

# 1 Intangibles: Important and Immeasurable

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Ask your colleagues what's important to them and out will come pictures of their family, if these are not already sitting on their desk. If they talk about their house, it won't be about the bricks and mortar – it more likely will be the view of the river, the valley or the mountain that they see from their window. Meeting one's future spouse may have a greater effect on one's life than any other single event. What could be more intangible than the events leading up to this chance encounter?

Bottom line: we cannot measure the things that are really important. But their value is real, a point Canadian author Margaret Atwood made when she stated in an interview: "Art is the highest form of entrepreneurship – the artist creates value out of nothing." A prime example is Michelangelo's David, a priceless statue carved out of a stone that would otherwise be of negligible value.

A characteristic of intangibles is that the value lies to a large extent in the eye of the observer. While the painting "Voice of Fire" was worth millions of dollars in the eyes of those selecting art for the National Gallery of Canada, others felt that given a case of spray paint, they could readily create a replica of the three coloured bands.

Time also comes into play when comparing tangibles and intangibles. Tangible assets normally depreciate over time; intangibles often realize their value only over time. Watch how the value of famous paintings increases dramatically from one auction to the next.

The human body could be considered as the most powerful intangible of all. Over 90% of the human body is a combination of oxygen, carbon and hydrogen, the balance looking like the periodic table. Although the composition does not vary much among people, the final product certainly does—just look at Michael Moore and Pamela Anderson. The "Artist" in these cases demonstrates a keen sense of humour!

Evaluating what you cannot measure – we do it all the time!  
 This book describes a disciplined methodology, with a clear and justifiable paper trail.

## In the Eyes of the Accountant

Accountants have taken the phrase “what cannot be measured cannot be controlled” to the point where they’ve ruled the world of commerce for most of recent history. Indeed, tangible assets were assumed to represent the majority of the wealth of companies. With assets suited to accurate assessment, we see the phrase “bean counting” coming into vogue (albeit in a somewhat derogatory fashion). The accountants’ view of the world has been the cornerstone of national and international commerce. The metrics developed for GAAP (Generally Accepted Accounting Principles) provide an essential universal framework for transactions among commercial enterprises.

But tangible assets form only one part of the wealth of a company or a nation. The book value of a company frequently has poorly represented its strength, either by overlooking future potential or exaggerating the long-term value of manufacturing processes and products. An entire industry has been set up to document the difference between a company’s book value and its market value. Through the concept of Intellectual Capital, the components of which are shown in Table 1.1, we see assets which cannot be quantitatively measured, but would be costly to develop or replace if lost. In short, they are intangible.

**TABLE 1.1**  
**Components of Intellectual Capital**

Intellectual Capital			
Structural Capital			Human Capital (knowledge, skills, capabilities, motivation of people)
Intellectual Assets		Systems, Processes, Relationships (with customers, suppliers etc.)	
Intellectual Property (patents, trademarks)	Codified Knowledge (documents, drawings, software)		

Of the FORTUNE 500 companies first listed (in 1954), two-thirds were off the list 40 years later.<sup>1</sup> Would we have been able to predict their demise with better knowledge of the strength of their intellectual capital?

## The Market Understands Intangibles

The value of companies lies between two bookends, Book Value and Market Value. Book value represents the depreciated value of all the tangible assets accumulated over a period of time—the bricks and

**FIGURE 1.1**  
**Hidden Values**



**TABLE 1.2**  
**Market to Book Value Ratios**  
**(typical 2005 values)**

Company	Ratio Market/ Book Value
General Motors	3.2
Microsoft	4.6
IBM	6.0
Genentech	7.9
Pfizer	12.3
GlaxoSmithKline	13.3

mortar, production equipment, and inventory. These are the factors that accountants can identify and measure and are the basis for valuing assets. But market value typically lies well above this figure, representing the promise that comes from intangible assets—the people, processes, brand names, and intellectual property.

An iceberg (Figure 1.1) is a good representation of intangible assets, with 90% of its mass hidden below the water surface. Nevertheless, we know it’s there. And we ignore it with “Titanic” consequences.

Examples of the difference between the market and book values of companies are shown in Table 1.2. As the “promise”

grows, the ratio of market to book value increases, in some cases exceeding the 9 to 1 ratio for hidden to visible ice.

Over the past decade, companies in areas such as software and information technologies have produced market to book value ratios far in excess of those shown in Table 1.2, all based on promises that attracted enormous investments, only to see the real value of some of those promises eroding to essentially zero.

## **Evaluating the Promise**

Know any venture capitalists? Ask them how they value start-up companies and they'll likely say they "have their ways" of predicting future success. But if you probe, they may admit their real test is to meet the CEO or the entrepreneur behind the business, with a warm feeling in the gut becoming the ultimate basis of an investment decision. While most venture capital companies can point to many successes, there are just a few home runs. Indeed, "success" is usually measured by having one big success in 10, with another two or three surviving. The balance, a venture capitalist will acknowledge, are ultimate failures. The reality is that continuing a high success rate is a more difficult challenge – many venture capital companies simply approach sector averages over time. Evaluating intangibles is usually claimed to be an art, one that involves the weighing of subjective factors in some indefinable way deep inside the human brain.

But what if we could add science to the process? Could we place a value on intangibles? Ten years of research and practical applications have led to a powerful five-step methodology for doing just that – evaluating what cannot be measured:

1. Identifying the Overarching Objectives
2. Defining an Evaluation Matrix™ of Criteria
3. Establishing metrics through Language Ladders
4. Evaluating the Intangible
5. Plotting the results on an Evaluation Grid

## Overarching Objectives

Many decisions in life involve two overarching factors, or objectives, each of which may be conflicting and in apparent opposition. Lowy and Hood<sup>ii</sup> note the “tension” that is involved in complex situations, one that is generated from “two conflicting needs.” With more than 50 examples of this tension documented, they show that through resolution, a new and higher level of success can be achieved.

This two-dimensional aspect of decision-making was noted in a previous publication related to intangible assets<sup>iii</sup>. Examples of these conflicting objectives are many; the short term versus the long term, the important versus the urgent, quality versus price, growth versus profitability, the vision versus the execution, personal life versus business pressures. Once the second dimension is recognized and understood, the pathway to understanding and using intangible assets becomes much clearer.

There are many examples of companies failing due to a one-dimensional strategy. A single product strategy, for example, eventually fails as the product reaches maturity. Focusing on the quarterly bottom line and neglecting long-term survival is another example of one-dimensional thinking. Unfortunately the tendency for individuals and organizations is to operate in that one-dimensional mode. Why? It’s an easy pathway that avoids the huge challenge (and choice) of incorporating a second dimension. Those who can think naturally in two dimensions have a tough time if they work in a strongly one-dimensional organization. In short, they don’t fit very well. Indeed, ambitious people do not stay in these organizations. Although the strong ones may stay, fighting for and making a difference, others stay and become moulded into rigid one-dimensional thinkers.

These competing forces frequently have a time dimension, such as short and long-term goals. Often they will have a mandated dimension, such as an emphasis on research and teaching in universities. The tension between funding basic and applied research is another example.

John Polanyi, a Nobel prize winner in chemistry, has eloquently and effectively demonstrated the positive impact of curiosity-oriented

basic research<sup>iv</sup>. But the other dimension is equally important. Man has reached the moon and the Alberta Oil Sands are now contributing half of Canada’s hydrocarbon demand, two major mission-oriented research endeavours that required extensive basic and applied research working hand in hand.

Peter Hackett has drawn the analogy to DNA<sup>v</sup>, with “two complementary strands of DNA, a culture of creativity in individuals and a culture of innovation in societies. The one patterns the other.”

When two competing objectives are orthogonal to one another, their net effect can be assessed using geometry. In their resolution, a vector is generated which provides the “energy and aim” necessary for success, as noted by Lowy and Hood. If the objectives are opposing (180 degrees apart in direction), a resolution is not possible.

The case studies in this book illustrate effective methods for selecting and validating the two overarching objectives that need to be determined as the first step in making decisions and evaluating performance.

## **Evaluation Matrix**

The Evaluation Matrix is the backbone for evaluating intangible assets and contains criteria central to the evaluation. A convenient example is an action that most take at least once and sometimes several times in a lifetime—buying a house. The process is normally a consultative one, involving family members reaching consensus on priorities, values and expectations. The entire process is illustrated in Figure 1.2.

Through discussion, the following overarching objectives are established:

- Quality of the building
- Attractiveness of the environment

An Evaluation Matrix contains the criteria desired for both the building and the neighbourhood environment, with the overarching objectives shown as the headings for the first column and the third column respectively. Criteria are tabulated in the appropriate

**FIGURE 1.2**  
**Buying a House**



**Selecting the Overarching Objectives**

1. Quality of the building
2. Attractiveness of the environment



**Establishing the Evaluation Matrix**

Building	Connectors	Environment
1 Features	4 Price	7 Location
2 Quality	5 Resale	8 Lot
3 Upgradability	6 Maintenance	9 Neighbourhood



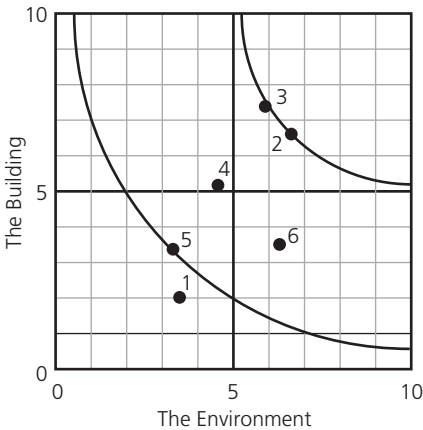
**Building the Language Ladder**

**e.g. Features** (four bedrooms, three bathrooms, large family room, full finished basement, two-car garage)

- A. Missing more than two requirements
- B. Missing one or two requirements
- C. Meets requirements
- D. Exceeds requirements



**Plotting the Results**



**Evaluating the Choices**

Criteria	House					
	1	2	3	4	5	6
1	A	C	D	C	B	C
2	B	C	C	B	B	B
3	A	C	C	D	B	A
4	A	C	C	B	B	C
5	C	C	C	B	B	B
6	B	C	C	A	B	A
7	A	C	C	A	B	C
8	C	C	B	C	B	C
9	B	C	C	D	B	D



columns, with those influencing both overarching objectives in the middle column—Connectors (sometimes called Enablers).

## **Language Ladder™**

Statements, which serve as measurements for the evaluation, can be prepared, for simplicity expressed in Figure 1.2 as one statement with four levels of expectation. Four-level Language Ladder statements are used in most of the examples in this book.

Language Ladders are not a new concept and have long been used for illustrating intangibles. A fresh wind blows in your face, a pleasant experience. The wind speed can be measured and a tangible number associated with it. But the wind itself and the emotions that it raises? Those are surely intangible.

Consider the Beaufort Scale (Table 1.3), developed in 1806 as a result of frustration with the way people described weather. Captain Francis Beaufort of the British Admiralty found imprecise expressions such as “moderate winds” or “a big storm” lacking certainty and accuracy of definition in the minds of non-observers.

Beaufort sought to match information about the wind’s speed to numbers that could be universally recognized and accepted by simple observation. Thus in a calm (Beaufort Scale 0), smoke rises vertically. At Beaufort Scale 1(light air), the direction of the wind direction is shown by smoke but not wind vanes. These are simple observations to which a number can be applied for each new progressive level and which can be clearly understood by users – in this case, often uneducated mariners.

This 13-step Beaufort Scale from 0 (calm) to 12 (hurricane) is an early example of a Language Ladder that seeks agreement on words to describe an intangible event and then gives it numerical equivalent.

By 1838, the now Admiral Beaufort, as Hydrographer to the British Admiralty, witnessed his scale accepted as the standard for the measurement of wind (there were no accurate wind instruments at the time) by the British Navy. Eventually it was adopted by many sea-going nations worldwide.

**TABLE 1.3**  
**The Beaufort Scale – 1838**

Beaufort Number	Name	Wind speed (mph)	Description
0	Calm	<1	calm; smoke rises vertically
1	Light air	1-3	direction of wind shown by smoke but not by wind vanes
2	Light breeze	4-7	wind felt on face; leaves rustle; ordinary vane moved by wind
3	Gentle breeze	8-12	leaves and small twigs in constant motion; wind extends light flag
4	Moderate breeze	13-18	raises dust and loose paper; small branches are moved
5	Fresh breeze	19-24	small trees in leaf begin to sway; crested wavelets form on inland waters
6	Strong breeze	25-31	large branches in motion; telegraph wires whistle; umbrellas used with difficulty
7	Near gale	32-38	whole trees in motion; inconvenience in walking against wind
8	Gale	39-46	breaks twigs off trees; generally impedes progress
9	Strong gale	47-54	slight structural damage occurs; chimney pots and slates removed
10	Storm	55-63	trees uprooted; considerable structural damage occurs
11	Violent storm	64-72	very rarely experienced; accompanied by wide-spread damage
12	Hurricane	73-136	devastation occurs

Author Scott Huler<sup>vi</sup> cited the 110 words of the Beaufort Scale as “the best, clearest, and most vigorous piece of descriptive writing I have ever seen” or, as he described it, “science put in poetry.”

Beaufort embraced the quotation from “A Manual of Scientific Enquiry, Third Edition, 1859 that “Nature, rightly questioned never lies.”

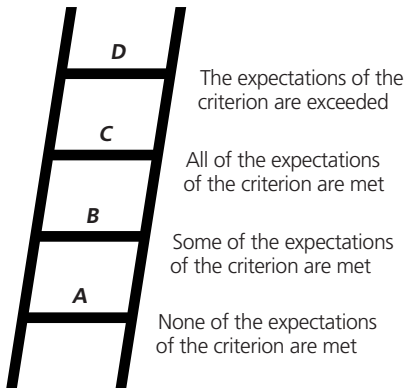
Others who followed saw the logic and wisdom of taking observations and assigning them a numerical equivalent, especially in converting intangible observations to data, thus improving the quality of information in a variety of activities.

The Modified Mercalli Earthquake Intensity Scale provides descriptions of 12 stages of increasing intensity of earthquakes. For example, at Scale I an earthquake is not felt and marginal; at Scale VI dishes are broken and many are frightened, running outdoors; at Scale XII damage is nearly total<sup>vii</sup>. Other examples of similar applications include the five levels of the Fujita Tornado Damage Scale<sup>viii</sup> and five levels of the Saffier-Simpson Hurricane Scale<sup>ix</sup> with the too familiar Categories One to Five describing expected wind damage and the impact of surging water levels, a horrifying experience as testified by those that survived the 2005 hurricane Katrina in the Southern United States.

Why not just numbers without the description? An early version of ProGrid used a 10-point scale to measure the degree of adherence or progress. Users, however, pointed out that a rating of “7” may be very different from person to person. Even so, a 10-step language scale was found to be impractical. Some evaluation methodologies employ a two-point binary scale, an example of which is used for compliance in fields such as the safety of production environments. If two fire extinguishers are required per production area, you either meet the requirement or you don’t. While users of the ProGrid methodology have tested various scales, most now use a four-step ladder, thus avoiding a middle “safe” region.

The term “ladder” is useful in that it provides a good physical representation of the

**FIGURE 1.3**  
**Generic Language Ladder**



representation of the problem, as shown in Figure 1.3. The four-step ladder starts with A and progresses upward to D. Short sentences with key words are used to express the intent of each step in this ladder and sentences are constructed to fit the evaluation task at hand.

Why does the ladder start at A and end at D, which is the reverse of the

terminology used in academia for grading purposes? Starting a journey at “A” is a logical starting point, permitting the journey to be extended beyond “D”. Extending the reach of the ladder is a useful concept in personnel evaluations involving staff promotions. Plus, the case studies described in later chapters in this book are hardly “academic exams.” Rather, they illustrate trajectories for increasing the value of assets and improving performance over time, in theory and in practice without limits.

The quality of the process depends initially on the correct structure for the Evaluation Matrix and then ultimately on the quality of the Language Ladder’s design. The words used to describe the steps in the Ladder should represent meaningful separations and be understandable by evaluators. In effect, the Language Ladder provides the “dictionary” definition for the A, B, C, D’s.

## **Establishing the Grid**

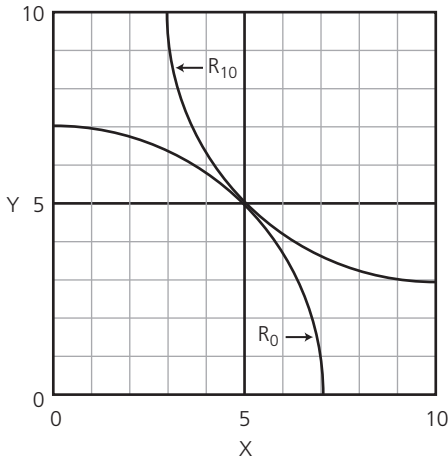
The results of an evaluation can be shown in the form of an Evaluation Grid (as shown previously in Figure 1.2), using the overarching objectives as its axes.

Literature is replete with examples of four-box grids, representing a range of evaluation tasks. The Lowy and Hood<sup>ii</sup> array of more than 50 matrices is a comprehensive compilation of examples of tasks to which this methodology could be applied. Lowy and Hood summarized the issue that all four-box users have faced, in their instruction “place yourself in one of the boxes.” Easier said than done but it’s a challenge that has been addressed and solved by the ProGrid methodology. The case studies presented show how to measure where you are in a four-box grid, with clear and convincing documentation.

## **R-Values – The Ranking Scale**

Deciding whether to measure progress in the grid from the origin (0,0) or from 10,10 is critical. Measuring progress from 0,0 provides credit for any movement in the grid, regardless of direction, which is appropriate, for example, in deciding on staff promotions where an employee’s strength may lie primarily in one dimension,

**FIGURE 1.4**  
**Comparison of R-value Scales**



and progress in that dimension should be rewarded. By contrast, a commercial technology-intensive venture may require progress in both axes; measuring the distance from the ultimate 10,10 goal would be a more appropriate metric. The difference between these approaches is illustrated in Figures 1.4.

Grid travel can be expressed as an R-value, which can be calculated in two ways:

- $R_0$  – a measure of the distance travelled from the point 0,0
- $R_{10}$  – a measure of the distance to travel to the point 10,10

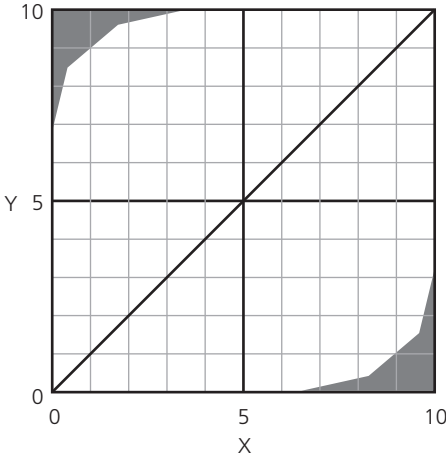
The R-values can be defined mathematically such that a grid position of 0,0 is equal to 0% and a grid position of 10,10 is equal to 100%, for both  $R_0$  and  $R_{10}$ . The two curves in Figure 1.4 both have R-values of 50%, and meet at 5,5. As the curves diverge from the diagonal, the difference between  $R_0$  and  $R_{10}$  increases.

Regardless of which R-value definition is used, all points along an R-value arc can be considered to be “equal” with respect to the two competing overarching objectives, but with a different weighting of values.

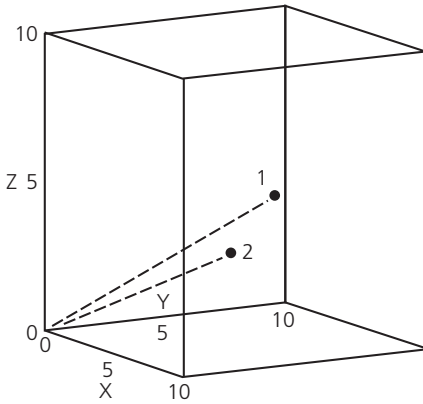
## Exclusion Zones

It is essential that the grid axes be relatively independent. This means that the overarching objectives that are plotted on these axes can be achieved independently. The degree of “independency” dictates how much of the grid is accessible for plotting purposes. If all criteria in the Evaluation Matrix are apportioned fully to one or the other axis, the full grid is accessible. If one or more criteria are apportioned to both

**FIGURE 1.5**  
**Exclusion Zones**



**FIGURE 1.6**  
**Evaluating in a**  
**Three Dimensional World**



axes, then some parts of the grid around the points 10,0 and 0,10 are not accessible (as seen in Figure 1.5). It is important that these zones are not excessively large. If they are, it means that there are too many criteria that influence both axes. If carried to the limit, only the diagonal is accessible and in this case, the axes are no longer independent. The example shown represents a realistic case in which the two exclusion zones in the upper left corner and the lower right corner are reasonably small.

## **But why only two dimensions?**

We live in a world of three dimensions; four if we include time. While ProGrid methodology will work with three dimensions,

the results being displayed as a cube (Figure 1.6), no significant advantages have been evident to date using a three dimensional approach. At the same time, there is nothing implicit in ProGrid methodology that prevents an evaluation in n-dimensional space. While a graphical display of the results would not be possible, a quantitative comparison of the intangible asset under consideration could be made, the R-value representing the distance from a defined point in n-dimensional space.

## **The Decision Process**

Organizations using the ProGrid methodology have their own decision processes to meet their specific goals and requirements. In most cases there is an individual, or group, that prepares an application for funding or a proponent who presents a proposed course of action. Reviewers or evaluators typically assess the merits of the application/proposal. And decision-makers seek the advice of those who initially screen the applications/proposals.

### **A Comparison with Peer Review**

Organizations providing funds for scientific projects in a formal competition typically use a Peer Review process to select winning projects. This time-honoured process has served the scientific community well in the past and will continue to be a mainstay of project selection. Applications, which normally consist of rigorously detailed descriptions of the planned research, also include papers describing previous related research and the curriculum vitae of principal investigators, documentation equivalent to a complete business plan for a commercial venture. The review process involves other researchers with experience in the area involved, part of the normally accepted work load that could consume several days to complete.

Yet peer review has its limitations. For example, when the volume of applications is large (several hundred or more), or there is a near-term business implication requiring a wider spectrum of experience of the reviewers, or there is a need for a high level of transparency in the review process and the need for a more consistent basis of providing feedback to applicants (both successful and unsuccessful), the need for modification of the standard peer review process is clear.

The major complaint against standard peer review is summed up by the phrase “fatigue” – by both applicants and reviewers alike.

Organizations that have used the methodology described in this book have reported the following advantages.

- Comprehensive – ensures that all key aspects have been addressed (open architecture)
- Achieves consensus – provides input from all stakeholders
- Rapid – busy experts are willing to participate in the review process
- Disciplined and reproducible
- Graphical and easily understood
- Ranks a large number of opportunities in a portfolio
- Provides a corporate database and memory
- A self-learning methodology, constantly improving
- Focuses on issues key to making difficult decisions

### **Importance of Self-Assessment**

Most of the active users of the methodology include self-assessment as a fundamental part of the process. As the purpose of benchmarking is to improve the performance of an organization, it is critical that the organization be actively involved in the process since it will have the prime responsibility for acting on the results.

Self-assessment is also frequently employed when ProGrid is used as a decision-assist, particularly in enabling reviewers to rapidly validate an assessment. The clarity in which the applicant/proponent is able to make a case for action is an important input in the process.

Nevertheless, self-assessment is not a prerequisite for using the ProGrid methodology. Indeed, in certain situations it may prove to be appropriate to leave out self-assessment, or at least not to disclose its existence to reviewers. In such cases, sufficient information needs to be included for reviewers to make an independent judgment. Don't fall back on the traditional approach – providing masses of information from which reviewers have to extract key information on which to base their opinions.

### **Other Approaches**

If intangibles are so important, why are rigorous methods not in use for their evaluation? In fact, many approaches have been developed, such as those described below:

## **The Risk Management Matrix of the Boston Consulting Group**

This was a technique that used four-quadrant grids for displaying performance using Relative Market Share and Growth as its two axes. As noted in the review by Millet and Honton<sup>x</sup>, these terms represent cash generation and cash use respectively and are thus not strictly independent. Millet and Honton note that portfolio analyses methods, of which the Boston Consulting Group Risk Management Matrix is an example, are “not only highly judgmental, but also highly arbitrary (even biased).” Such methods are qualitative and the axes are unscaled. The position of a technology in these matrices is not subject to quantitative examination by other evaluators.

## **The Kepner-Tregoe Decision Process**

This technique, which lays out key criteria for a selection process and uses a numerical scale to rank alternative choices<sup>xi</sup>, is particularly useful in problem solving as it identifies the likely cause of an undesirable event by listing and weighting potential causes. This approach illustrates the importance of having clearly-defined criteria and separating them into “musts” and “wants.”

## **The Blake Managerial Grid**

The Blake grid is used to optimize the balance between people-focused and production-focused human resource practices.<sup>xii</sup> Using a grid that displays and compares different personnel behaviour practices, the technique shows how subjective factors can be organized into meaningful patterns.

## **The Myers-Briggs Personality Test**

This evaluation test reveals the personality traits of individuals by using carefully-defined statements and randomized selections of preferred statements.<sup>xiii</sup> Useful in improving group dynamics by valuing different approaches to solving problems, Myers-Briggs uses a scale of statements to establish comparative performance levels.

Although useful for specific tasks, these approaches do not provide a process for assessing the value of intangible assets and

integrating them into an effective management system. A 10-year search for such a system led to the approach described in this book, which is now known as ProGrid.

The ProGrid methodology can be used by:

- Governments to provide fair and objective procurement practices.
- Granting agencies to provide an effective national innovation capacity.
- Investors to identify and track winning technologies.
- Shareholders and regulatory authorities to assess the effectiveness of governance practices
- By a nation to establish and monitor long-range societal goals

These are huge claims for a process that is still relatively immature. However, with the history of Enron and other examples of unacceptable performance, the existing evaluation approaches have failed to achieve a desired level of performance. In the next five chapters, we will describe how the methodology has been used to address major challenges in which intangible factors are the drivers.

<sup>i</sup> *Forty Years of the 500*, Carol J. Loomis, Kathleen C. Smyth, Suzanne Barlyn, Volume 131, No. 9, 40th Anniversary Issue, page 182

<sup>ii</sup> *The Power of the 2 x 2 Matrix*, Alex Lowy, Phil Hood, 2004, Jossey-Bass (Wiley)

<sup>iii</sup> *Evaluating Intellectual Capital – Part I*, C. W. Bowman, *Canadian Chemical News*, January 2001

<sup>iv</sup> John Polanyi, *Assessing the Role of Basic Research in Science Policy*. Science Forum, 9, June, 1969

<sup>v</sup> Peter Hackett, Innwest 2004, Presentation Nov 17, 2004, Calgary, Alberta, Canada

<sup>vi</sup> Huler, Scott, *Defining the Wind*, Crown Publishers, New York, 2004, ISBN 1-4000-4884-2

<sup>vii</sup> <http://hvo.wr.usgs.gov/earthquakes/felt/mercalli.html>

<sup>viii</sup> <http://www.tornadoproject.com/fscale/fscale.htm>

<sup>ix</sup> <http://www.charlottecountyfl.com/Emergency/hurricane/>

<sup>x</sup> *A Manager's Guide To Technology Forecasting And Strategic Analysis Methods*, Stephen M. Millet and Edward J. Honton, Battelle Press, 1991

<sup>xi</sup> <http://www.kepner-tregoe/index.html>

<sup>xii</sup> *The Managerial Grid*, Robert R. Blake and Jane Mouton, Gulf Publishing Company, Library of Congress Number 64-14724, 1964

<sup>xiii</sup> <http://www.oise.on.ca/~cengel/coop.mbcareer.htm>