“Military Judgement with a dash of logic”: Royal Navy Case studies

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Catalyze Ltd.

ISMOR 2016

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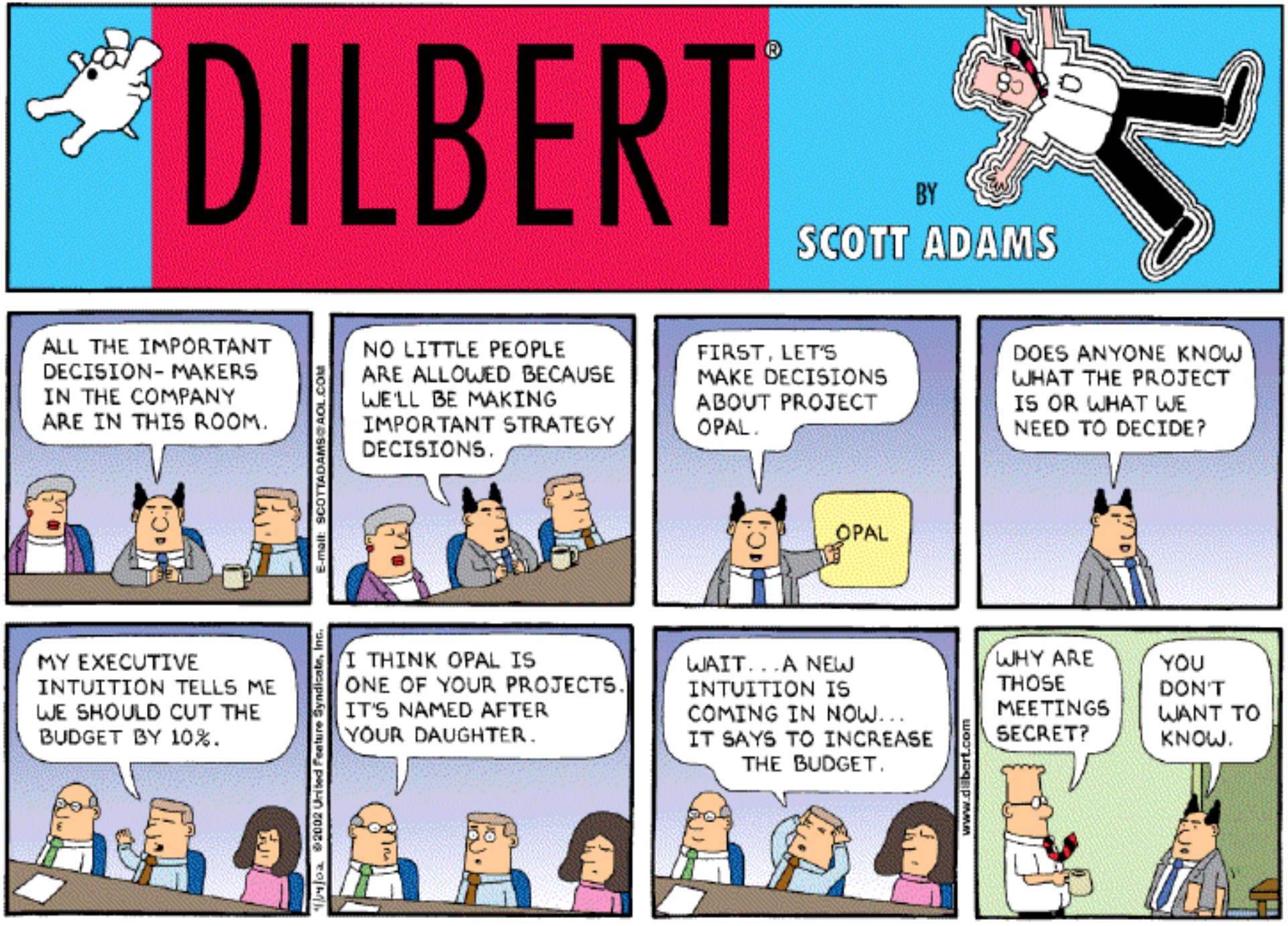
ENABLING EFFECTIVE DECISIONS

Catalyze

A process consultancy specialising in the practical application of Decision Science to complex problems


DILBERT®
BY
SCOTT ADAMS
ALL THE IMPORTANT DECISION-MAKERS IN THE COMPANY ARE IN THIS ROOM.
NO LITTLE PEOPLE ARE ALLOWED BECAUSE WE'LL BE MAKING IMPORTANT STRATEGY DECISIONS.
FIRST, LET'S MAKE DECISIONS ABOUT PROJECT OPAL.
OPAL
DOES ANYONE KNOW WHAT THE PROJECT IS OR WHAT WE NEED TO DECIDE?
MY EXECUTIVE INTUITION TELLS ME WE SHOULD CUT THE BUDGET BY 10%.
I THINK OPAL IS ONE OF YOUR PROJECTS. IT'S NAMED AFTER YOUR DAUGHTER.
WAIT...A NEW INTUITION IS COMING IN NOW... IT SAYS TO INCREASE THE BUDGET.
WHY ARE THOSE MEETINGS SECRET?
YOU DON'T WANT TO KNOW.
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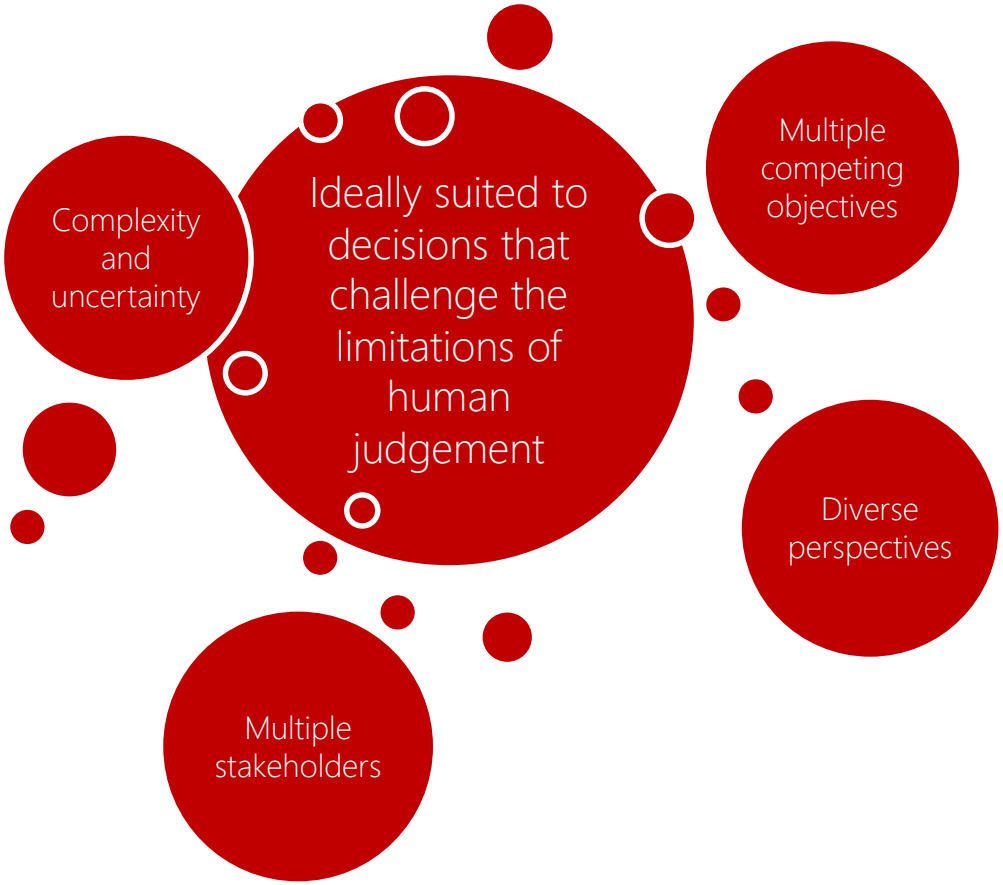
EMPLOYING DECISION SCIENCE

Proven process, principles and tools to aid effective decisions at the highest level



Allowing qualitative and quantitative data to be combined

Providing robust, transparent and auditable evidence

Helping eliminate biases and ill-informed decisions

Aiding fast and efficient decision-making

Decision Conferencing combines the technical aspects of Multi-Criteria Decision Analysis with facilitated workshops to help stakeholders model the decision and decide.

CREATING:

Shared understanding of the issues and perspectives

Sense of common purpose

Commitment to action

Defence Applications

- Programme
  - Naval Base Review
  - **Small Ship** and Submarine **Base Porting**
  - Training Estate rationalisation
  - Royal Fleet Auxiliary Manning Strategy
  - Cdo Engineering Regiment location
  - Ammunition Facilities
  - Commando unit accommodation

- Portfolio
  - Type 45 Destroyer
  - Equipment Plan
  - Fleet Operating budget
  - Estates build programme
  - NATO ATC
  - Weapons Operating centre
  - NZ Defence Force Strategic Review
  - Land Cmd Balance of Investment
  - Navy Cmd Strategic Balance of Investment

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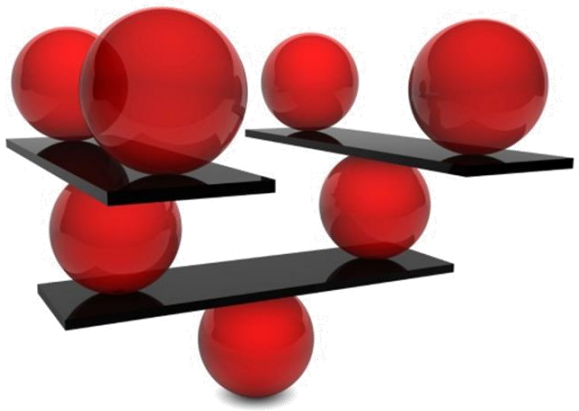
Mine Countermeasures Vessels (MMs) Base Port location



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Decision Context

- Financial savings left the Navy with 2 classes of 8 ships ('Hunts' and 'Sandowns')
- But only 4 ships in Faslane, Scotland (north) and 12 in Portsmouth (south)
- Needed to determine the optimal base port arrangements

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Options

- **Option 1** - Do nothing, 12 MMs remain in Portsmouth and 4 remain in Faslane.
- **Option 2** - Base all 16 MMs in Faslane.
- **Option 3** - Base all 16 MMs in Portsmouth.
- **Option 4** - MM Force split 8 Portsmouth, 8 Faslane - equal mix of Hunt/Sandown.
- **Option 5** - MM Force split 8 Portsmouth, 8 Faslane - Hunts south, Sandown north.
- **Option 6** - MM Force split 8 Portsmouth, 8 Faslane – Sandown south, Hunts north.
- **Option 7** - Relocate 2 or 3 MMs North, unequal mix North:South, 10:6 or 9:7

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Criteria

- Question the decision makers and experts
- What do they really care about?
- How do they see the future?
- Criteria emerge easily – ensure that they are complete and are discriminators

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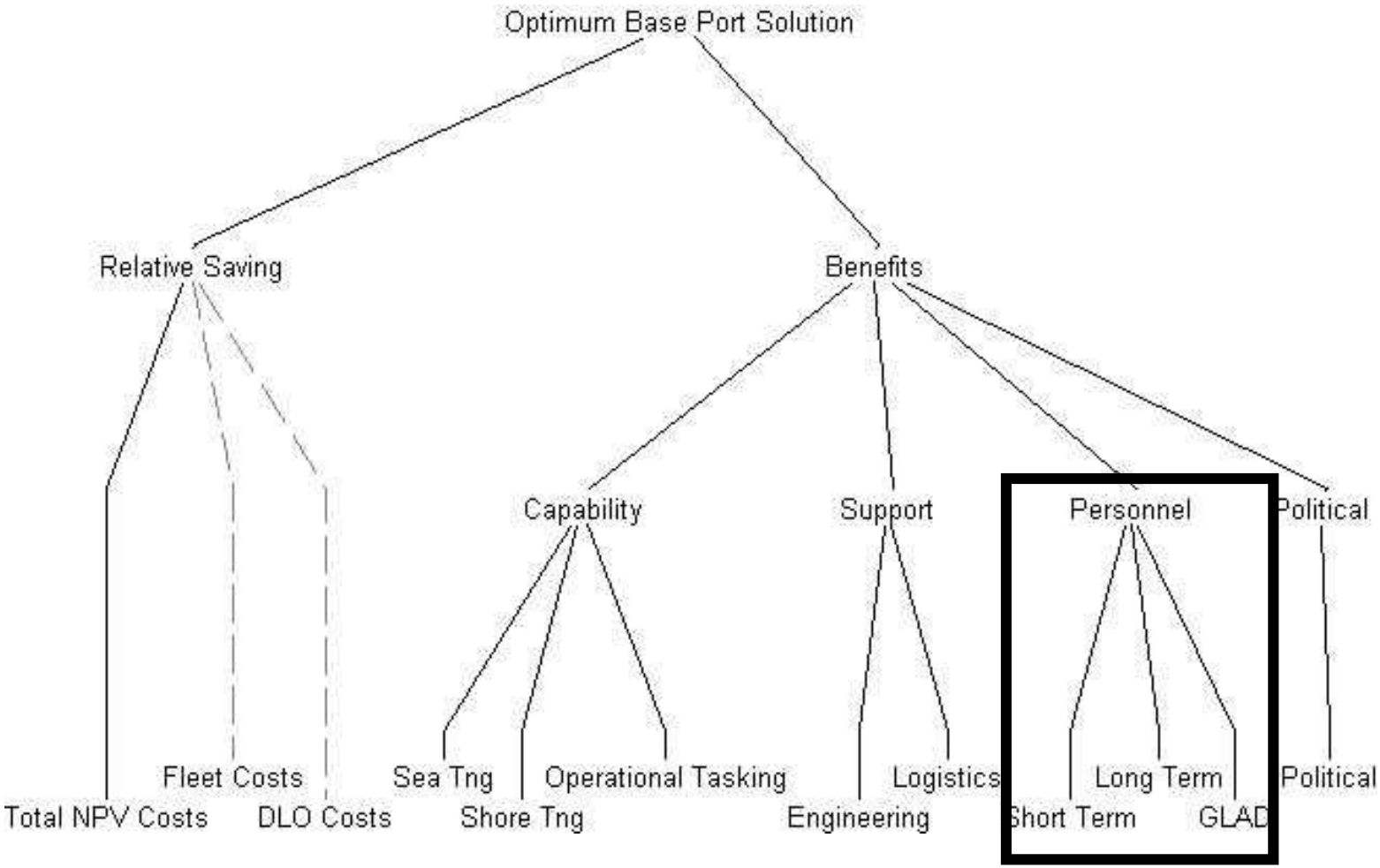
Build a model: Decision Tree



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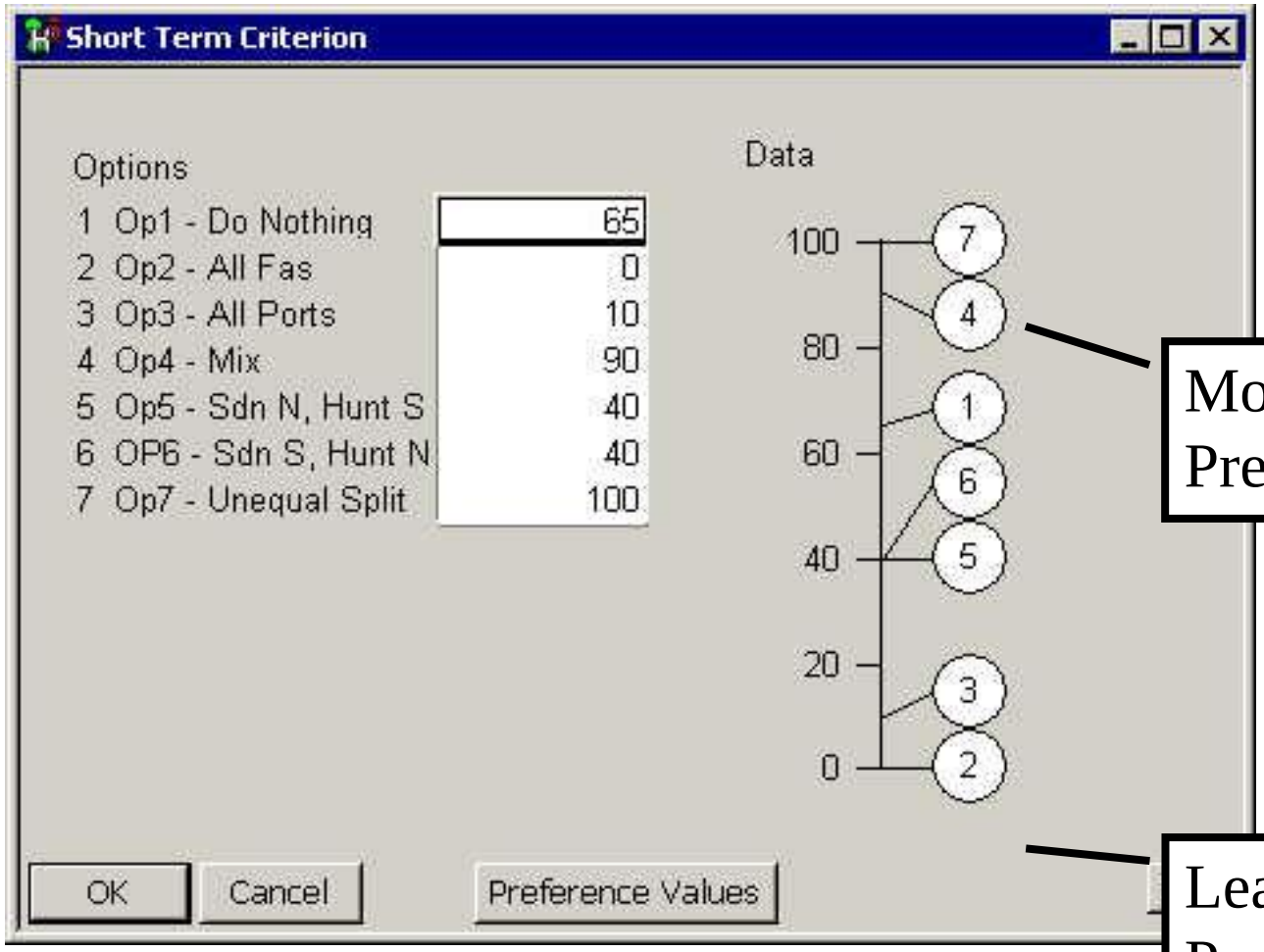
Scoring – Personnel (Short Term) Criterion



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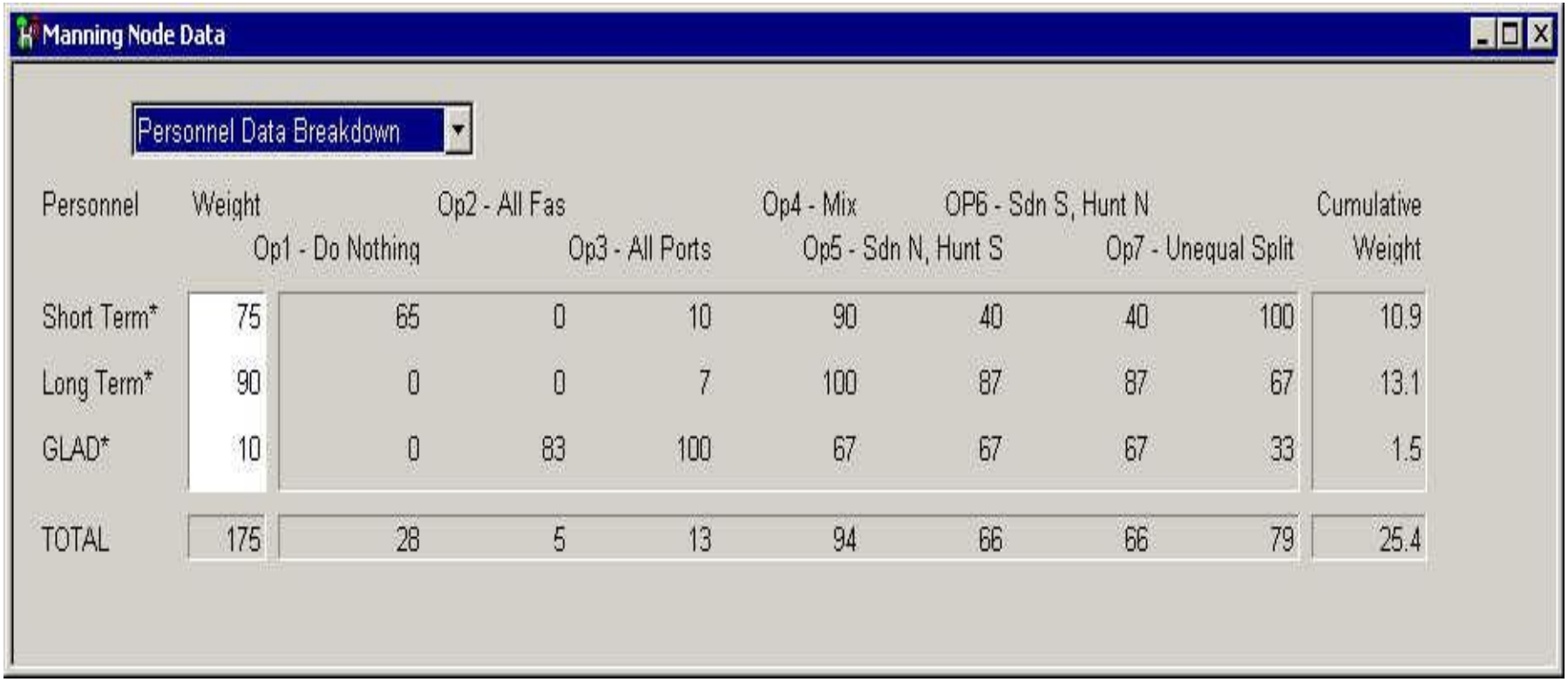
Within Criterion Weighting – Personnel


Manning Node Data

Personnel Data Breakdown

Personnel	Weight	Op1 - Do Nothing	Op2 - All Fas	Op3 - All Ports	Op4 - Mix	Op5 - Sdn N, Hunt S	OP6 - Sdn S, Hunt N	Op7 - Unequal Split	Cumulative Weight
Short Term*	75	65	0	10	90	40	40	100	10.9
Long Term*	90	0	0	7	100	87	87	67	13.1
GLAD*	10	0	83	100	67	67	67	33	1.5
TOTAL	175	28	5	13	94	66	66	79	25.4

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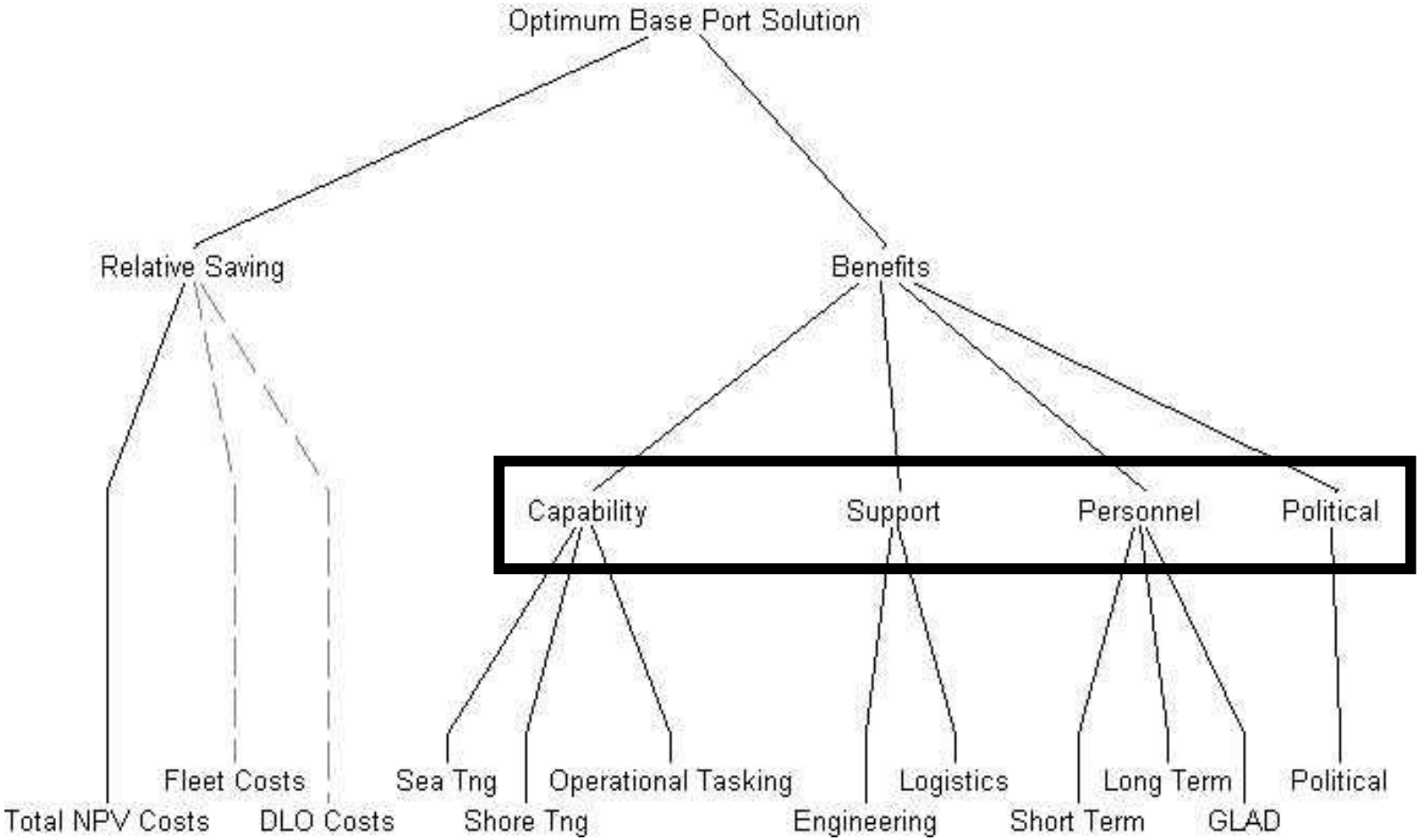
Decision Tree



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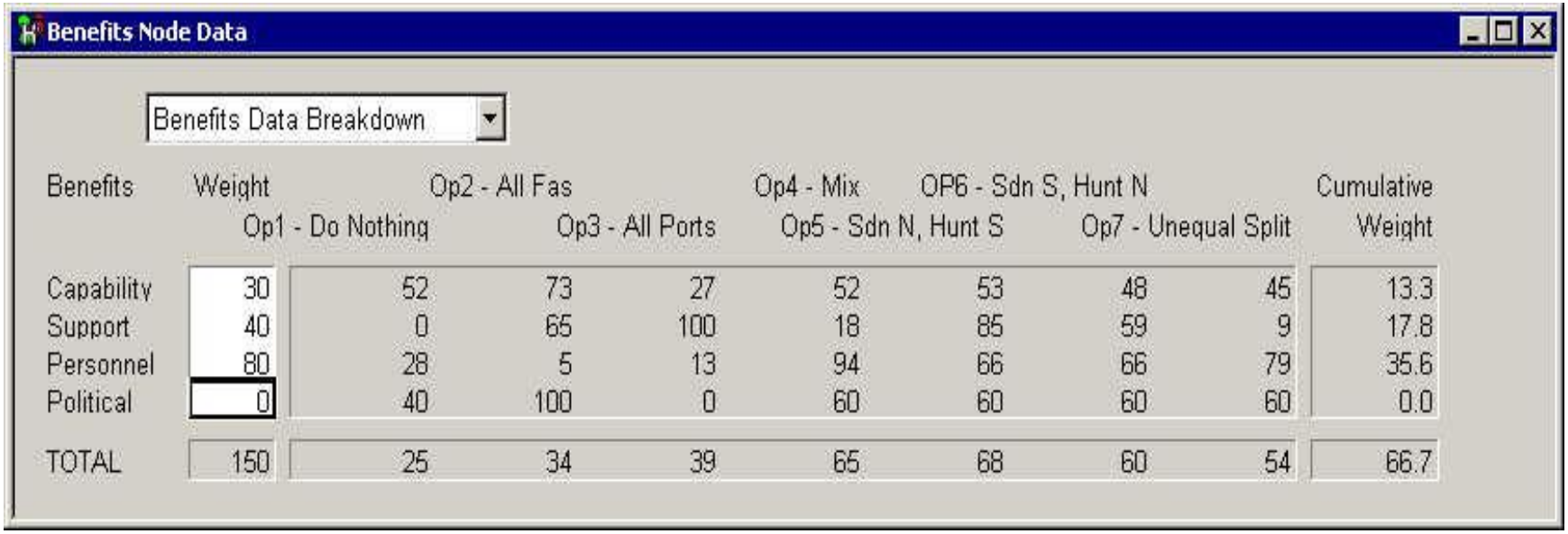
Across Criteria Weighting – Benefits



Benefits Node Data

Benefits Data Breakdown

Benefits	Weight	Op1 - Do Nothing	Op2 - All Fas	Op3 - All Ports	Op4 - Mix	Op5 - Sdn N, Hunt S	OP6 - Sdn S, Hunt N	Op7 - Unequal Split	Cumulative Weight
Capability	30	52	73	27	52	53	48	45	13.3
Support	40	0	65	100	18	85	59	9	17.8
Personnel	80	28	5	13	94	66	66	79	35.6
Political	0	40	100	0	60	60	60	60	0.0
TOTAL	150	25	34	39	65	68	60	54	66.7

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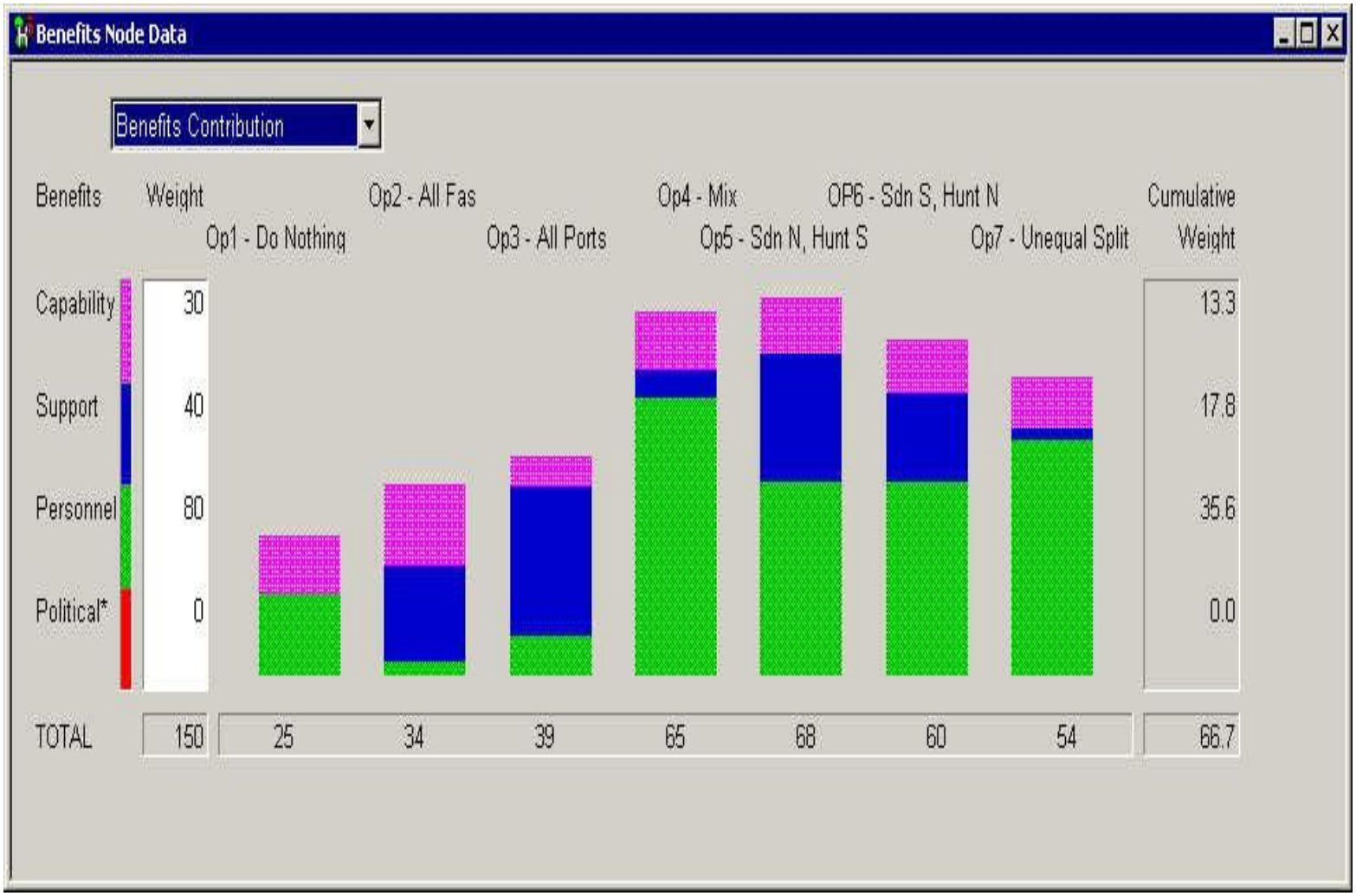
Total Weighted Benefit by Criterion (Political = 0)



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Costs

	Op 1	Op 2	Op 3	Op 4	Op 5	Op 6	Op 7
Transition Cost (Yr 1) (£k)	0	285	208	0	0	0	0
Net annual cost impact (£k)	0	807	-1253	486	-439	-439	243
Total 10 Yr Discounted Net Cost Impact (£k)	**0**	**8002**	**-11317**	**4582**	**-3984**	**-3984**	**2291**
Net Cost Preference Value	41	0	100	18	62	54	30

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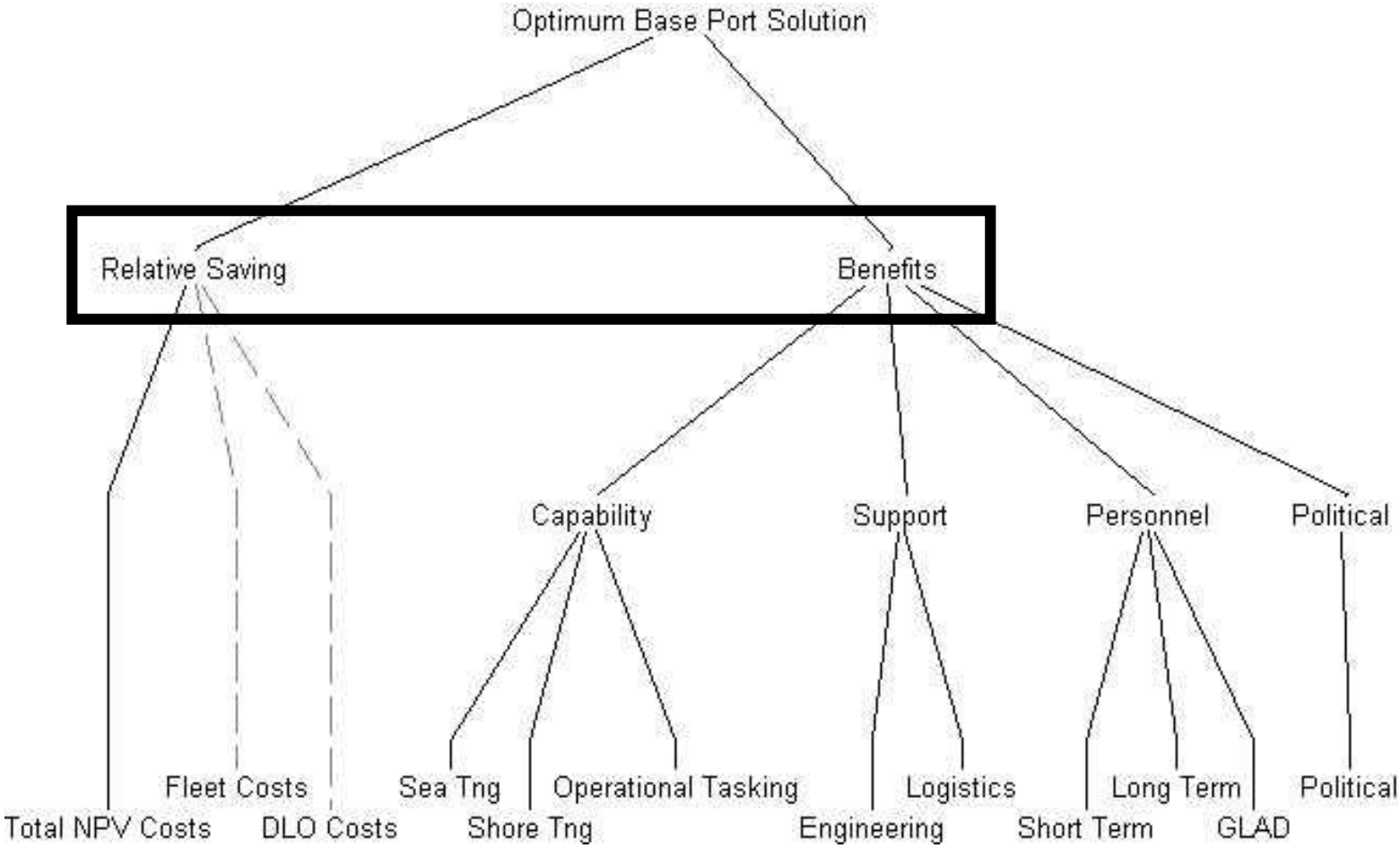
Relative Saving v Benefit



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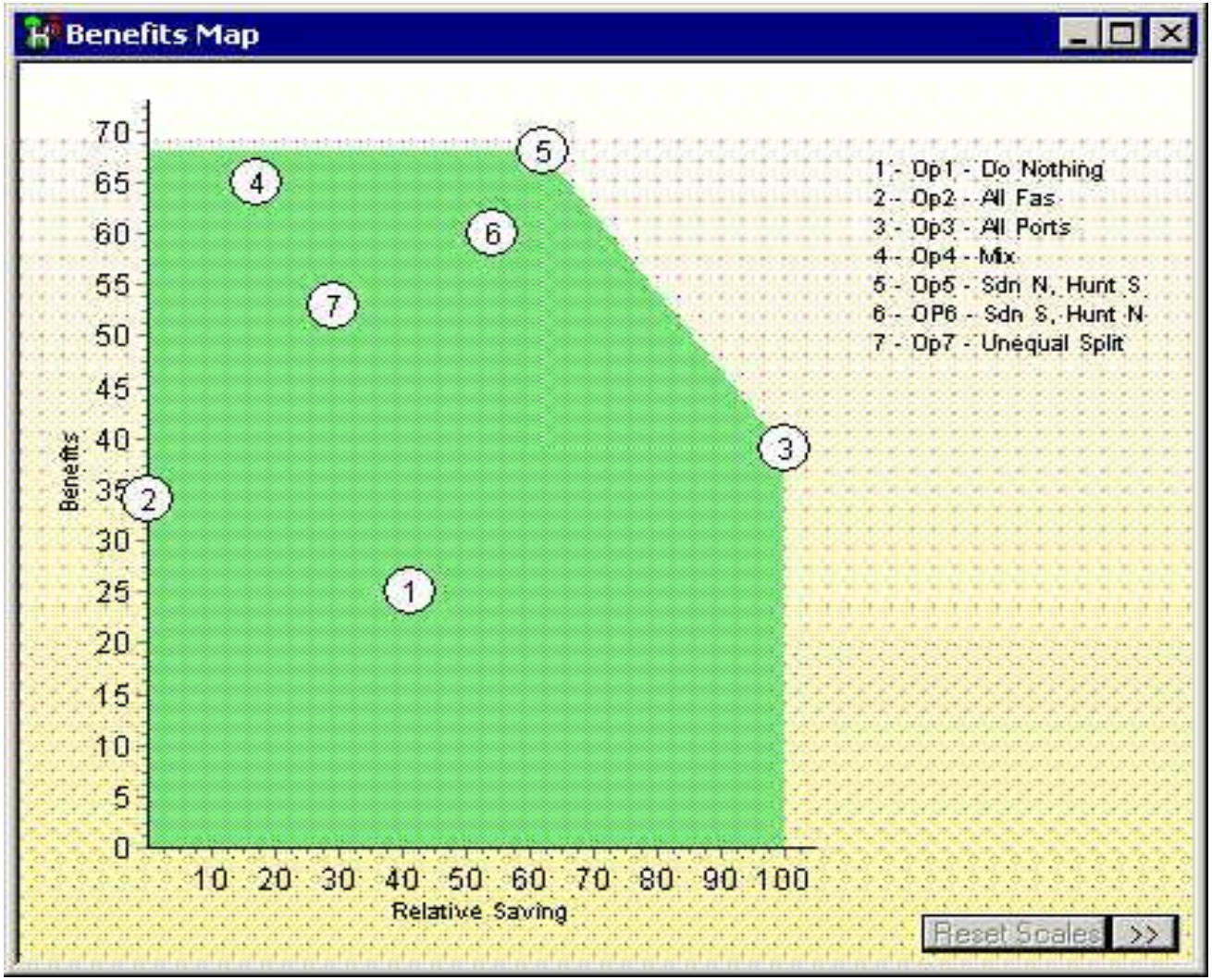
Benefit v Relative Savings (political weight = 0)



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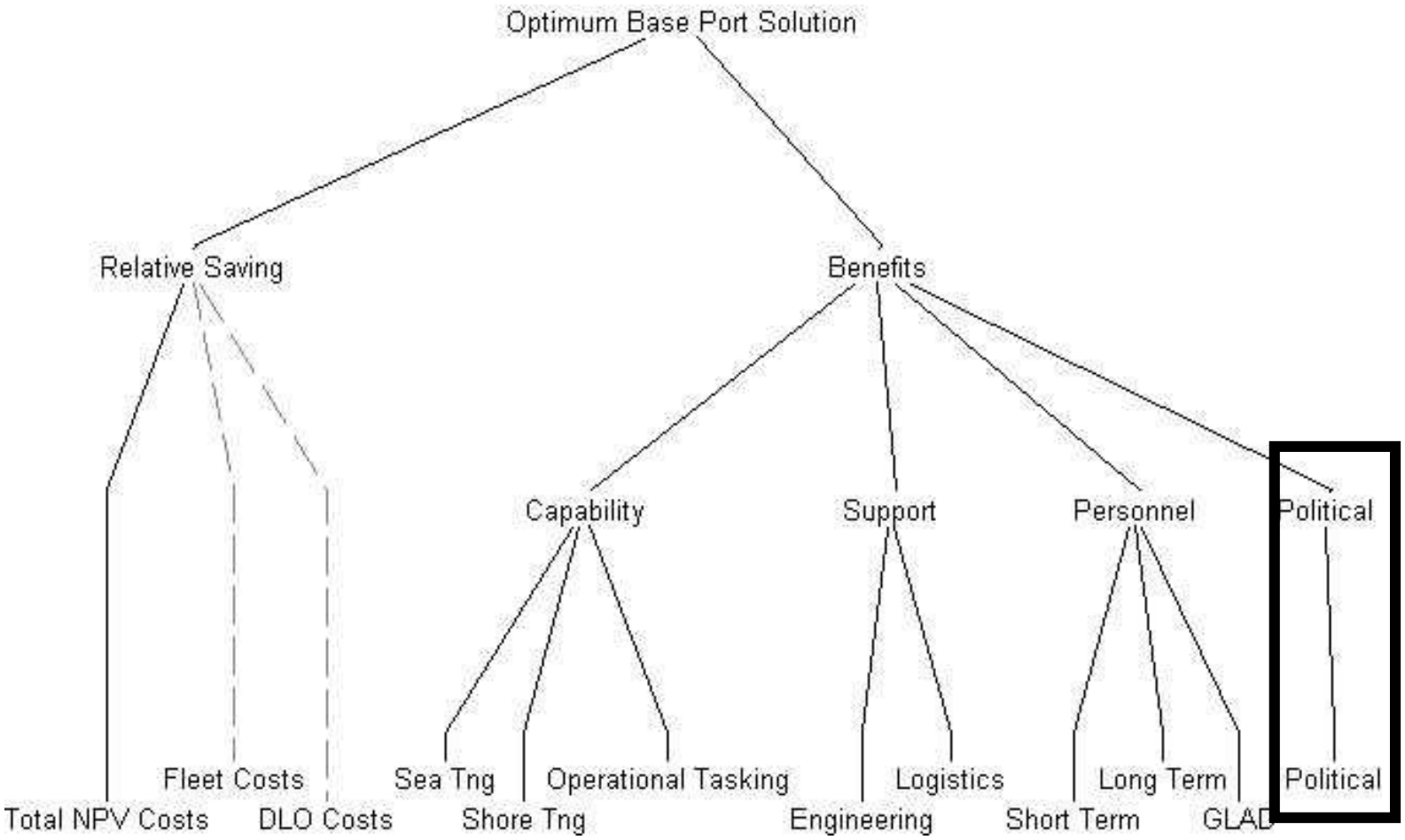
Sensitivity Analysis (1) Decision Tree (political)



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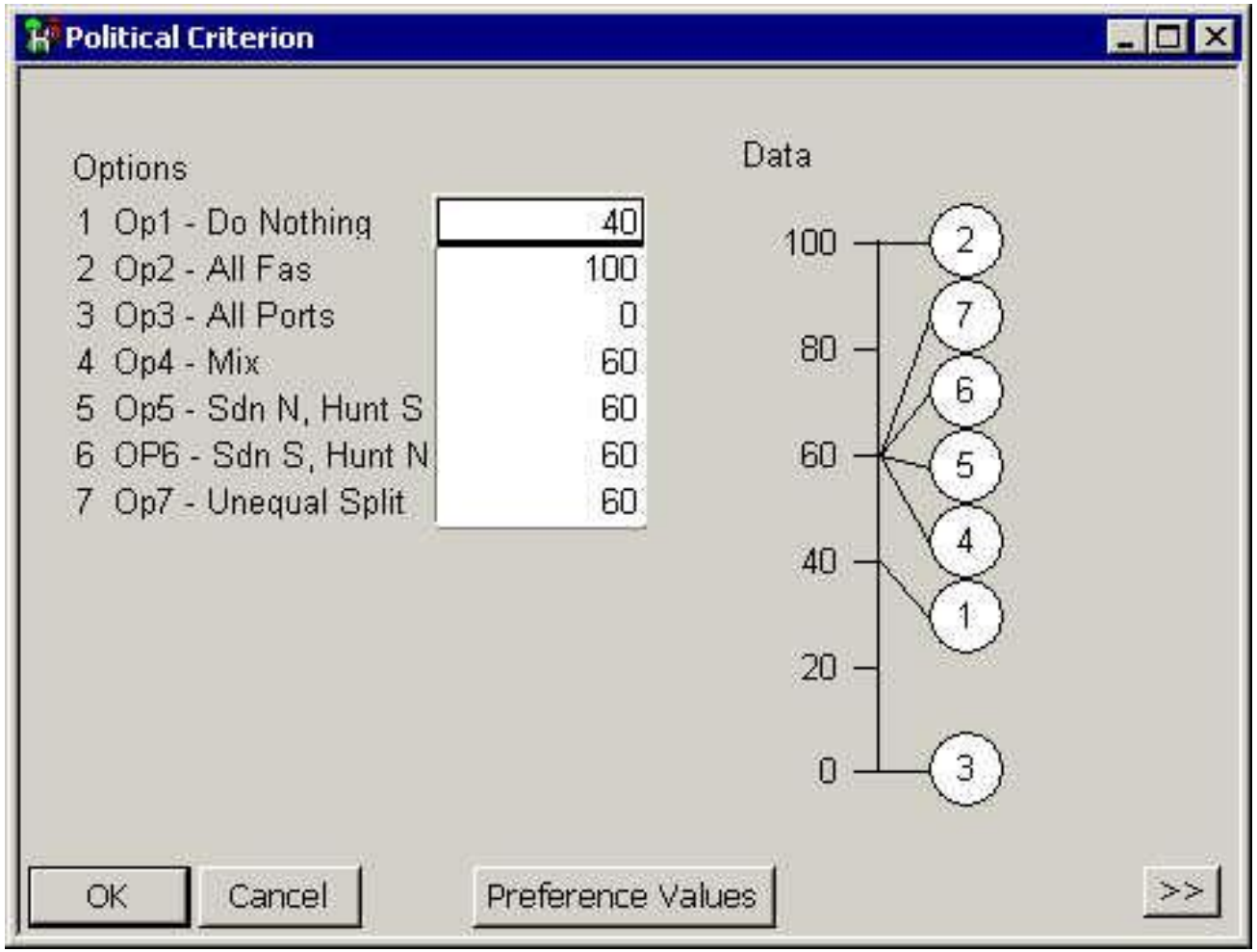
Sensitivity Analysis (1) Political Scores



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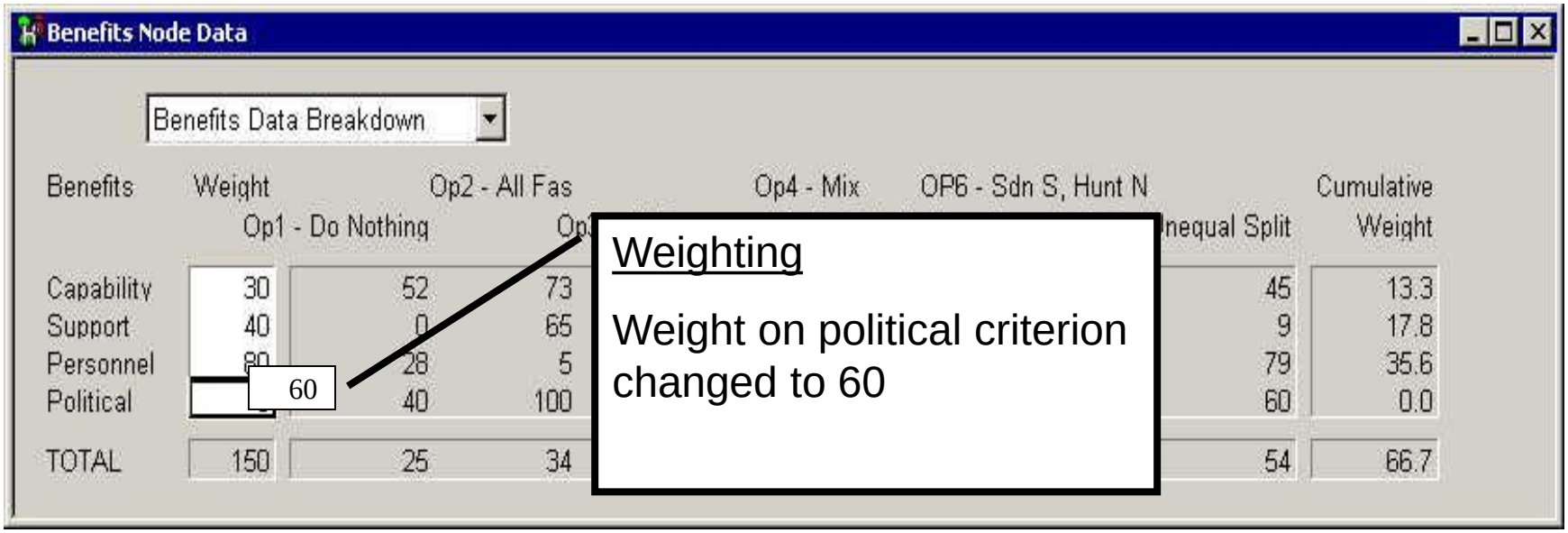
Sensitivity Analysis (1) - vary political weighting



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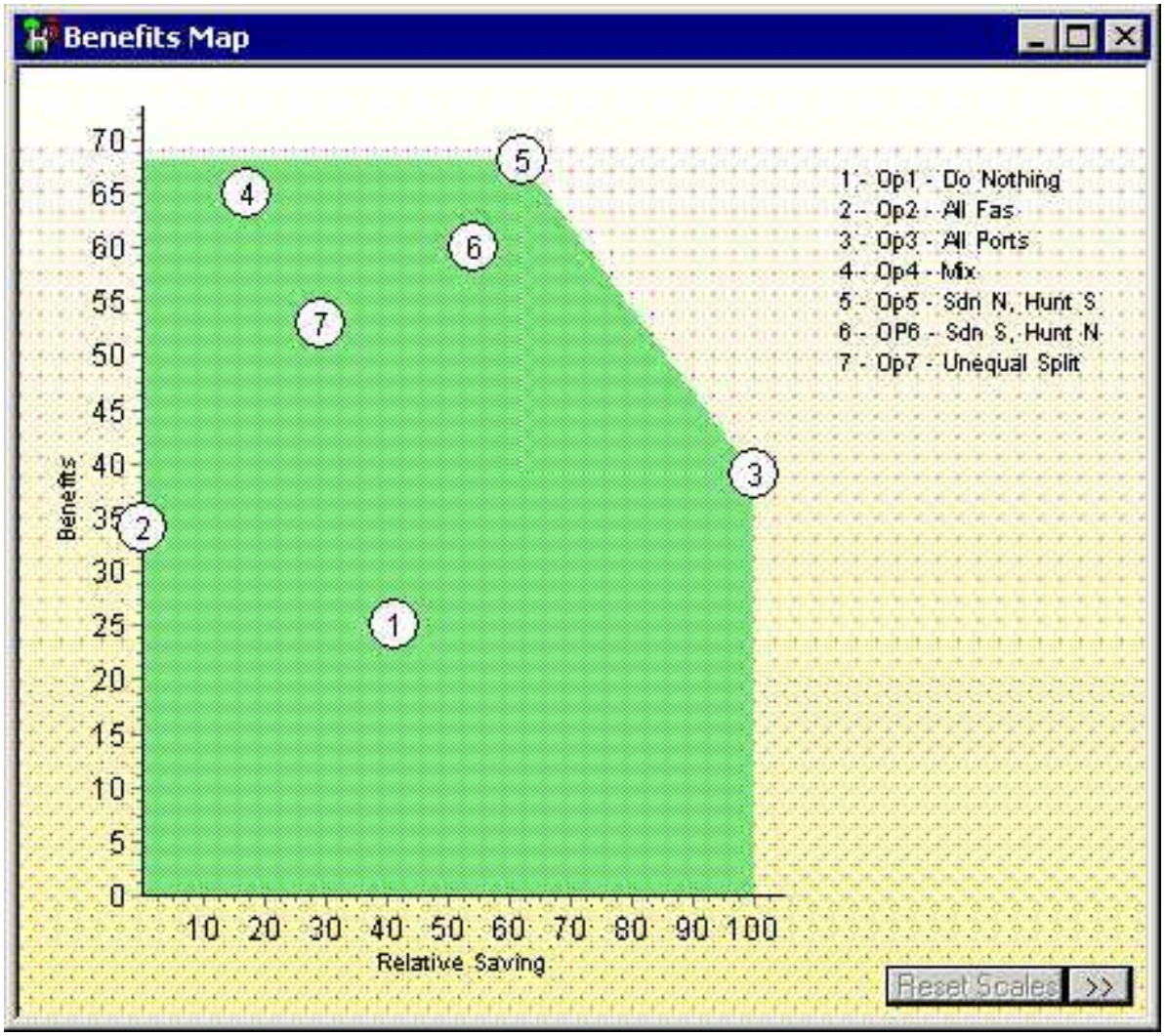
Sensitivity Analysis (1) Benefit v Relative Savings (political = 0)



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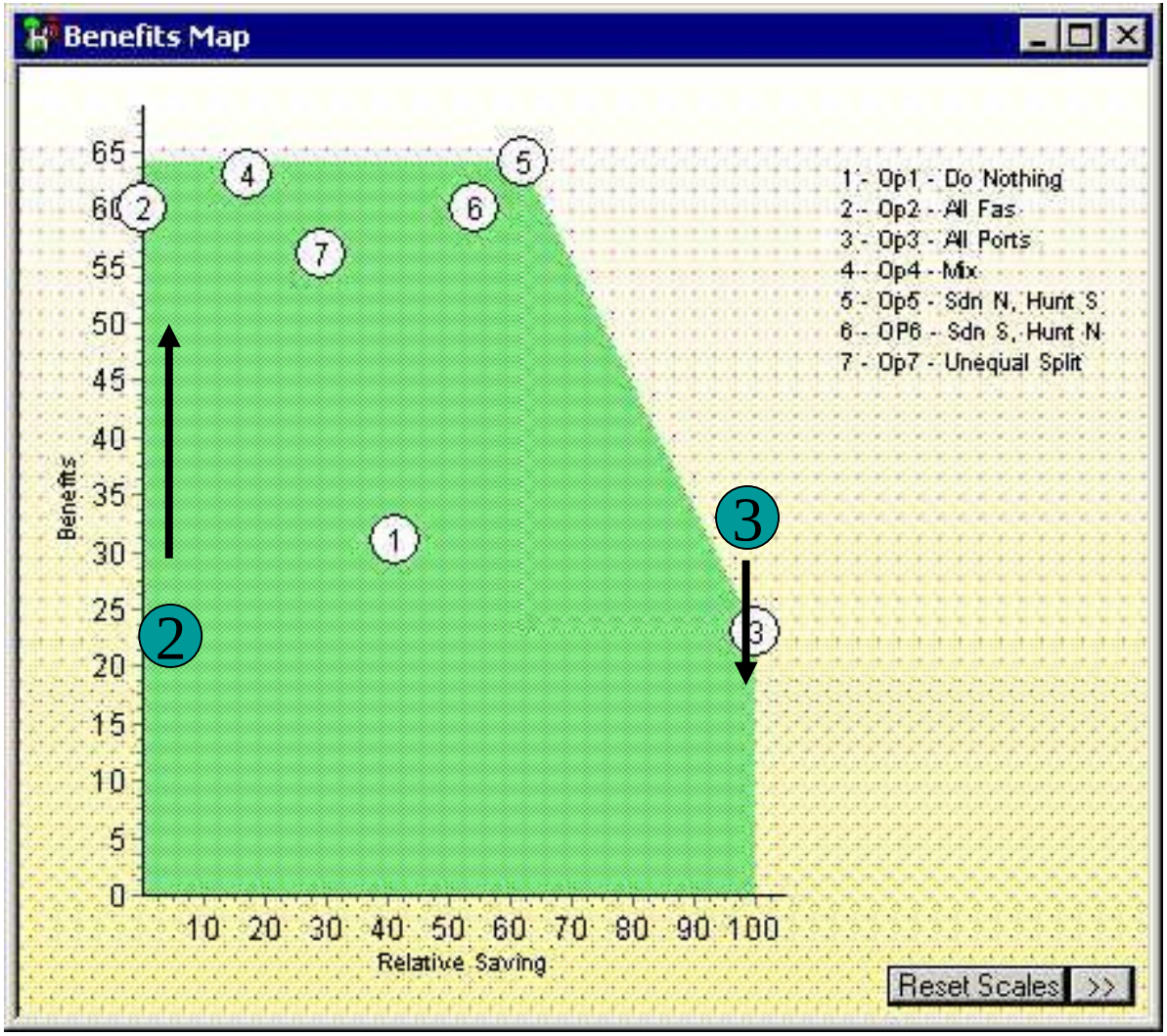
Sensitivity Analysis (1) Benefit v Relative Savings (political = 60)



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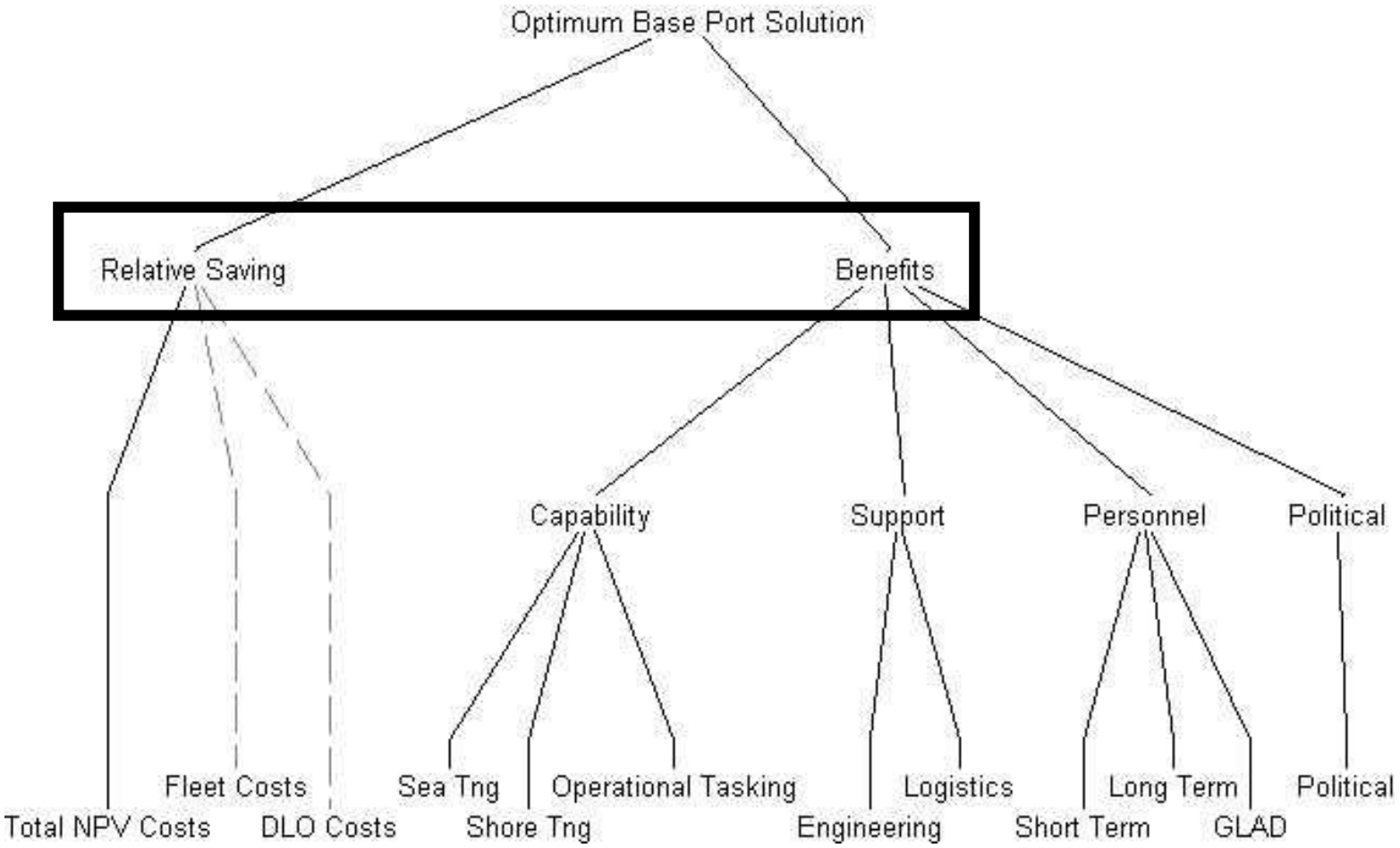
Sensitivity Analysis (2) Relative Saving v Benefit



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Sensitivity Analysis (2)

Cost Benefit 50:50

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Sensitivity Analysis (2) Vary Saving/Benefit weighting

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Recommendation

- Base 8 Sandowns in Faslane
  Base 8 Hunts in Portsmouth

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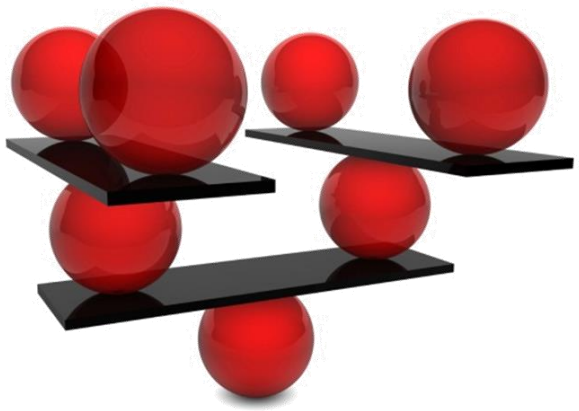
Questions?



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