

Rapid Business Case Development Using Macro-Based Excel Tool

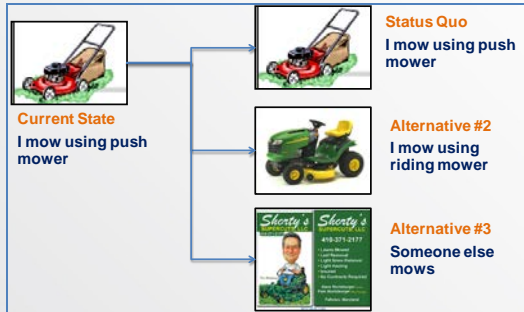
Presented at the 2012 SCEA/ISPA Joint Annual Conference and Training Workshop - www.iceaaonline.com

Presenter: Andrew Hutchinson
June 25, 2012

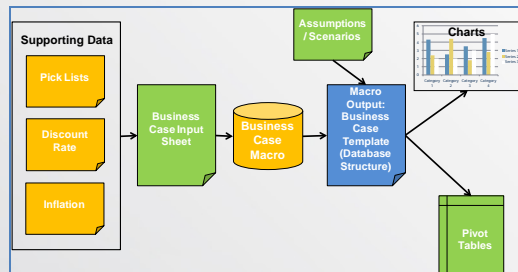


SYSTEMS THINKING. SMARTER SOLUTIONS.™

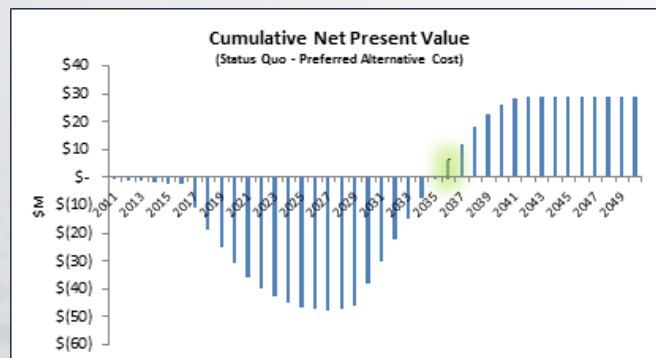
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What, Who, When, Where, Why, and How of Business Case



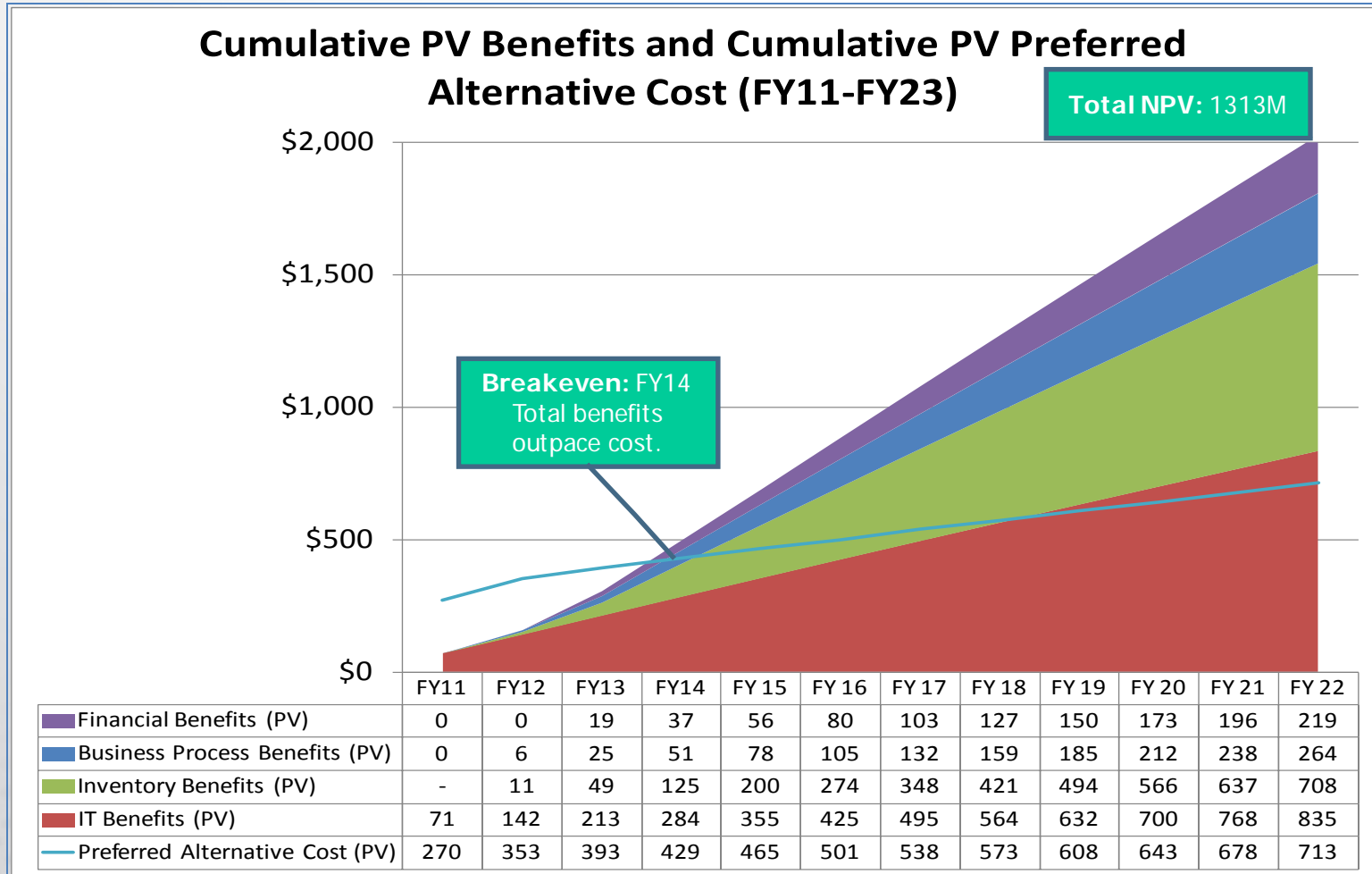
Demo of Business Case Approach & Tool



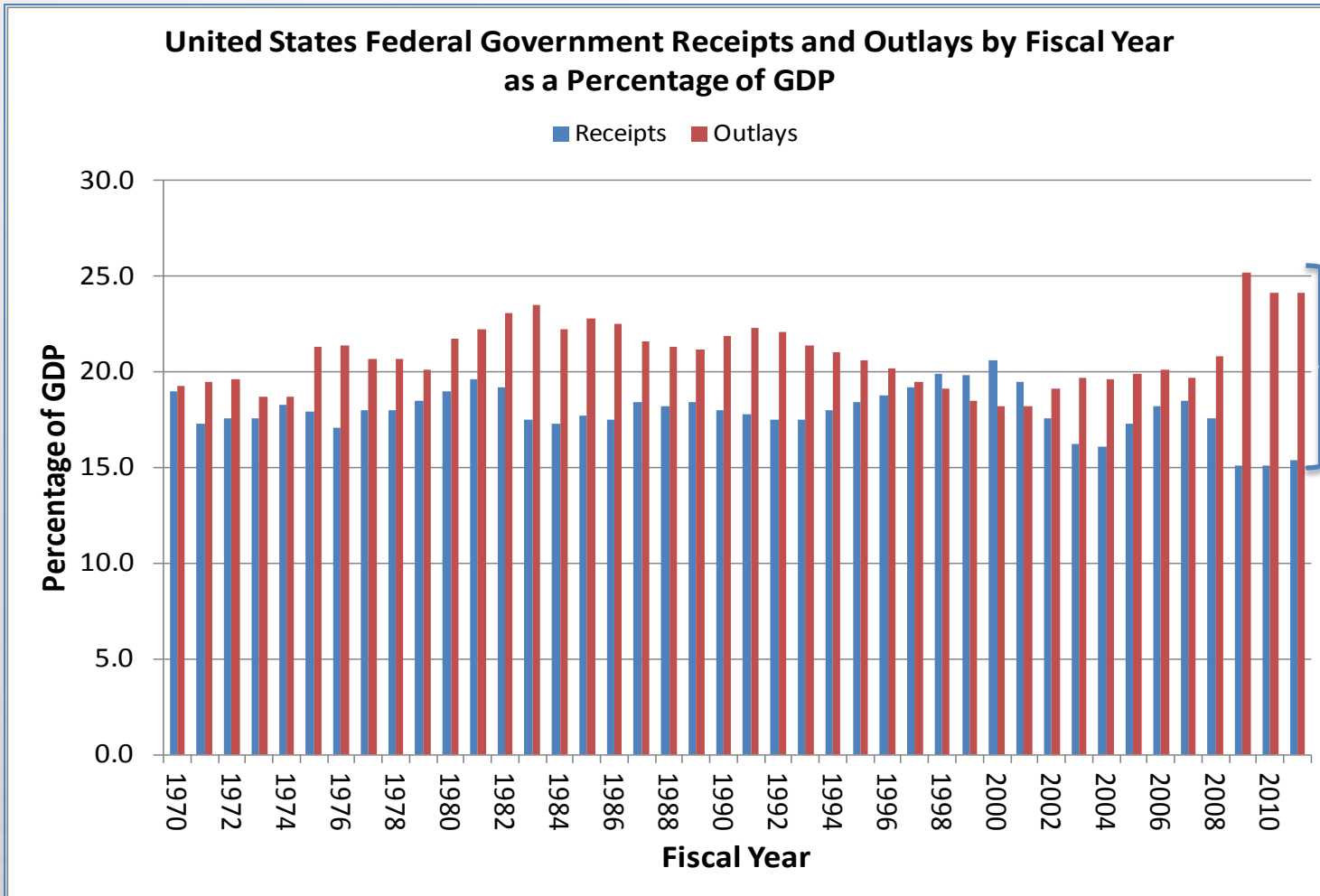
Business Case Tool Lessons Learned From Case Studies

What is a business case?

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Business cases (aka Cost Benefit Analysis, Economic Analysis) seek to analyze the viability of a potential investment from an objective perspective

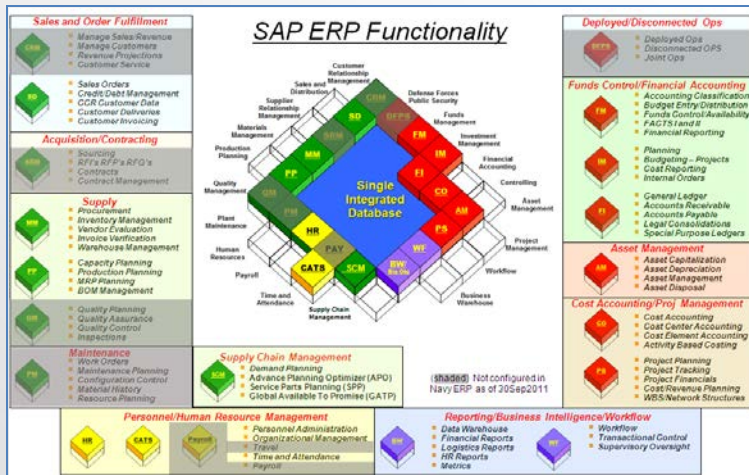


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A poor economy has led to the highest US federal deficits since World War 2



**2009-2011 US Federal Deficit:
~10% of GDP**

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Business cases are performed throughout industry and government for a variety of purposes



Case Study #1: ERP implementation resulting in consolidation of IT systems

Case Study #2: Improved engine technology resulting in reduction to oil consumption



What is the concept behind a business case?

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Business cases provide objective analysis for multiple alternatives



Current State

I mow using push mower



Status Quo

I mow using push mower



Alternative #2

I mow using riding mower



Alternative #3

Someone else mows

How are business cases calculated?

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Qualitative and quantitative factors are captured for each alternative and compared



Status Quo

Labor

Maintenance

Qualitative: Physical Fitness



Alternative #2

Investment

Labor

Maintenance



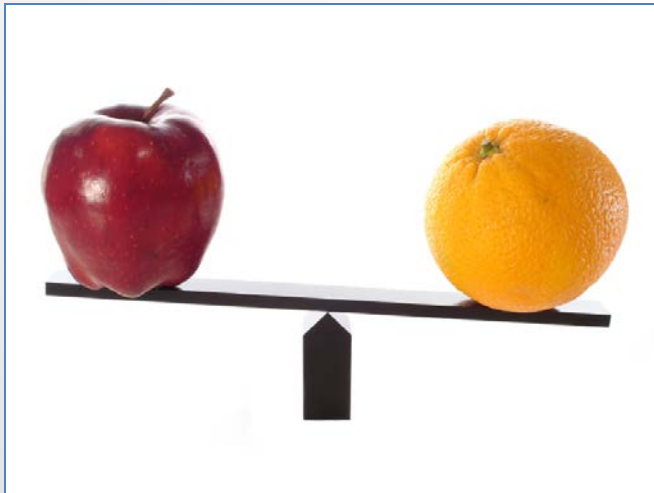
Alternative #3

Contract

Qualitative: More Free Time

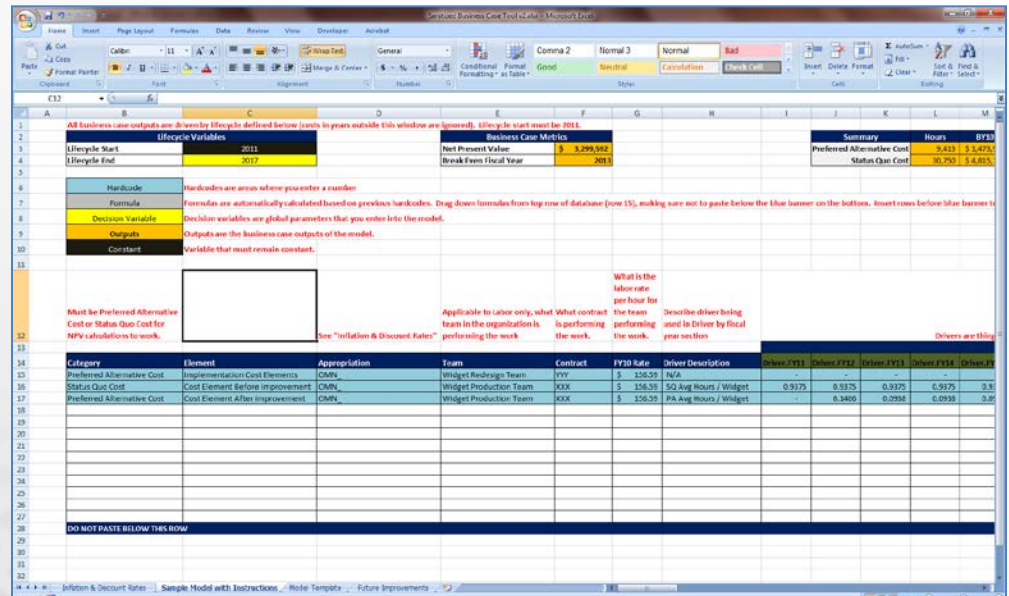
Why are business case templates useful?

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Comparing competing alternatives without normalizing data can lead to incorrect decisions

Business case templates standardize the outputs of alternatives



Category	Element	Implementation Cost Elements	Appropriation	Team	Contract	FY10 Rate	Driver Description	Driver FY11	Driver FY12	Driver FY13	Driver FY14	Driver FY15
Preferred Alternative Cost	Implementation Cost Elements	CMN	Widget Production Team	FYF	\$	252.23	PA					
Status Quo Cost	Cost Element Before Improvement	CMN	Widget Production Team	XXX	\$	156.55	50 Avg Hours / Widget	0.9375	0.9375	0.9375	0.9375	0.9375
Preferred Alternative Cost	Cost Element After Improvement	CMN	Widget Production Team	XXX	\$	156.55	PA Avg Hours / Widget		0.3460	0.0938	0.0938	0.0938

What are the common pitfalls of business case templates?

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Poor business case templates constrain the user to a particular set of circumstances that reflect the reality of the template developer

Black Box: All NPV calculations in a single cell with a hardcoded discount rate

1	A	B	C					
2		NPV	\$22.15					
3								
4		Cash (\$M)	FY12	FY13	FY14	FY15	FY16	FY17
5		Status Quo	\$ 515	\$ 515	\$ 515	\$ 515	\$ 515	\$ 515
6		Labor	\$ 450	\$ 450	\$ 450	\$ 450	\$ 450	\$ 450
7		Develop	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
		Deploy	\$ -	\$ -	\$ -	\$ -	\$ -	\$ -
		Sustain	\$ 400	\$ 400	\$ 400	\$ 400	\$ 400	\$ 400
		PMO	\$ 50	\$ 50	\$ 50	\$ 50	\$ 50	\$ 50
		Non-Labor	\$ 65	\$ 65	\$ 65	\$ 65	\$ 65	\$ 65
		Hardware	\$ 25	\$ 25	\$ 25	\$ 25	\$ 25	\$ 25
		Software	\$ 25	\$ 25	\$ 25	\$ 25	\$ 25	\$ 25
		Facilities	\$ 10	\$ 10	\$ 10	\$ 10	\$ 10	\$ 10
		Travel	\$ 5	\$ 5	\$ 5	\$ 5	\$ 5	\$ 5
16		Preferred Alternative	\$ 670	\$ 750	\$ 580	\$ 365	\$ 330	\$ 305
17		Labor	\$ 565	\$ 665	\$ 515	\$ 300	\$ 265	\$ 240
18		Develop	\$ 100					
19		Deploy		\$ 200	\$ 200			
20		Sustain	\$ 400	\$ 400	\$ 250	\$ 250	\$ 220	\$ 200
21		PMO	\$ 65	\$ 65	\$ 65	\$ 50	\$ 45	\$ 40
22		Non-Labor	\$ 105	\$ 85	\$ 65	\$ 65	\$ 65	\$ 65
23		Hardware	\$ 40	\$ 30	\$ 25	\$ 25	\$ 25	\$ 25
24		Software	\$ 50	\$ 40	\$ 25	\$ 25	\$ 25	\$ 25
25		Facilities	\$ 10	\$ 10	\$ 10	\$ 10	\$ 10	\$ 10
26		Travel	\$ 5	\$ 5	\$ 5	\$ 5	\$ 5	\$ 5
27		SQ - PA	\$ (155)	\$ (235)	\$ (65)	\$ 150	\$ 185	\$ 210
28								
29								

Static cost categories

Static time horizon

Sub-rollup costs instead of database format

What is the preferred process for developing business cases?

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Dynamic templates strike the right balance between customization and standardization

Develop
Template

Populate
Template

Report
Results

Manual:
Time
Consuming

Develop
Template

Customize
Template

Populate
Template

Report
Results

Static
Template:
Black Box

Develop
Template

Customize
Template

Populate
Template

Report
Results

Dynamic
Template:
Maximizes
quality,
reduces time

LEGEND

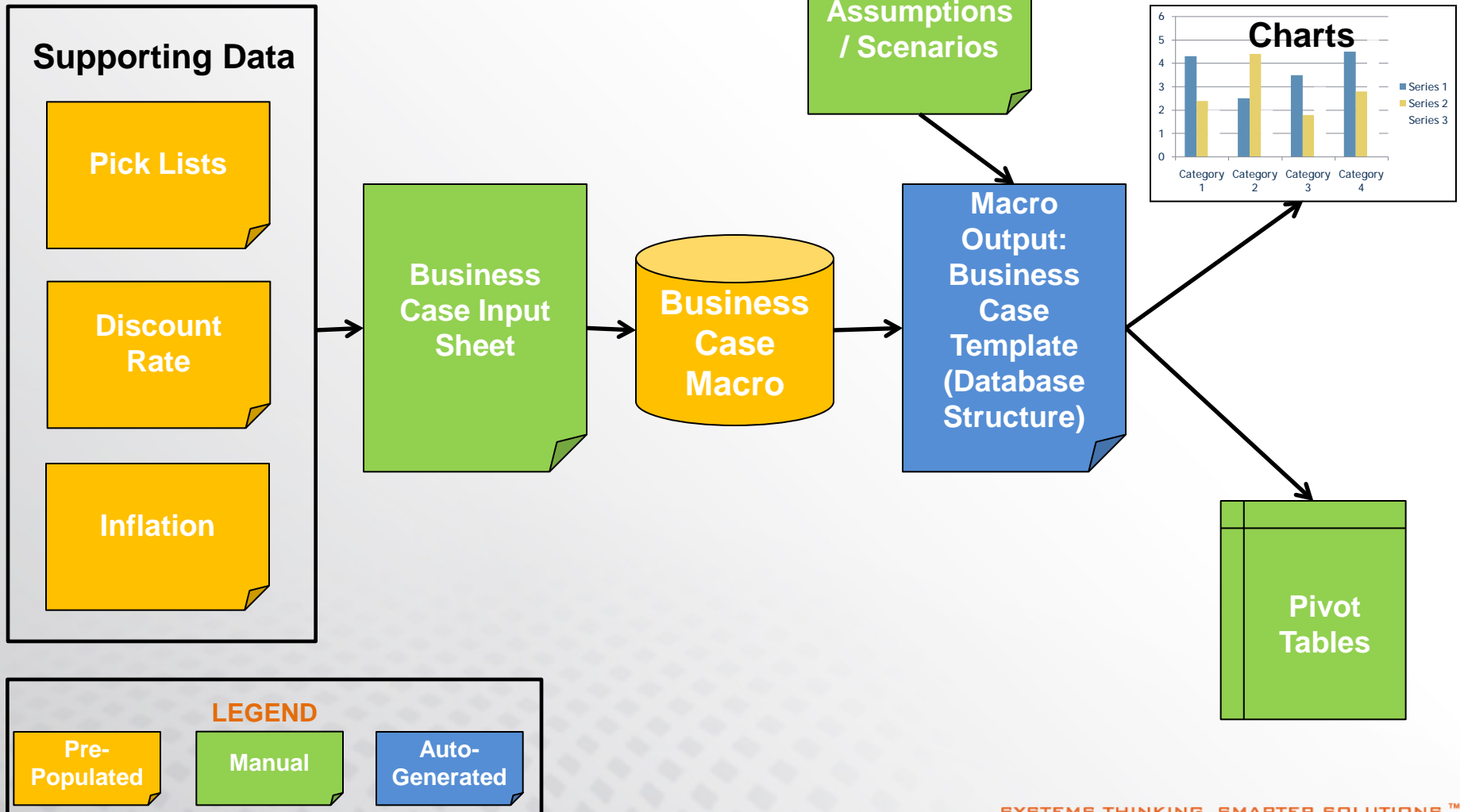
Pre-
Populated

Manual

What is the dynamic template model structure?

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All calculations in template are transparent and can be customized to any environment

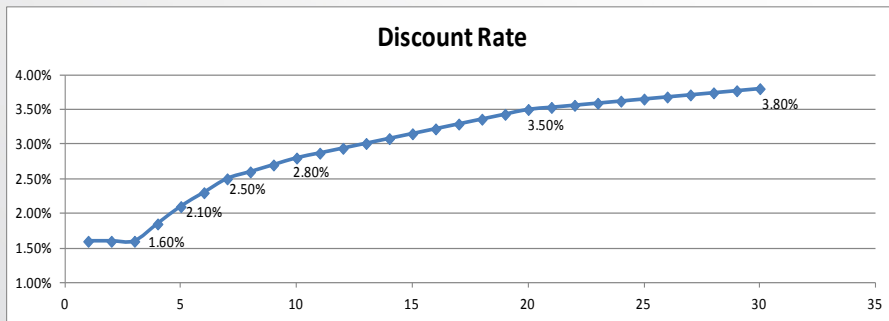




What is the dynamic template model structure?

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Supporting data is pre-populated into tool consistent with Federal Business Case Guidelines

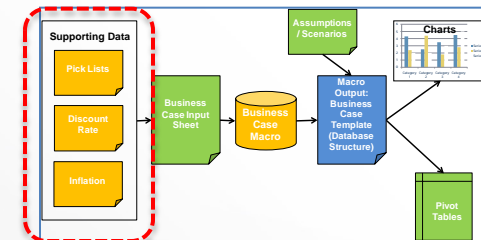
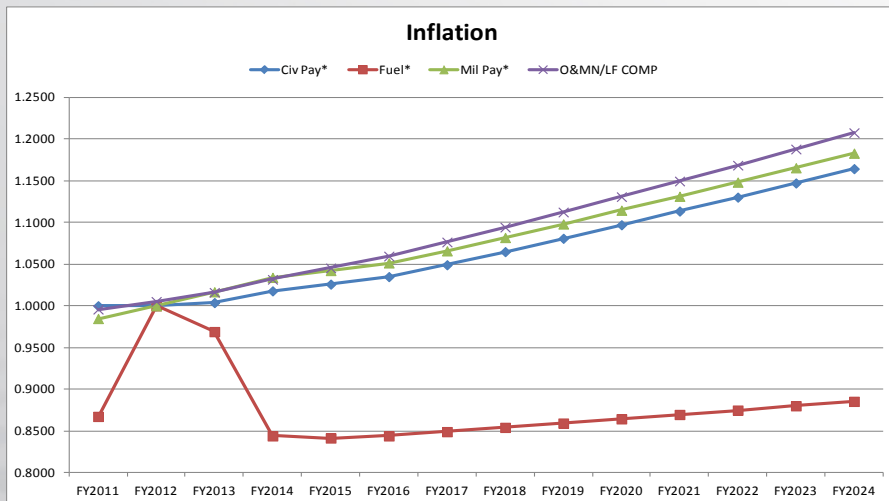
OMB Discount Rates



NCCA Inflation Categories

Appropriation
APN
BRAC
BRAC ER
Civ Pay*
ENV REST
FH (Con) Purch
FH (Ops) Purch
FH Con COMP
Fuel*
Mil Pay*
Milcon COMP
Milcon DoD
Milcon Purch
Milcon Res Purch
MPMC COMP
MPMC Non-pay
MPN COMP
MPN Non-pay

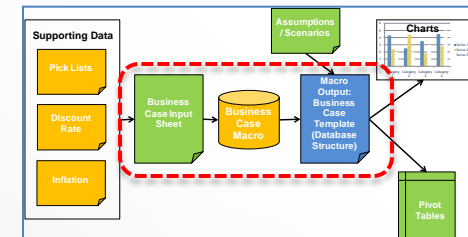
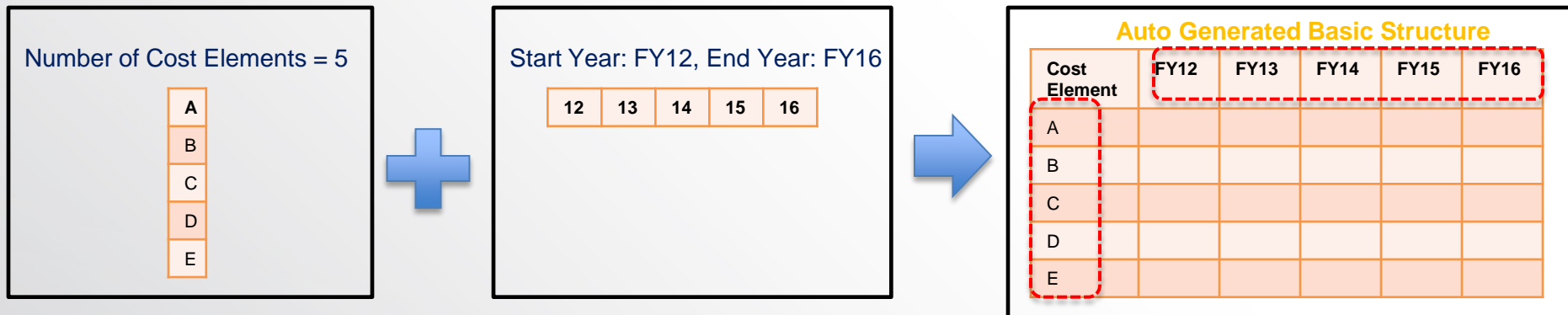
NCCA Inflation Indices



What is the dynamic template model structure?

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Macro input sheet allows user to automatically create new business case templates based on different investment conditions

- Number of Cost Elements
- Investment Timeline



What is the dynamic template model structure?

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Macro input sheet allows user to automatically create new business case templates based on different investment conditions

- **Meta-Data**

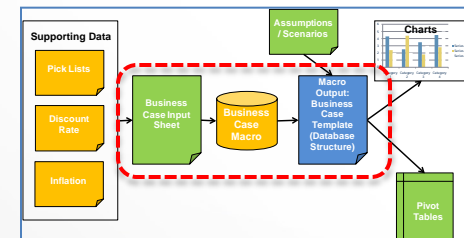
Category, Element Description, Etc.

Category 1	Category 2	Element Description
------------	------------	---------------------



Auto Generated Basic Structure with Meta-Data

Num	Category 1	Category 2	Element Description	FY12	FY13	FY14	FY15	FY16
1								
2								
3								
4								
5								

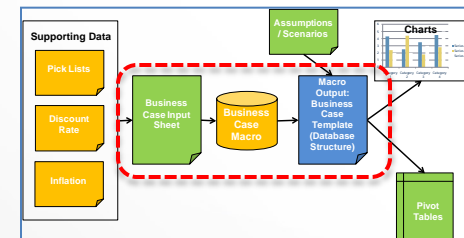
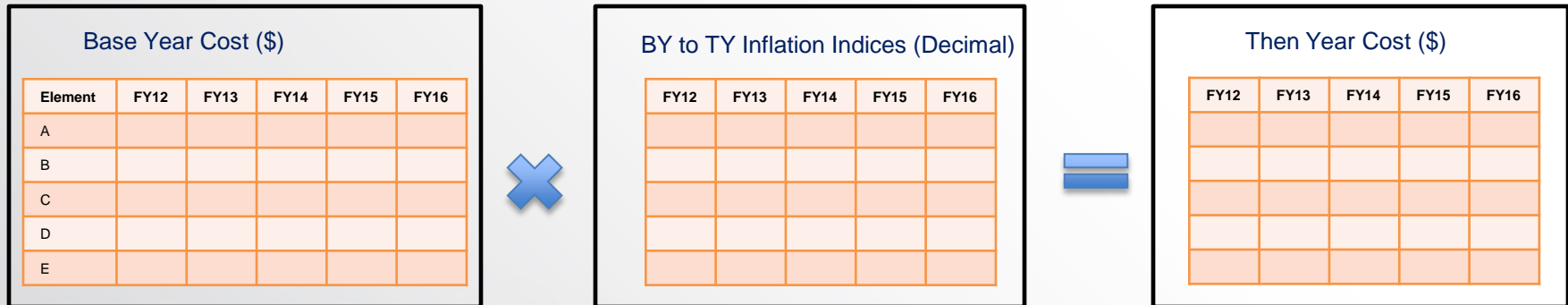


What is the dynamic template model structure?

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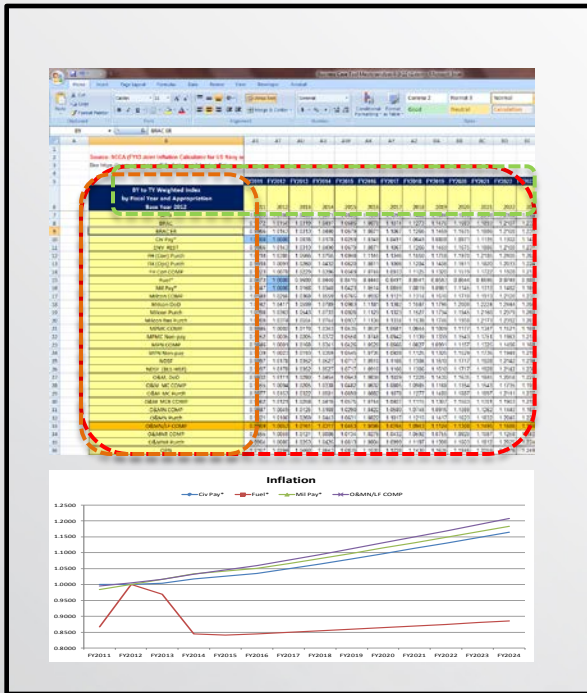
Macro input sheet allows user to automatically create new business case templates based on different investment conditions

- Section Headers
- Calculation Methodology
- Style/Font



What is the dynamic template model structure?

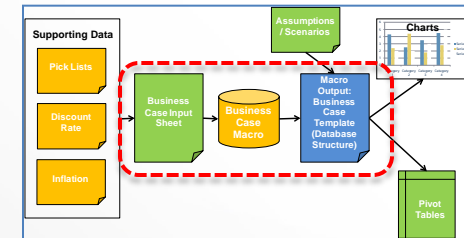
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Resultant output is an excel spreadsheet with transparent formulas that are trace-able to inputs



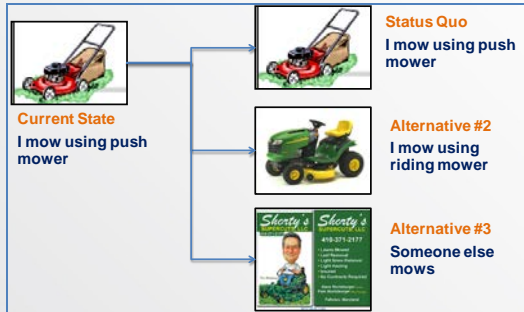
Inflation Formula
 =INDEX(Inflation!\$B\$6:\$EG\$49,
 MATCH(\$E15, Inflation!\$B\$6:\$B\$49,0),
 MATCH(BQ\$8, Inflation!\$B\$6:\$EG\$6,0))

BY to TY Inflation Indices (Decimal)

FY12	FY13	FY14	FY15	FY16



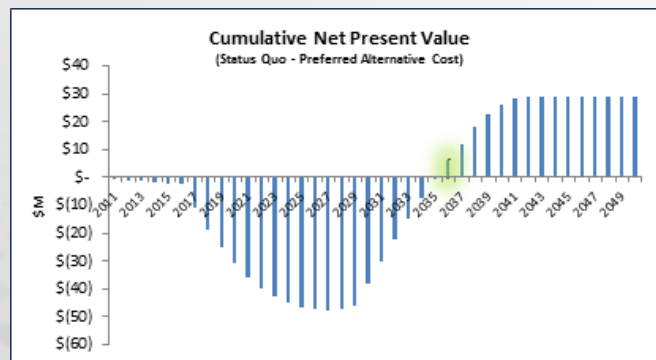
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What, Who, When, Where, Why, and How of Business Case

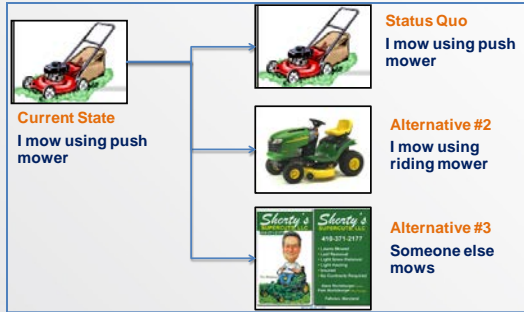


Demo of Business Case Approach & Tool

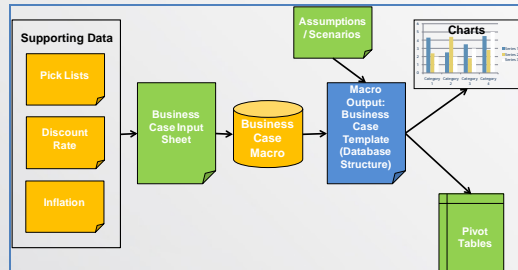


Business Case Tool Lessons Learned From Case Studies

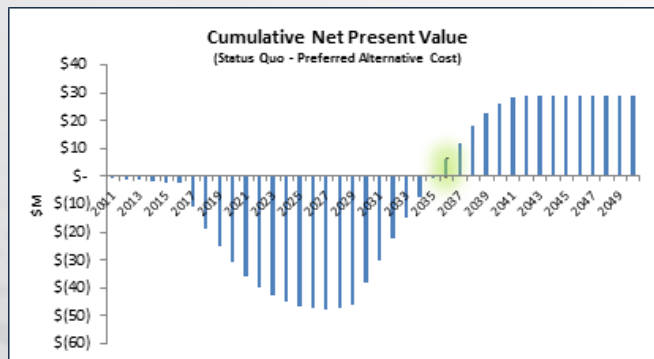
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What, Who, When, Where, Why, and How of Business Case



Demo of Business Case Approach & Tool

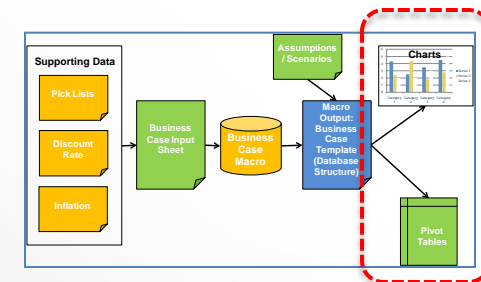
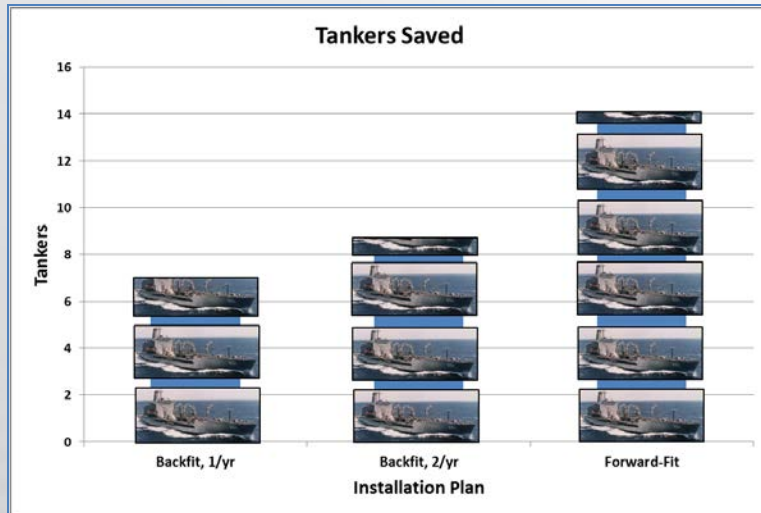
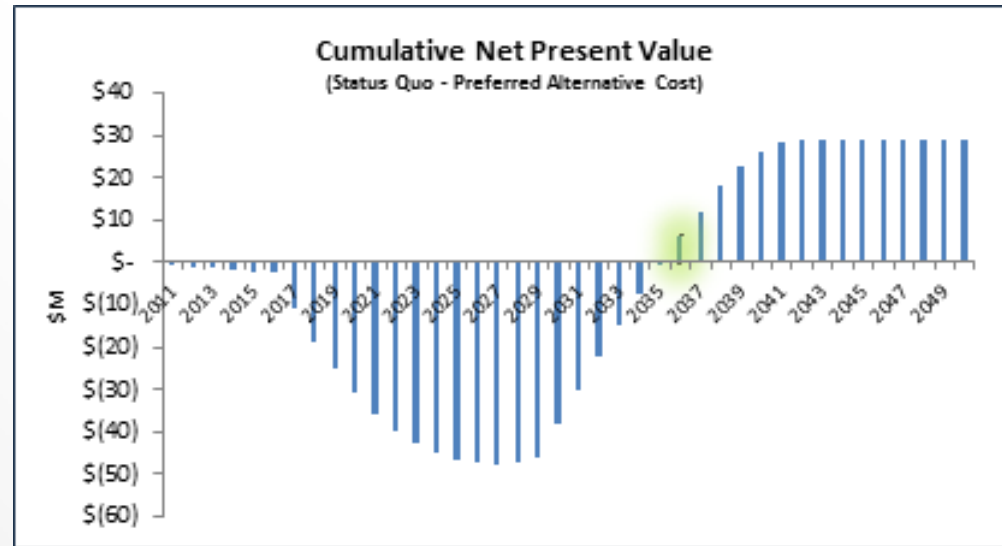


Business Case Tool Lessons Learned From Case Studies

What are some visual displays for the business case tool?

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Database format allows for ability to easily develop visual displays

- Pivot Tables (Demo)
- Cumulative NPV by Fiscal Year
- Other Analyses

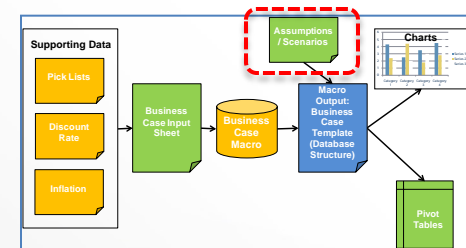


* Tanker = 159,000 barrels of oil

What are some enhancements to the tool?

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With some enhancements, the tool can be made dynamic

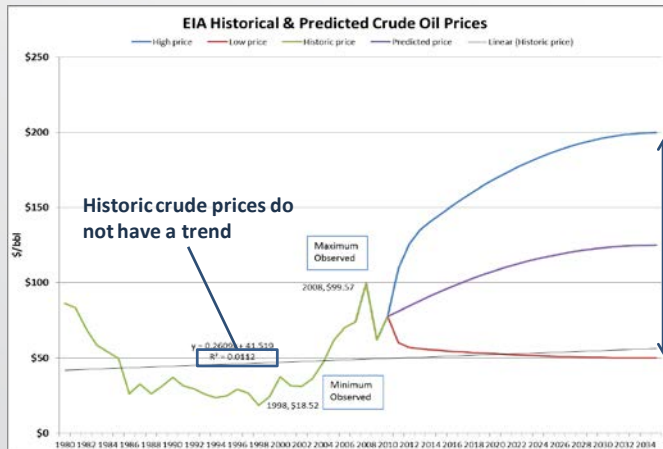
- ERP Investment Portfolio Analysis (Demo)
- Energy Scenario Analysis (Demo)



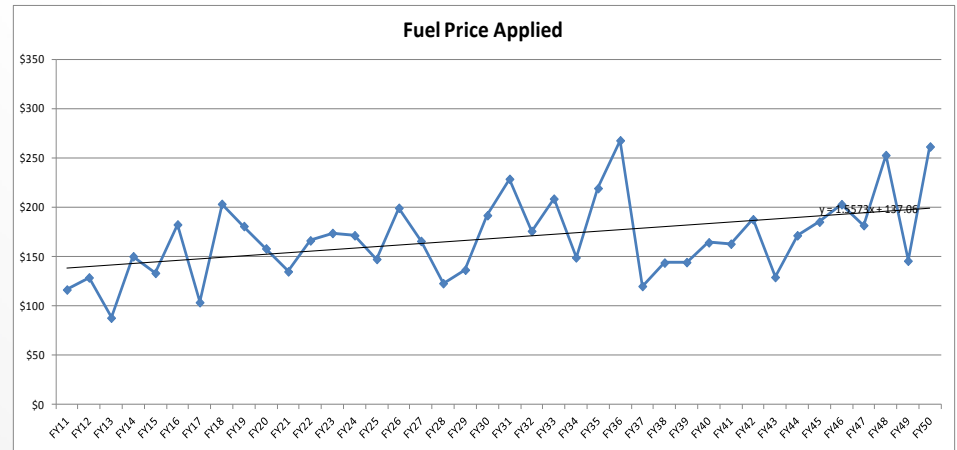
What are some enhancements to the tool?

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With some enhancements, the tool can conduct simulations

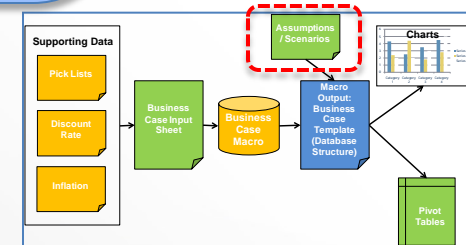
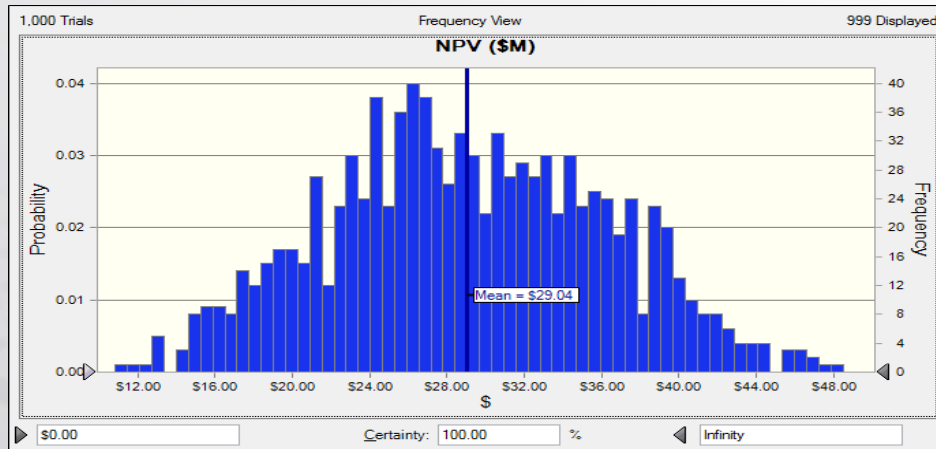
Historic oil price volatility decreases confidence in point estimates



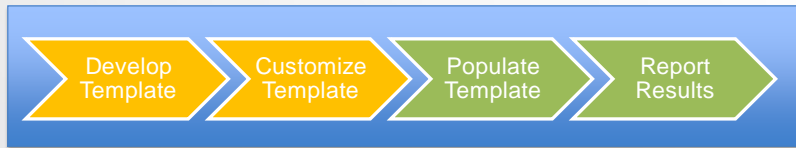
Crystal ball used to simulate the random walk of oil prices



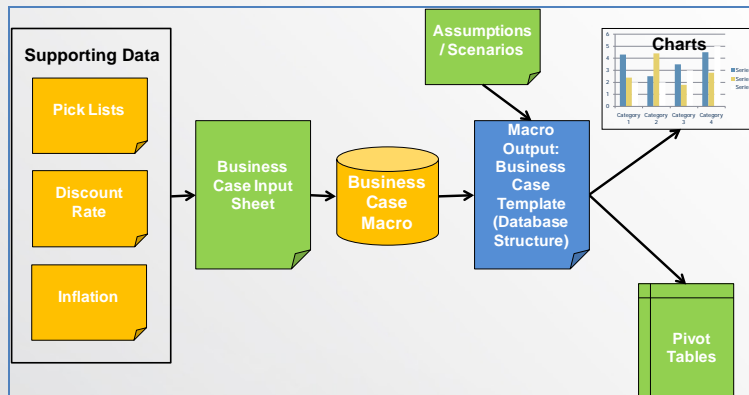
Results plotted against distribution to show range of outcomes



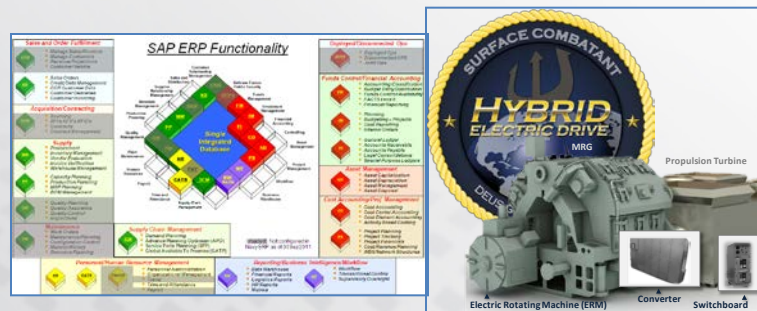
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Lessons Learned from Development of Rapid Business Case Tool



Balance between customization and standardization



Modular design and database format allow for transparency and ability to enhance product



Flexibility of tool is critical for success across differing organizations

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Andrew Hutchinson is a management consultant with over eight years of experience spanning a number of analytical areas:

- ❖ **Modeling, Simulation and Tools** – implementation of solutions to facilitate cost estimating, manpower analysis, operations research and program management.
- ❖ **Process Standardization** - development of standardized and streamlined approaches for costing, financial management and performance measurement / metrics.
- ❖ **Production Management** – application of Lean manufacturing and manufacturing issue resolution across multiple industries.
- ❖ **DoD Program Management** - direct support of program management activities at the Navy's Enterprise Resource Planning (ERP) program including the development of the Economic Analysis for the program's Full Deployment Decision milestone as well as several ad hoc business cases to assess the cost-benefit of proposed new initiatives.
- ❖ **Energy Analysis** – development of business cases to assess the economic viability of new energy saving technology. Applied linear regression and simulation tools to forecast the range of oil prices to increase the accuracy of business case tools.
- ❖ **Education** - Bachelor's degree in Operations Research / Financial Engineering from Princeton University, Master of Business Administration from Darden School of Business (University of Virginia) which is 100% business case study resulting in review and analysis of 600 business cases across multiple industries and functions. Received Faculty Award for Academic Excellence at Darden (top 10% GPA).
- ❖ **Certifications** - Society of Cost Estimating and Analysis (SCEA) Certified Cost Estimator/Analyst (CCEA), Lean Six Sigma Green Belt

