

Name:

Date:

Class:

## Evaluating Alternatives Rubric

### Step 1: List Criteria

a) Your team should make a list of all the criteria you can think of to compare your design solutions. In other words, what are the important design considerations? Some possibilities are:

- weight
- size
- appearance
- time to produce
- cost to produce
- ease of use
- availability of materials
- environmental impact
- safety

b) Make a list of eight criteria on the back of this page or another sheet of paper.

### Step 2: Assign Priority Values to Criteria

- a) Complete the *interaction matrix* (page 2) by listing the criteria both in rows down the left and columns across the top. Don't worry about filling out the "ROW TOTAL," "COLUMN TOTAL," or "NORMALIZED VALUE" yet.
- b) Now choose a facilitator within your team, and have this person poll the entire team for their opinions of the relative importance of one criterion over another. For example, the first blank cell on the top left tallies the number of people who feel that Criterion 1 is more important than Criterion 2. Let's say you have five people in your team, and three people feel that Criterion 1 is more important than Criterion 2. Then you would write the number "3" in this first blank cell on the top left. You would then write a "2" in the off-diagonal cell—the one that ranks Criterion 2 against Criterion 1.
- c) Add the number across the rows for each criterion and write this number in the "ROW TOTAL" cell.
- d) Add the "ROW TOTAL" numbers down the column to find the "COLUMN TOTAL."

### Step 3: Normalize the Priority Values

- a) To get a better feel for the relative priority values, you can "normalize" the values, which means to calculate each value as a proportion of a total that equals 1.
- b) To normalize the priority values, divide each "ROW TOTAL" by the "COLUMN TOTAL" and write this number in the corresponding "NORMALIZED VALUE" cell.

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### Interaction Matrix

Criteria	Criterion 1	Criterion 2	Criterion 3	Criterion 4	Criterion 5	Criterion 6	Criterion 7	Criterion 8	ROW TOTAL	NORMALIZED VALUE
Criterion 1										
Criterion 2										
Criterion 3										
Criterion 4										
Criterion 5										
Criterion 6										
Criterion 7										
Criterion 8										
<b>COLUMN TOTAL</b>										

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#### Step 4: Compare Alternative Designs

- a) Order the normalized criteria values from largest to smallest. This puts the most important criteria at the top of the list.
- b) Write each criterion and its corresponding normalized criteria value in the *decision matrix* (page 4).
- c) Now, rank each alternative design concept according to how well the group feels that concept could satisfy each of the design criteria identified. Use a consistent scale (for example 0 – 5). A ranking of 0 means that the team feels the design concepts does not meet the criterion at all. A 5 means that the team feels the design concepts meets the criterion perfectly.
- d) Write these ranked values in the gray cells below each design alternative.
- e) Multiply each ranked value by the normalized criterion value and write this number to the right of the ranked value for each design alternative.
- f) Sum these multiplied values and write them in the corresponding “TOTAL” cell.

#### Step Five: Analyze Results

- a) The design alternative with the highest value (as shown in the “TOTALS” row) is the alternative that best meets the selected criteria. Design alternatives with significantly lower values can be discarded. The design alternative with the highest score may be selected, or you can select the alternative that received the highest score for the majority of the categories.
- b) Which is the design alternative with the highest value?
- c) Which idea will you proceed to design?

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Decision Matrix

Criteria (ranked by normalized criteria value)	Normalized Priority Value	Design Alternative #1	Design Alternative #2	Design Alternative #3	Design Alternative #4	Design Alternative #5
<b>Totals</b>						