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Benefits Opportunities Costs Risks

Calculations demystified

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SWOT

- **Strengths**: characteristics of the business or project that give it a strategic advantage over others
- **Weaknesses**: characteristics of the business that place the business or project at a strategic disadvantage relative to others
- **Opportunities**: elements in the environment that the business or project could exploit to its advantage
- **Threats**: elements in the environment that could cause trouble for the business or project

It is a way of summarizing the current state of a company and helping to devise a plan for the future, one that employs the existing strengths, addresses existing weaknesses, exploits opportunities and defends against threats.

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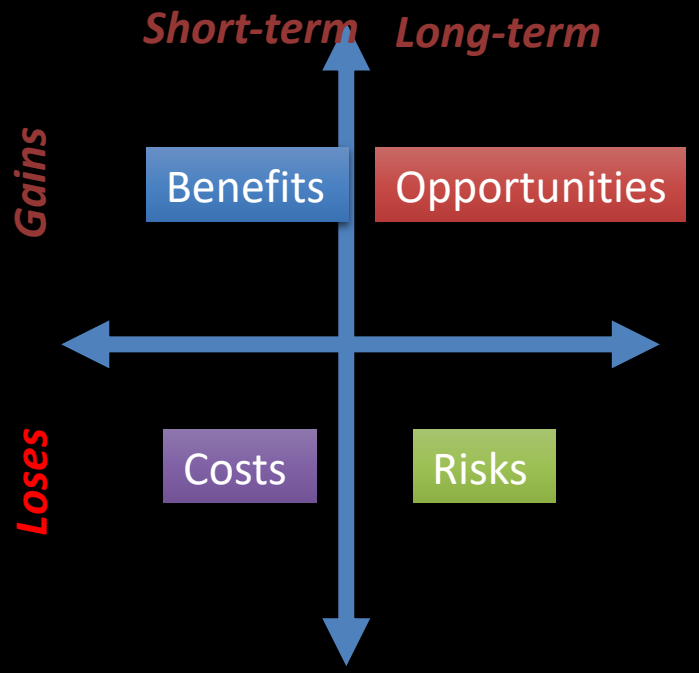
BOCR



In most decisions it is possible to identify the factors that offer benefits or opportunities or have to do with costs or risks.

The factors are best evaluated by grouping those that influence benefits together, and similarly grouping the others.

This is done through a system of control nodes.

The BOCR nodes are control nodes with networks beneath them that contain their control criteria nodes.

Each of the control criteria nodes in turn have a decision subnetwork containing the alternatives of the decision.

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BOCR Models – The idea

- BOCR models are used to make decisions by considering the
  - Benefits - B,
  - Opportunities - O,
  - Costs - C and
  - Risks - R of the alternatives.
- There are two different aspects from which a decision can be viewed.
  - What are the factors that affect the alternatives' desirability?
  - And what is the impact on the decision maker's long term strategic objectives?
- Both are incorporated in a multi-level BOCR model with strategic criteria.

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BOCR vs SWOT

	Short term	Long term
Gains	B	O
Losses	C	R

	Helpful to achieving the objective	Harmful to achieving the objective
Internal origin (attributes of the organization)	Strengths (S)	Weaknesses (W)
External origin (attributes of the environment)	Opportunities (O)	Threats (T)

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BOCR Structure

- The main top level network contains the BOCR merit nodes: Benefits, Opportunities, Costs and Risks.
- There are four second level subnetworks, one for each of the BOCR nodes. They contain the control criteria nodes.
- Attached to the control criteria nodes are the third level subnetworks at the bottom of the model. They are the Alternative subnet. Each must contain a cluster that contains the alternatives.
- The final step is to add strategic criteria to the top-level network.

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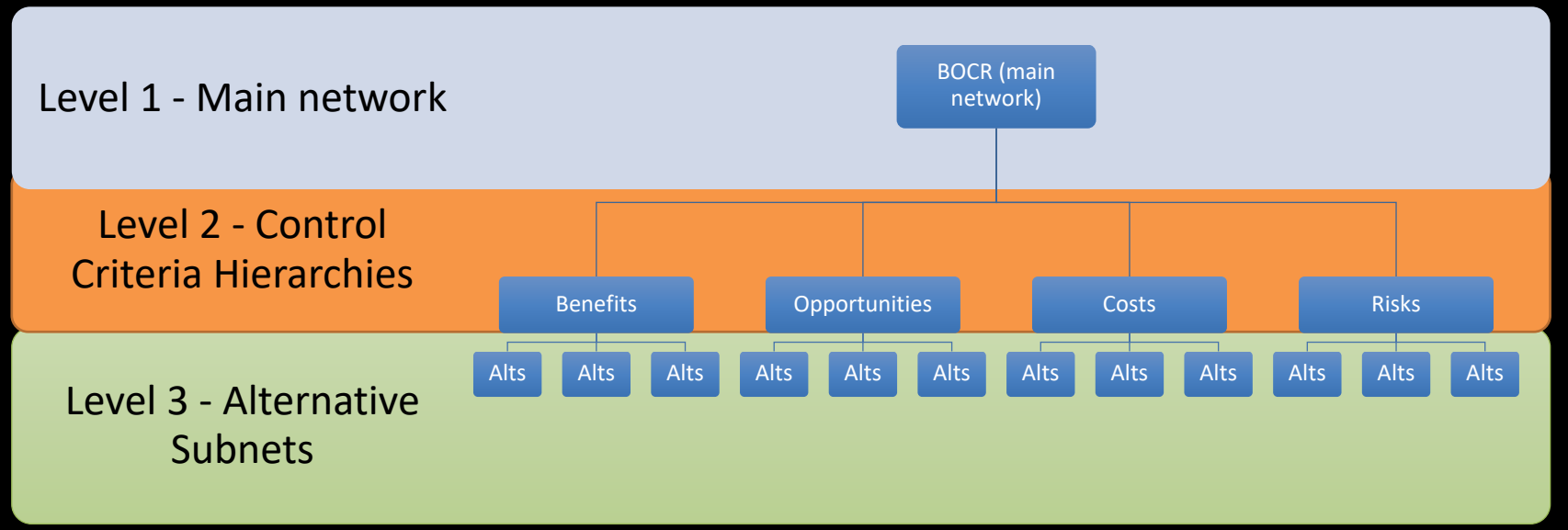
Skeletal Outline of Networks in a BOCR Model



- In this schematic there are 17 networks in all:
  - a main network at the top that has a cluster containing the BOCR nodes,
  - 4 control criteria networks each containing
    - 3 control criteria nodes, and
      - 12 alternative subnets , one for each of these nodes.

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How to set up a BOCR model

1. Define the problem

- Example:
  - The University of Pittsburgh has faced losses of state appropriations in many of the past years and has had to introduce many cost-saving solutions such as freezes in pay increases, decreased budgets, layoffs of some staff, and delays in needed construction projects.
  - Also, the university has had to increase the cost of tuition for students from Pennsylvania to become closer to the out-of-state rate.
  - So far, the state has given no indication that it will not cut Pitt's budget by 30% again in **2012.**
  - The university recognizes this problem and there are talks about how to survive in an era of decreased funding from the state.
  - This alternative in this model involves the University of Pittsburgh privatizing and no longer being state-related.

2. Define the Alternatives

- Alternatives:
  - Privatize
  - Public (status quo)

- At this step you want to clearly define the alternatives and their profiles to facilitate the process of pairwise comparing them later on

3. Define Strategic Criteria

- Strategic criteria represent the decision maker's point of view and they are used to select from the best ranking alternatives the ones that fit the decision maker's system of beliefs/ mission/long term goals
- Example:
  - Economic Well Being
  - University Ranking
  - Quality of Education
  - Continued Enrollment
  - Research

4. Define Control Criteria

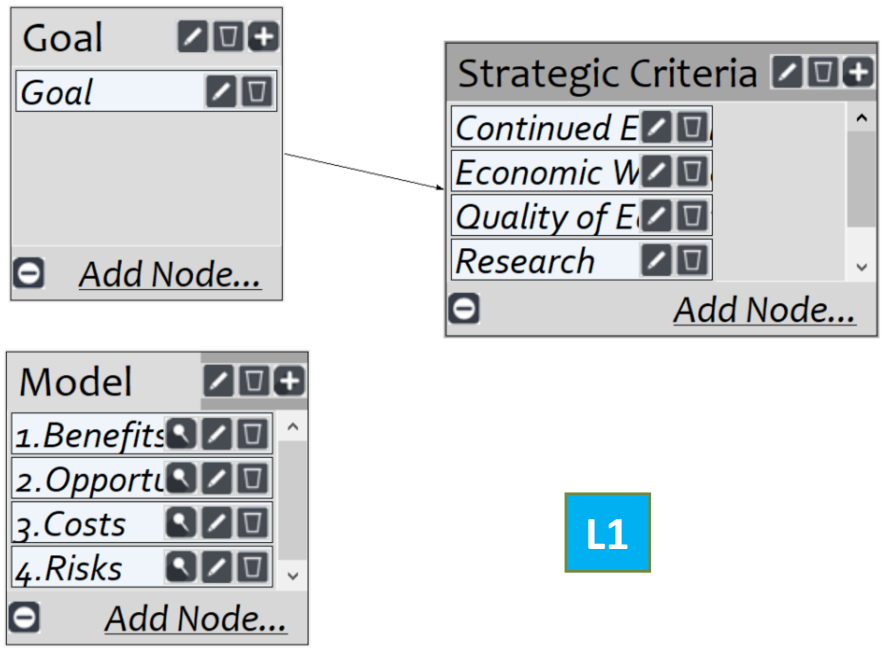
- We want to approach the problem from many perspectives. These perspectives are the control criteria.
- Each merit – B-O-C-R can have different control criteria or the same.
- Example:

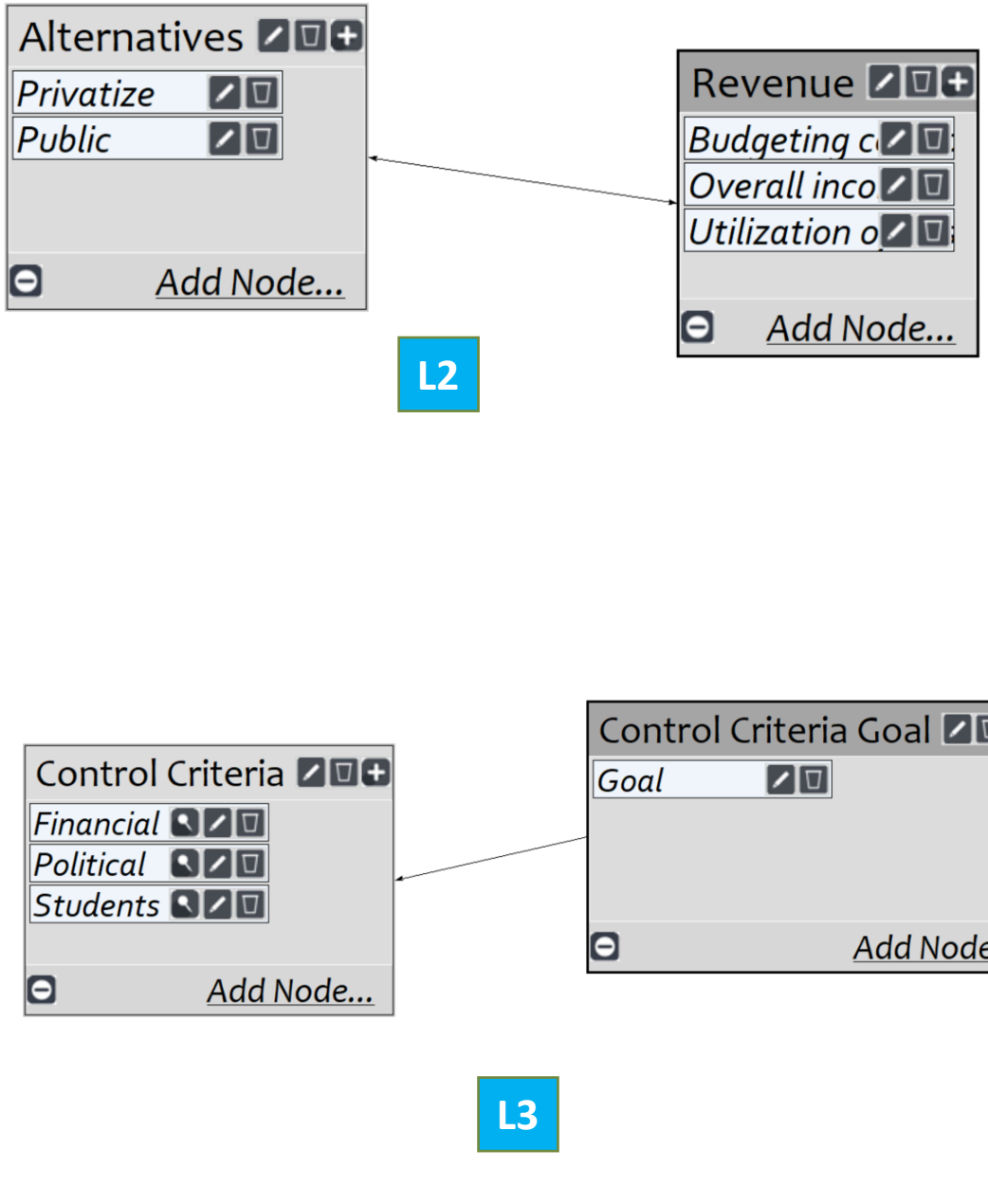
Benefits	Opportunities	Costs	Risks
Financial	Financial	Financial	Financial
Political	Political	Political	Political
Students			Social

5. Define bottom level subnets

- For each merit (B,O,C,R) we need to create a bottom level network, which includes:
  - All the alternatives
  - The expected results for all the alternatives
    - E.g. For Benefits – Financial:
      - What are the financial benefits that we get from privatization?
      - What are the financial benefits that we get from keeping it public?
  - The factors that you want to consider in order to decide which alternative provides more
    - E.g. Financial benefits
- We need at least one cluster beside the one with the alternatives, with at least 2 criteria although one or more clusters with 3-5 criteria would work better

Set up the model in SuperDecisions





GOAL: Should the university privatize or remain public?

STRATEGIC CRITERIA

- ECON. WELL BEING
- CONT. ENROLLMENT
- UNIV. RANKING
- QUALITY OF EDUCATION
- RESEARCH

MODEL

- BENEFITS
- OPPORTUNITIES
- COSTS
- RISKS

Strategic criteria weights

Criteria	Weight	Rank
Economic Well Being	0.244	3
Continued Enrollment	0.096	4
University Ranking	0.307	1
Quality of Education	0.073	5
Research	0.279	2

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Benefits

Financial

- Budgeting
- Overall income
- Utilization of Resources

Political

- State Governor
  - Democrat
  - Republican
- State Assembly
  - Democrat
  - Republican

Students

- Educ Quality
  - Class size
  - Prof Availability
- Financial
  - Total cost knowledge
  - Tuition
  - Student AId

Opportunities

Financial

- Control
  - Federal Influence
  - Student admission plan
  - State Influence
  - Overall budget
- Research
  - Classified

Political

- Classified Research
- Public Research

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Pairiwise comparisons

- Pairwise compare strategic criteria
- Get to each of the B- O-C-R and pairwise its control criteria
  - *i.e. Are the financial benefits or the political or the students more important?*
- For each merit and for each control criterion
  - Do pairwise comparisons
- Synthesize results bottom up until you get which alternative provides the most:
  - Benefits?
  - Opportunities?
  - Costs?
  - Risks?
- Now you can go to the ratings of the main network – top level and rate the
  - Benefits – having in mind the most beneficial alternative
  - Opportunities - having in mind the alternative that provides the most benefits
  - Costs – having in mind the most expensive alternative
  - Risks – having in mind the most risky alternative

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Final Step is to Combine the BOCR Using a Formula

1. Additive negative formula – generally best for long term results: bB+oO-cC-rR

Name	Graphic	Ideals	Normals	Raw
1 Outsource all application development ~		1.000000	0.913603	0.211591
2 Outsource the design and programming phases		-0.051703	-0.047236	-0.010940
3 Do not outsource any application development ~		-0.042864	-0.039161	-0.009070

2. Multiplicative formula – equivalent to marginal cost/benefit analysis and generally best for short term results: BO/CR

Name	Graphic	Ideals	Normals	Raw
1 Outsource all application development ~		1.000000	0.635364	1.203028
2 Outsource the design and programming phases		0.365921	0.232493	0.440213
3 Do not outsource any application development ~		0.207980	0.132143	0.250206