

The “Principles” Behind Principle-Based Evaluation and Decision Making

Definitions

Decision

What you decide to do – the result of the decision making process

Evaluation (or Assessment)

How you decide what to do - leads to a **decision** or a **ranking**

Principles

The **high-level criteria** you use to evaluate the options and make your decision to choose one or more from the available options

Criteria

The explicit features or attributes which **must be measured** for each option

Measurements

How each option rates with respect to each of the **criteria**

Decision Characteristics - Examples

	Type of Evaluation	Number of Options	Decision Consequence
1.	Does it meet some standard or standards?	Single or small number	To decide “yes or no”; “go or no-go”
2.	Which is/are best?	Many	To pick a single winner or several “front runners”
3.	Which should we do first?	Many	To rank or prioritise options or opportunities
4.	Which activities were successful and which not?	Few to many	Performance measurement and evaluation. “Support the best, forget the rest”

For Example

Who or what?	Example Evaluation Question	Type of Evaluation
Vendors	Which of several consultants should we engage?	1 and 2
Vendors	Which of several consultants are qualified to bid?	1
Strategies	Which of several strategies should we adopt?	2 and 3
Government grants	To whom should we give grants or support payments?	2
Auditing	Does this situation meet the standards advocated by the CICA?	1

Who or what?	Example Evaluation Question	Type of Evaluation
Risk assessment	Which risks are most probable and most potentially damaging, should they occur?	1, 2 and 3
Government applications	Should we approve this application or not?	1
Investments	Which high-tech company should we invest in?	2 or 3
Students	What grade should we give for an assignment?	1
Research	Which research projects should we support?	2 and 3
Staff	Who should we appoint or promote?	1 and 2
Projects	Which were the most successful?	1 and 4
Business development	Which proposal opportunities should we follow up?	1 and 3

Commonalities

All the decision types listed above have two commonalities:

1. None of them can rely on **quantitative** information alone (there might not even be any); and therefore-
2. All of them must rely heavily on **qualitative** or intangible information, i.e. **the principles**.

This is why we use the terms “principle-based evaluation” and “principle-based decision making”.

Principle Based Decision Making (“PBDM”) compared

Principle-based evaluation is a form of *multivariate analysis* in that it explicitly considers more than one variable. It boasts several characteristics when compared with other forms of evaluation and decision making, as shown in the following table.

Characteristic	Most Methodologies	Intuition	PBDM
Explicitness	Rare	No	Yes
Transparency	Rare	No	Yes
Evidence, reasons or “features”	Rare	No	Yes
Absence of bias and preconception	Can’t be known	No	Yes
Replicable by others	Rare	No	Yes
Auditability	Rare	No	Yes

Essentials for Principle-Based Evaluation and Decision Making

All principle-based evaluations which result in decisions must have **five essential components**:

1. An **objective** - what we want to know or do as a result;
2. A set of discrete **choices, options or opportunities**;
3. A set of **overall evaluation criteria** against which the choices, options or opportunities must be evaluated;
4. Some **explicit measures** to determine the extent to which each criterion is met; and
5. A **mechanism** to evaluate the choices, options or opportunities.

Principles, Criteria and Measures – the “Decision Hierarchy”

Every decision must have **principles**, or high-level evaluation criteria. But these are usually vague enough that reasonable people cannot evaluate them discretely or, if they can, they cannot quantify them or rank them, except by intuition. If the decision is reached by intuition, it cannot be transparent or auditable and it can rarely be replicated except by someone with exactly the same values.

Instead, we can break each principle down into bite-sized chunks, which **can** be evaluated. We ask ourselves “*what does this “principle” really look like?*” The chunks are (a) the detailed evaluation criteria and (b) the measurements themselves.

If there is an obvious and **explicit** linkage between the principles, the detailed criteria and the measures, we can evaluate the detailed criteria and, at the same time, evaluate the principles. We develop this linkage by asking “*what do we need to observe in order to be sure the principle is correctly measured?*”

For example:

- One of the principles used to evaluate a management consulting firm prior to a client engagement is that it must demonstrate that it has met certain performance and quality standards in previous engagements. Thus we might identify detailed criteria related to the consultant’s credentials, previous performance, staffing, experience, expertise, work plan and organisational capacity.
- A common principle in awarding government grants is that every grant must match the granting organisation’s program objectives. The criteria might then include alignment with organisational objectives, an expectation of incrementality, the credibility of the recipient and extension of the funding organisation’s “reach” or influence.

This deconstruction process results in the following **decision hierarchy**:

- | | |
|--|--|
| 1. Overall high-level decision criteria or “principles” | The overall standards we have to measure against or achieve |
| 2. Detailed decision criteria | The detailed and explicit criteria we want to measure in order to evaluate adherence to the principles |
| 3. Measures | The actual measures we use to evaluate the detailed criteria |

By evaluating the detailed criteria, we can *explicitly* evaluate the principles.

Measurement

When evaluating choices, options or opportunities against explicit criteria, **there are only four options**:

1. Does not meet the requirement, standard or expectation expressed in the criterion

2. Meets some of the requirement
3. Meets all of the requirement
4. Exceeds the requirement

There are no others!

So, for each individual criterion, we can apply these exact measures, as in the following two examples:

CRITERION	MEASURE	SELECT ONE
Consultant's Credentials	Does not meet our requirement (standard or expectation)	
	Meets some of our requirement	
	Meets all of our requirement	
	Exceeds our requirement	

CRITERION	MEASURE	SELECT ONE
Alignment with Organisation's Objectives	Does not meet our requirement (standard or expectation)	
	Meets some of our requirement	
	Meets all of our requirement	
	Exceeds our requirement	

Explicit Measurement

While this general form can be useful in decision making, rather than using a general measurement, we can now go one step further and make these evaluation measures **explicit** to our particular decision criteria. Once in their explicit format, they are known as “**language ladders™**” because they show a “step-up” process from “worst” to “best”.

Note the relationship between the general form and the explicit form. The explicit form is specific to the circumstances of the decision. The general form is not.

EXAMPLE 1 - ENGAGING CONSULTANTS			
CRITERION	MEASURE - GENERAL FORM	MEASURE – EXPLICIT FORM	SELECT ONE
Consultant's Credentials	Does not meet the requirement, standard or expectation	This consultant appears never to have done this type of work before	
	Meets some of the requirement	This consultant appears to have done this type of work before, but never in government	
	Meets all of the requirement	This consultant has done this type of work before in government	X
	Exceeds the requirement	This consultant has done this type of work before in government. In addition , the firm has done it for other organisations like ours in this government	

EXAMPLE 2 – GOVERNMENT GRANTS			
CRITERION	MEASURE - GENERAL FORM	MEASURE – EXPLICIT FORM	SELECT ONE
Alignment with our Organisation's Objectives	Does not meet the requirement, standard or expectation	This project does not appear to be aligned with any of our objectives	
	Meets some of the requirement	This project is generally well aligned with one or two of our objectives, but not all of them. There are significant gaps	
	Meets all of the requirement	This project is well aligned with all of our organisations' objectives	X
	Exceeds the requirements	This project is well aligned with all of our organisations' objectives and. In addition , it affords a unique opportunity to further one or more of them.	

You can observe that we have translated our “high level” principles into explicit criteria and used the measuring devices to measure the criteria.

This process is repeated for each evaluation criterion.

The Methodology

To implement this principle-based evaluation methodology, we follow these five steps:

1. Identify the “high level” principles;
2. Identify the decision criteria and place them in a matrix;

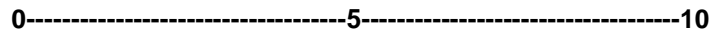
3. Identify the measuring devices for each criterion and place them in a “language ladder” format;
4. Conduct the evaluation; and
5. Report the results.

Why a Matrix Format?

We use a matrix format for the criteria because it enables the agency to *evaluate conflicting or opposing criteria at the same time* - for example economic development impacts vs. environmental impacts or short term vs. long term benefits. It is impossible to *maximise* two such criteria, but it is quite possible to *optimise* them in combination. The matrix is known as a “Bowman Grid”.

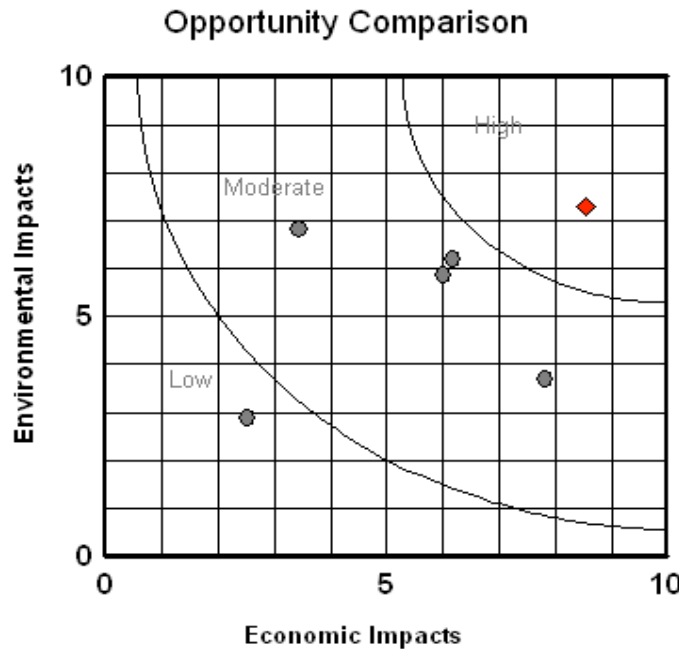
Conflicting Criteria - the Two-Dimensional Problem

The two-dimensional issue is best illustrated by an example. A single dimensional problem can be represented by a series of points on a line, for example:



The only options are the various points on the line 0 to 10. The assumption is that if we can measure an opportunity (a proposal or an application, for example) on the scale as an “8”, it will be “better than” one which only measures a “6”. If “7” is our “hurdle point”, one opportunity will be approved and one will not.

But many decisions are not one dimensional. With two dimensions¹, a single line doesn’t do the job. We need two lines, intersecting at point zero, so we can evaluate opportunities with respect to both of the “opposing” criteria. The result is a series of points in a two-dimensional graph and it looks like this:



¹ We are sometimes asked what happens if there are more than two dimensions. Indeed there may be, but rarely are they of equal and very significant importance, and the human brain has some difficulty coping with multi-dimensional graphs.

In this graph, six opportunities have been evaluated in respect of their ability to meet certain *environmental impacts* (absence of) and *economic impacts* (presence of). One opportunity (the red diamond) does very well in both, one does poorly in both and four lie in between – the “moderate” segment of the graph. Of these four, one is highly rated with regard to environmental impacts, one highly rated with regard to economic impacts, and the other two are about equal in each.

If we were to select and approve only the *optimal combination* of environmental and economic impacts, we would approve only one of the six opportunities, the red diamond.

If we were to select only those which showed best in environmental impacts (high on the left side axis) two opportunities would be selected. For economic impacts (high on the bottom axis), two again. Thus the agency is able to optimize the economic and environmental values *in combination*.

Example

The example on the following pages shows how a series of “opportunities” are actually evaluated using the principle based method.

Example - “Principle Based” Project and Evaluation Methodology

Evaluation Objectives

The example described in the following pages was developed for a government grant-making agency which was interested in ensuring that the grants it approved had met its decision criteria. It also wanted to know specifically why the staff approved some grants and rejected others.

As well as demonstrating the process, it also shows examples of some of the evaluation reports.

Background

This evaluation methodology was originally designed by Dr Clem Bowman and Dr Ron McCullough² to help grant makers in the Canadian science and technology sector to evaluate their grant applications and decide which research ideas to fund and which not to fund. The methodology is now used by many of the major research and other grant makers in Canada, for example, the Canadian Innovation Foundation, Natural Resources Canada, the Alberta Heritage Funds for Medical Research and Agricultural Research and Defence Research Canada.

Some \$1.5 to \$2.0 billion in investment every year is evaluated by this methodology, mostly in discrete “opportunities” or “projects”. It has only recently been made available for other evaluation purposes.

The concept uses “principles” (not numbers) in the form of evaluation criteria expressed in plain English. It uses a very simple evaluation process which *captures the inherent knowledge, skills and experience of the evaluators*. Thus it is also useful to evaluate almost any sort of “opportunity” or “project” which requires evaluation or prioritisation and where the numbers themselves are either not available or not very useful. Business strategies (Government of Alberta), competitive management consulting proposals (Government of BC) and development projects (Royal Roads University) are some examples.

General Approach

The general approach is as follows: Examples are provided in the following pages.

Plan the Evaluation

1. In a workshop, brainstorm all the objectives or criteria which ought to be reflected somewhere in the evaluation process (at this point it doesn't matter how many there are or how relatively important they seem).
2. Choose the two “overarching objectives” for the evaluation and the decisions to be made - and then choose a third “linking” objective. Quite often, you will find these three criteria will take the form of “inputs”, “process” and “expected outcomes”.
3. Arrange the criteria in groups and focus them so that there are up to 12 detailed criteria which are crucial to the evaluation.³ Arrange the criteria in a “Bowman Grid” evaluation matrix (see below).
4. Write a four-step “Language Ladder” for each criterion (see below).

Evaluate the “Opportunities”

² “Intangibles” by C. W. Bowman (Grafics Publishing, Sarnia Ontario, 2005) is the authority for the methodology.

³ Aren't 12 too few criteria? Rarely. The largest user of this methodology uses only 6 criteria to evaluate over \$1.0 billion in project expenditures every year.

5. Ensure the evaluators have the information they need for each opportunity to be evaluated, preferably on a consistent basis. The usual sources are proposals, application letters.
6. Evaluate each opportunity by selecting the appropriate step (A, B, C, D) in the Language Ladders. We usually suggest that up to four evaluators be used for each project. However, this will depend on the type and size of the opportunities.
7. Enter the data and produce the reports.

Example – The evaluation of grant projects

The “Criteria Bin” – what the granting agency seeks to optimise

1. Alignment with agency objectives
2. Leverage – brings other partners in
3. Incrementality – makes things happen which otherwise wouldn't
4. Provincial/regional focus (not local)
5. “A seat at the table” (agency support)
6. Reach - through networks/conferences
7. Knowledge and/or capacity development
8. Raising awareness of program issues
9. Marshalling and applying resources
10. Credibility and creditworthiness in the recipient
11. Specific benefits to the “domain” or “community” in which the project is situated

These criteria are merely suggestions for the example. They may be changed at will.

The “high level criteria” or “principles”

1. The nature and quality of the proposed project itself (inputs)
2. The proposed process and the proponent (process)
3. The expected results of the proposed project (outputs/outcomes)

Project Evaluation Matrix (“Bowman Grid”) (Eleven Criteria in Three Groups)

The Project (Inputs)	The Process	The Results
1. Aligns with agency objectives	5. Marshals resources outside government	8. Provincial/regional application/impact
2. Provides incrementality	6. Credibility and creditworthiness of the recipient	9. Develops knowledge and/or capacity
3. Leverage apparent	7. Agency involvement (the “seat at the table”)	10. Raises awareness
4. Extends agency reach	(Not used)	11. Specific benefits to the “domain” or “community”

Each of four project proposals was independently evaluated by reference to each of the eleven criteria above by two knowledgeable project evaluators. “Language Ladders” were used for the evaluation.

Examples of evaluation/input forms (“language ladders”) for three of the eleven criteria

Note the way the Language Ladders are crafted, with an “explicit” form for this evaluation which follows the “general form” on the left. The “expected” ranking is “C - Meets all expectations” or “meets all objectives”. Some projects will achieve many Cs, and a few a selection of Ds. Most will achieve Bs and Cs. The large **red** letter is the ranking for **this** project and **this** criterion.

Criterion 1. Aligns with agency objectives		
Description: An approved project should be capable of alignment with agency’s explicit objectives		
General Form	Explicit Form	Rank
Does not meet expectations	This project does not align with agency objectives	A
Meets some expectations but not all	This project aligns with some agency objectives but not all of them	B
Meets all expectations	This project matches all agency objectives	C
Exceeds all expectations	This project meets all Agency objectives and in addition has the potential to provide additional contributions	D
Comment		

Criterion 2. Provides incrementality to the Agency		
Description: Agency should only fund projects where the incrementality of its investment can be demonstrated		
General Form	Explicit Form	Rank
Does not meet expectations	This project can be expected to proceed without a grant There is little or no incrementality	A
Meets some expectations but not all	It is doubtful whether or not this project would proceed without a grant. A degree of incrementality is possible but not probable	B
Meets all expectations	This project is unlikely to proceed without a grant. There is significant incrementality	C
Exceeds all expectations	This project will definitely not proceed without a grant. There is significant incrementality	D
Comment		

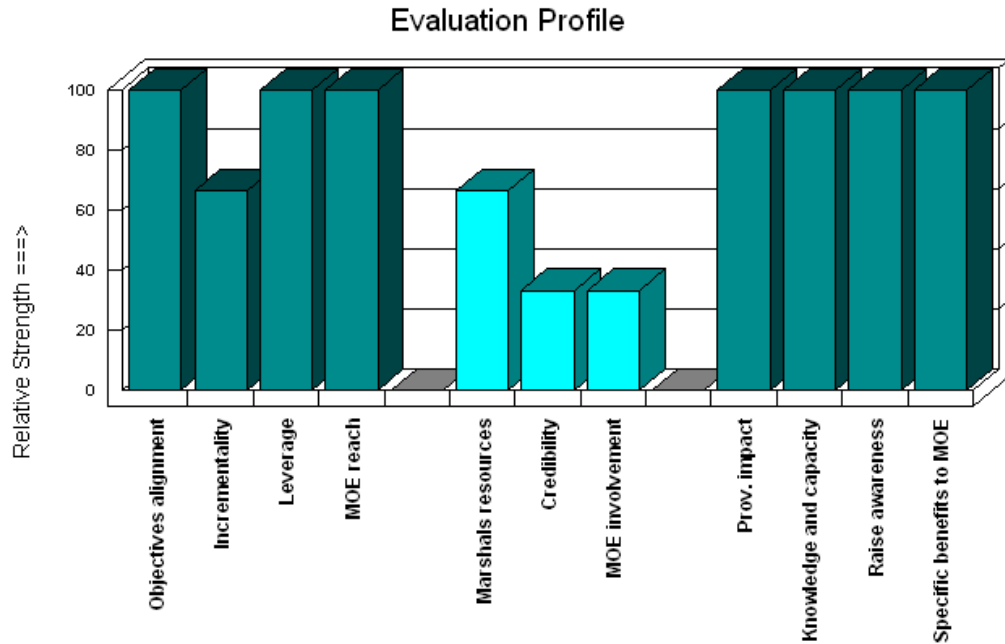
Criterion - 3. Leverage apparent		
Description: Agency strongly prefers that project costs be shared between itself, the recipient and other partner organisations		
General Form	Explicit Form	Rank
Does not meet expectations	The total contributions of the recipient and other partners are expected to be less than those of Agency	A
Meets some expectations but not all	The total contributions of the recipient and other partners are expected to be about the same as those of Agency	B
Meets all expectations	The total contributions of the recipient and other partners is expected to be double the Agency contribution	C
Exceeds all expectations	The total contributions of the recipient and other partners are expected to be more than double those of Agency	D
Comment		

There are eight other Language Ladder assessment forms, one for each criterion, using the same outline as in the above example.

The standard reports produced by the software are very easy for the decision makers to understand. They also provide a level of accountability not seen in other evaluation methodologies. Examples follow.

Results - Evaluation Report Example
 Four Projects, Two Evaluators, Eleven Criteria

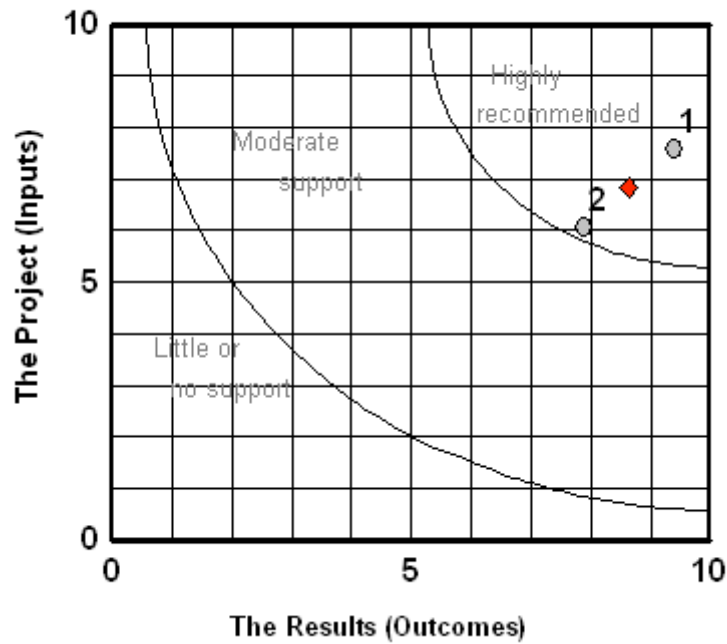
1 Evaluation of one of the projects – two evaluators, eleven criteria



- Shows which of the explicit criteria are most or least likely to be achieved by the proposed project.
- If self-assessed by the applicant *prior to* submission, shows strengths and weaknesses of the application. He/she might then choose to address any weaknesses before submission and increase the chance of funding.
- When reviewed by staff, indicates to which areas government expertise might be applied to ensure success.
- When supplied to the applicant *after* evaluation, provides firm information about how the project could be improved.

2 Evaluation of one of the projects – two evaluators, eleven criteria

Evaluation Grid



- The chart shows how the project evaluated is expected to perform with reference to all the agency’s eleven evaluation criteria in combination.
- The best projects are upwards and to the right.
- This one is “highly recommended” – it is ranked highly and the evaluators’ evaluations are consistent.
- There would be little need to discuss this project prior to approval.

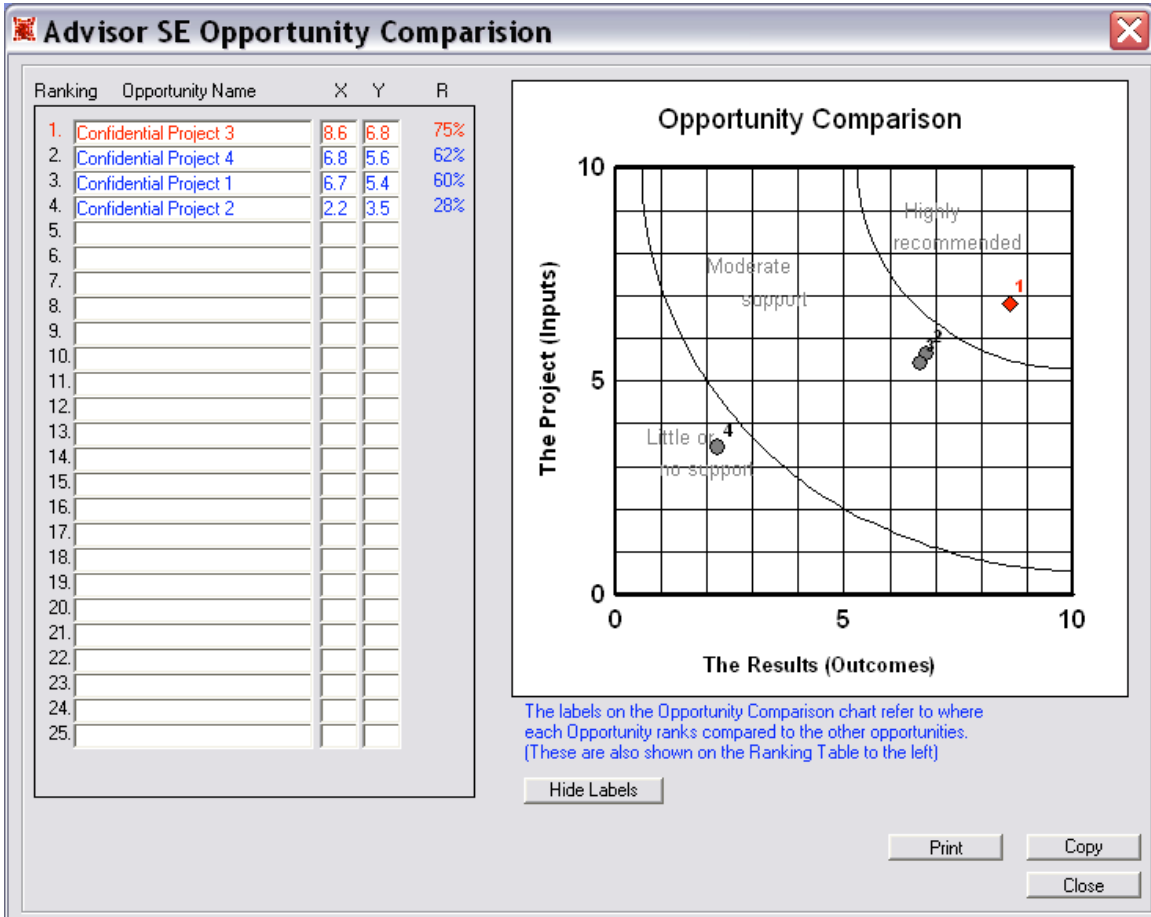
3 Summary of evaluators assessments for this project

		Evaluation Criteria										
		1	2	3	4	5	6	7	9	10	11	12
1.	Evaluator 1	C	B	D	D	C	D	C	D	D	D	D
2.	Evaluator 2	C	B	C	C	C	C	C	C	C	D	D
3.												
4.												
5.												
6.												

- The table summarises the two individual evaluators’ rankings.
- If more than one evaluator is used (we usually suggest four) it provides a comparison of opinions – and topics for subsequent discussion and resolution.

4 Comparison of the project evaluated with three other projects which have been previously evaluated

This standard report is a list of four opportunities which have been ranked in order of their ability to satisfy the explicit criteria set by the agency. The list provides recommendations for staff discussion, not firm decisions. However, should the recommendations be over-riden, as they may be, accountability requires that the reasons be properly documented.



- The report shows how the four proposed projects compare with one another after evaluation. The one we have just evaluated is marked in red. The chart shows that one project is very highly ranked in its ability to satisfy the explicit criteria we defined. Two are very good, and the fourth, as it stands, is questionable.
- If the evaluations produce a clear consensus between the evaluators' assessments about the "best" and the "worst" opportunities (see 3, Summary of Evaluators' Assessments), these need not be discussed at all. Only those where there is no consensus, or opportunities immediately on either side of the funding "cut-off" line, need be discussed in any detail.
- With limited (and varying) funds available, and the necessity to generate the biggest bang for the buck (which probably means "the best alignment with the explicit agency criteria"), this table can be used to prioritise the projects by starting at the top and funding projects until the cumulative budget runs out.