. In most cases, “doing nothing” is not acceptable— so how much does the **ALTERNATIVE COST?** How much will the technology **SAVE?**



Rule Set 4: Training

- Training. Expenses incurred in establishing a new or revised training capability to operate or maintain the new technology, and the expenses required to train operators over the pre-existing training costs are to be included in the Operations and Maintenance cost calculation.



Rule Set 5: Other



- DOT(not M)LPF review– additional savings/costs?
- Cost sharing with other entities
- Technology development or integration
- Testing or certification
- Engineering and manufacturing development
- Licensing



NPV FLOW PART 2: APPROACHES, ASSUMPTIONS



Systematic Approach Step 3: Identify Other Factors

- 1. TIPS Program Criteria
- 2. Identify Type of Savings
- 3. Identify Other Factors
 - Increased capabilities
 - Other?



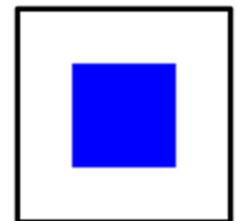
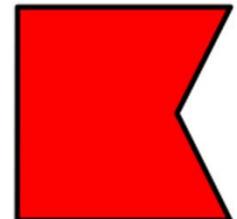
Systematic Approach Step 4: Examine Cost Assumptions

- 1. TIPS Program Criteria
- 2. Identify Type of Savings
- 3. Identify Other Factors
- 4. Examine Savings Assumptions
 - Rule sets invoke consistency



Invalid Assumptions To Look For

- Savings associated with out year expenditures that are not funded or budgeted
- Operational manning that does not result in actual head count reduction
- Reduced production costs that accrue only to the producer
- Artificially monetized costs
- Savings from acceleration that accrue beyond seven years





Cost-Associated Risks

- Achievement of projected percentage item or service cost reduction
- Future utilization of the system or platform
- Technical failure (development, integration, testing/certification, programmatic acceptance)
- Supplier/Supply Chain capability



Systematic Approach Step 5: Summary Evaluation

- 1. TIPS Program Criteria
- 2. Identify Type of Savings
- 3. Identify Other Factors
- 4. Examine Savings Assumptions
- 5. **Conduct a Summary Evaluation of the NPV**



Step 5: Summary Evaluation of the NPV

- NPV presentations are evaluated on several factors:
 - Realism of the assumptions
 - ROI-- + or -?
 - Level of TIPS investment needed to attain the ROI
 - Break-even point/Time to pay back
 - Program funding required for deal execution
 - Sponsor commitment (or lack thereof) to out-year funding



NPV Worksheet

SAMPLE NPV WITH ASSUMPTIONS



SAMPLE NPV

- Open the sample NPV file; it contains two tabs to fill out
 - NPV Template for 2015”
 - “Assumptions”

- Provided for reference
 - “Rules For Cost Savings”

- Access the “Example NPV Workbook” tab
 - This tab shows the relationship between
 - Costs recorded in the “NPV Template” tab
 - Assumptions (recorded in the “Assumptions (Must Complete)” tab)



Creativity

- Labor for a yard-based maintenance procedure will be significantly reduced by the technology.
 - Issue: Workers are government employees – can the labor reduction be claimed?
 - Resolution: Government workers would displace contractor labor elsewhere at the facility – ‘secondary’ savings can be claimed

- On-board computerized training significantly improves at-sea maintenance performance
 - Issue: No reduction in ship’s company
 - Resolution: Reduction in emergency tech assist deployments can be used in the NPV



More Recent Example Complex Cost Business Cases

- New electronics module design and fabrication technology reduces manufacturing costs
 - Issue: Capturing savings for the Navy
 - Resolution: Production contract had existing language enabling routine rate adjustments for productivity improvements
- Planning software provides significant operational logistics savings
 - Issue: The organization hosting the software would not experience cost reductions
 - Resolution: Costs for deployed forces were significantly reduced



NPV Worksheet

CONCLUSIONS



Concluding Points

- NPV is a measure of savings, the primary factor for TIPS
- However, secondary factors may include increased capability, performance, schedule improvement, etc
- Predictions are hard, especially when they're about the future— ***but they require scrutiny and creativity***
- Follow the steps and apply the rules to reduce risk
- Enumerate questions and issues into a single list