

National Innovation Initiative

Valuing Long-Term Innovation Strategies

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(v.1.33)

EXECUTIVE SUMMARY

A central objective of the *National Innovation Initiative* is increasing the incentive for the private sector to pursue long term innovation strategies and investment. An important determinant is how markets evaluate such strategies. While markets are considered efficient they rely on information. Markets do, when they can see it, value innovation. However, if this information is “asymmetric” markets are likely to overestimate or underestimate the intrinsic value of innovation. Even managers often do not understand their own innovation assets. We currently lack adequate and well accepted methods for measuring innovation assets and the value of long term innovation strategies. The challenge, then, is to help markets more clearly see and assess long-term innovation strategies without giving away trade secrets and compromising company competitiveness. Cautious disclosure of rearward looking financial performance and a limited discussion of near-term performance guidance characterize today’s communications between companies and financial markets. Clear disclosures of innovation strategies are simply not central to the current dialog. By making the innovation strategies of a company more clearly visible to the markets, a virtuous cycle can be created where companies with strong internal innovation performance systems and robust innovation strategies are rewarded while those without are not.

To meet this objective it is recommended that the private sector undertake a major information campaign to better understand their own innovation assets and use that understanding to educate investors, financial analysts and markets on the historic contribution and future growth potential of longer term innovation. An effective way to do this would be through voluntary disclosures of intellectual capital, integrated performance measures and indicators of future value. The specific recommendations are:

- 1. Industry should initiate voluntary and supplemental disclosure of intellectual capital, innovation performance and indicators of expected future value.*
- 2. Government should enhance the legal and regulatory framework and “safe harbor” provisions to encourage the disclosure of longer term innovation strategies in a way that enhances investor trust and provides for better disclosure.*
- 3. Industry, associations and universities should partner to educate themselves and financial analysts and consultants on emerging technological trends, innovation performance and management practices and support research on comprehensive valuation methodologies for assessing longer term innovation strategies and risks.*
- 4. Corporate boards of directors should consider management incentive structures that encourage long-term intrinsic value creation rather than short-term objectives.*
- 5. Established enterprises should develop and pursue new approaches for their innovation investments including portfolio-based risk taking and look to entrepreneur/venture capital dynamics for insights and lessons.*

BACKGROUND FOR THE RECOMMENDATIONS

Innovation is the engine of the 21st century economy. Successful companies will be those that continually invest in innovation—creating, developing and deploying new technologies, products, services and processes. This is a fundamentally different kind of economy which in the past was driven by investments and management of “tangible assets” such as land, plant and equipment, and physical resources. Today, firms are increasingly relying on *intellectual and intangible assets* to sustain their competitive advantage and the market value of their firms.

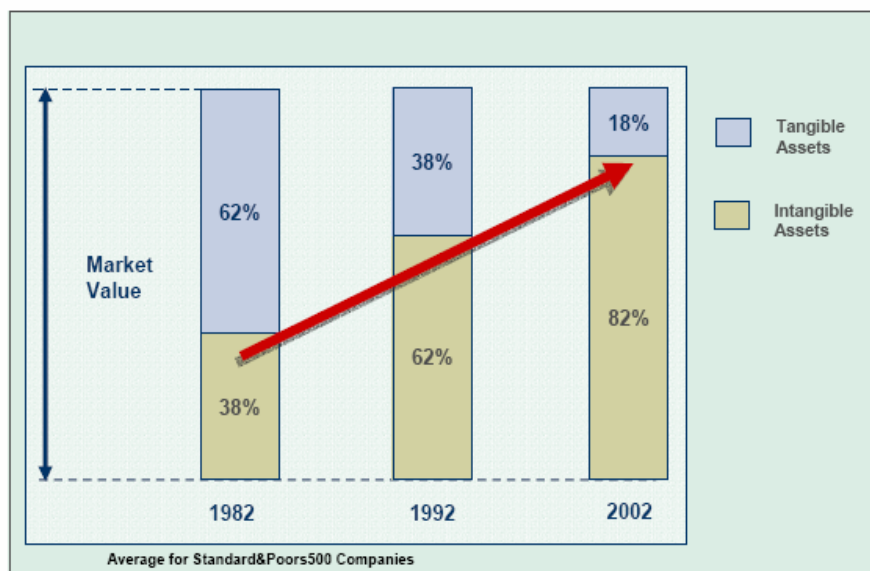
The bursting of the Internet bubble caused many to question the notion of efficient markets and the link between market value and innovation. Nevertheless there is widespread recognition that market valuations in the future will be based on new technology, innovation and other intangibles as the predominant drivers of future value.

“Wealth and growth in today’s economy are driven primarily by intangible (intellectual) assets”

Baruch Lev

In the late 1990s the annual US investment in intangible assets (R&D, business processes and software, brand enhancement, employee training) was roughly \$1 trillion, almost equal to the total manufacturing investment in physical assets (\$1.1 trillion). Furthermore, according to some analysts intangible capital currently constitutes well over half of corporate market value. Accenture by comparing book value to market values in 2002 approximated that intangible assets accounted for 82% of market valuation. See Chart 1.

Chart 1: Growing Importance of Intangible Assets in Market Valuation



This is testimony to investor confidence in the future growth and global power of the US innovation system. It also reflects a level of market risk if our innovation ecosystem of business, universities, government and skilled management were to falter.

New Dynamics of Value Creation

The knowledge based global economy is changing the dynamics of value creation yet the methodologies and information typically available to market analysts and investors are deficient for assessing the core innovation capabilities of firms. When American management faced the competitive challenges from Japan in the 1980s managements focused on creating more efficient

production processes and upgrading quality control. The focus was on cost reduction, elimination of waste and return on capital. However for the 21st century innovation economy this model for managing the performance of organizations ends up falling short. Organizations must now compete more on continuous innovation, creation of new markets, introduction of new products and services, differentiation and satisfying more complex customer needs. Cost, financial efficiency and quality are still important but no longer fully encompass what is required to successfully create value and compete in global markets. Competitive advantage today is how effectively the firm can create customer value through innovation. We need new generation performance measurement systems that capture the dynamics of longer term innovation.

Longer Term Innovation Creates Value

In a study of business launches in 108 companies, we found that 86% of those new ventures were line extensions—incremental improvements to existing industry offerings—and a mere 14% were aimed at creating new markets or industries. While line extensions did account for 62% of the total revenues, they delivered only 39% of the total profits. By contrast, the 14% invested in creating new markets and industries delivered 38% of total revenues and a startling 61% of total profits...Competing in overcrowded industries is no way to sustain high performance. The real opportunity is to create blue oceans of uncontested market space...In blue oceans, demand is created rather than fought over. There is ample opportunity for growth that is both profitable and rapid.

Kim and Mauborgne, Harvard Business Review, October 2004

Expert Views on the Inadequacy of Innovation Measures

The immediate challenge is how to realize better information and transparency innovation investments that may have longer term revenue and earnings potential (future value). A new measurement and disclosure approach is needed to provide management, investors, and financial markets with a more complete understanding of value creation.

An SEC inspired task force, chaired by Jeffrey Garten (*Yale School of Management*) looked into whether company disclosure requirements provide investors with the information they need to assess company value. The report concluded that, “The current reporting system, comprised of Generally Accepted Accounting Principles (GAAP) and SEC mandated disclosures, focuses primarily on historical financial measures. The system provides limited guidance about other information investors need.”

Peter Wallison (*American Enterprise Institute*) and Robert Litan (*Brookings Institution*) in a new book call for a totally new system that would provide ways to account for the growing importance of intangible assets such as intellectual capital, information or knowledge used in production of goods and services, research and development, trademarks, brand names, patents and even alliances with suppliers and distributors. With intangible assets accounting for up to 80 percent of the value of S&P 500 companies the authors say that market value cannot be measured using GAAP accounting. (*The GAAP Gap: Corporate Disclosure in the Internet Age*)

Companies that measure key non-financial strategic performance areas are more likely than their non-measurement counterparts to be perceived as industry leaders (74 % versus 44 %) and to exhibit superior performance on three year return on investment (80% versus 44%).

Metrus Group Study (1996)

Baruch Lev (*New York University's Stern School*) observes that the old financial model is broken and urges investor relations officers and CFOs to create a new model for communicating non-financial factors to the investment community.

Intangibles: The Key Driver of Long Term Performance

Innovation measurements are useful not only for external reporting but also for management strategy and control. “As the importance of intangible assets increases in terms of its impact on the valuation of companies, organizations must become more effective and efficient in the management of these assets in order to remain competitive and maximize shareholder value.”

Table 1: Examples of the types of capital, categorizing them as tangible and intangible

Type of Capital	Type of Asset	Examples
Financial	Tangible	Monetary Investment; Land and Buildings; Equipment
Human	Tangible	Manual Labor; Repetitive Tasks; Low-Tech Skills; Process Execution
Intellectual	Intangible	Process Generation; Best Practices; Experience; Intuition; Wisdom
Social	Intangible	Internal Networks; External Relationships; Communities of Practice; Goodwill; Shared Values; Internalized Standards

Source: Carayannis, E.G. “Measuring intangibles: managing intangibles for tangible outcomes in research and innovation” Int. J. Nuclear Knowledge Management

Gaps in Innovation Data

Data on intangible assets is not systematically collected. Most innovation related information available from firms is highly qualitative and anecdotal. Therefore it has limited value for management or investor decisions. There are enormous data voids. R&D investments are the only intellectual capital factor required to be publicly reported by companies; there is access to company level patent data but little more. Intangible assets that are increasingly important to longer term innovation include: customer satisfaction and relationships, IT investment, education of employees, recruitment practices, new product development processes, external research and technology alliances, services innovation and participation in alliances and regional networks. Information on how firms cross functionally integrate intangible assets is also limited. Large R&D spending may mean little if a company does not have well conceived business process for transforming research results into the market place. A well trained sales force will not generate maximum value without customer feedback to the research, product development, manufacturing and supply chain function. Highly qualified scientists and engineers if not compensated and recognized appropriately might leave for better opportunities. Table 2 is partial list of longer term innovation issues which could be resolved through improved measurements.

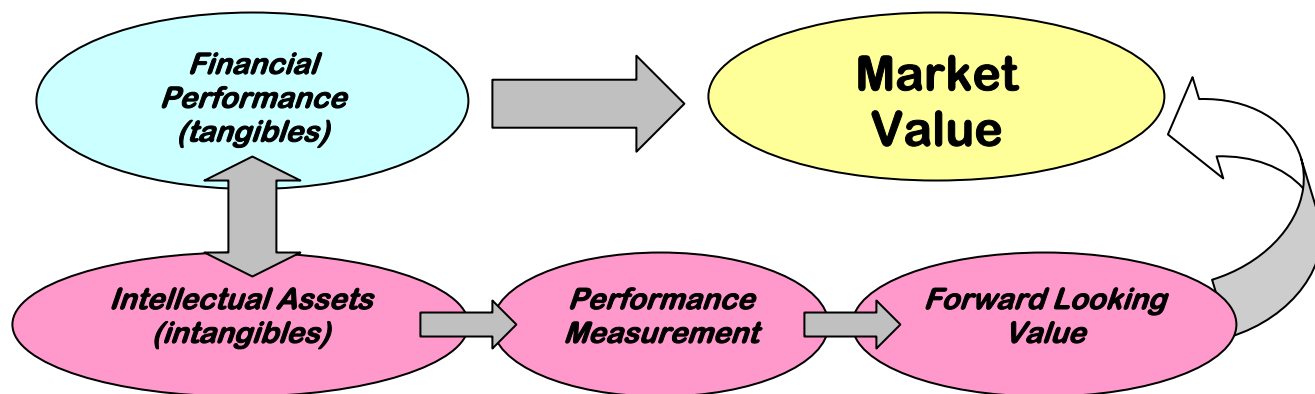
Table 2: Key Issues that Effect Long Term Innovation Performance

- What organizations structures are most conducive to R&D, multidisciplinary breakthroughs and innovation success?
- What project management methods lead to higher rates of commercialization?
- What is the contribution of industry-university collaborations and corporate networking alliances, partnerships and joint ventures on company performance? What is the optimal way to structure these arrangements?
- What is the rate of return on investments in intangibles (R&D, training, branding, customer relationship building)?
- What compensation and incentive systems positively impact individual, team and enterprise performance?
- How are new knowledge and technologies captured, adopted and diffused within the organization?
- When are failing products and services and business processes abandoned? How does the enterprise know when to abandon?
- What value are new products, services and processes creating for customers?
- How does the public policy, legal and regulatory environment impact innovation and value creation?

How Longer Term Innovation Drives Market Valuation

Chart 2 is a highly simplified model of the drivers of value. When markets are efficient, this translates into increases in market value. Markets take into account perceptions of future growth potential which are driven by firm’s intellectual assets and measures of business performance such as management competence to transform intellectual assets into future revenue streams and profits. A number of factors external to the firm also influence market valuations, including the uncertainties as to future economic conditions, market demand, competitive rivalry and alternate technological trajectories. Improving the transparency of intellectual assets, performance measures and expected innovation outcomes will help investors and markets put a value on long term innovation strategies.

Chart 2: Value Creation Framework
(Shorter term financial drivers and longer term innovation drivers)



Market Driver	Measurement (examples)
Financial Performance	GAAP Income and Balance Sheet Statements. Quarterly earnings guidance.
Intellectual Assets	Intangible capital, R&D, patents, technology alliances, skills of workforce, innovation strategy, management competency.
Performance Measurement	# of new products introduced, customer satisfaction and retention, recruitment rate, market share, adaptability.
Forward Looking Value	Market demand, expected revenues, rate of return, profits on innovation projects, economic and technical risks.



Markets Positively Value Innovation—if they know about it

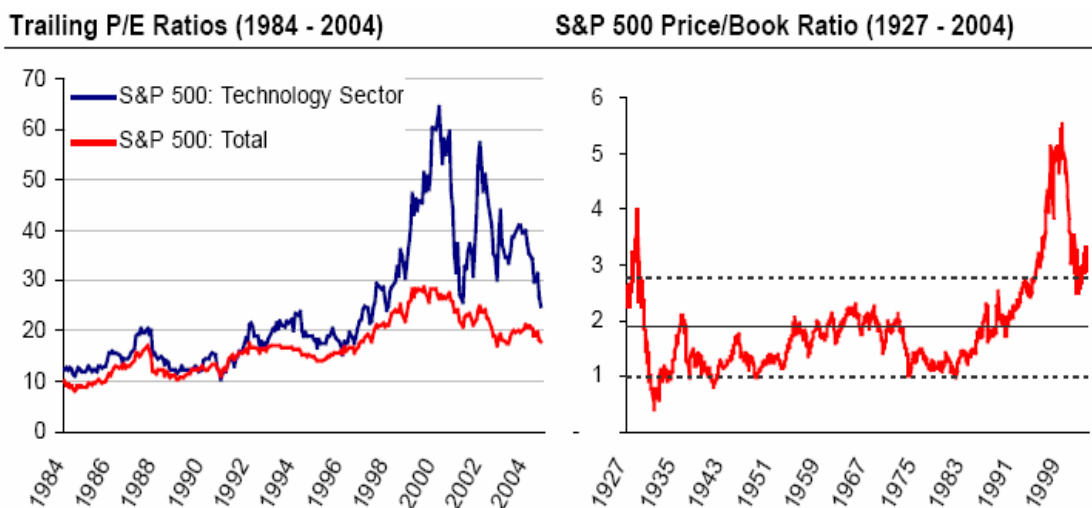
Evidence suggests that capital market participants do respond to intellectual asset information. Knowledge-intensive companies, identified via their expenditures on R&D, have a market value that is significantly higher than their book value (Hansson 1997; Lev 1997). Intellectual capital is a lead indicator of future performance of organizations. Financial analysts recommend higher amounts be invested for long term holding when the intellectual asset measures as well as the financial measures are above the industry average. Based on a content analysis of 284 corporate annual reports over the years 1993-1997, there is evidence of a highly significant and positive correlation between intellectual capital disclosure and market capitalization. This is consistent with research indicating positive correlation between voluntary disclosure and stock market valuation.

The NII Innovation Finance Working Group points out in their report that the marketplace continues to evolve in its recognition of the value of intangible assets to the external valuation of modern companies. Simply comparing the 10 highest market cap companies today vs. 10 years ago shows the relative ascendancy of companies focused on human, intellectual and technology capital as compared with those focused on commodity processing and/or manufacturing.

Company name	2004 Market Cap (\$ Billions)	Company Name	1994 Market Cap (\$ Billions)
General Electric	356	General Electric	85
Exxon Mobil	309	Toyota	79
Microsoft	296	Exxon Mobil	73
Citigroup	243	Mitsubishi	71
Pfizer	243	Royal Dutch Petroleum	60
Wal-Mart	226	Wal-Mart	60
AIG	185	Coca-Cola	59
Bank of America	181	Altria Group Inc.	52
Johnson & Johnson	173	Merck	42
IBM	145	IBM	41

Source: Morgan Stanley

The long-term rise in the stock market vs. alternative investments has been accompanied by a stair step rise in P/E ratios, and more interestingly, Price-to-Book ratios.



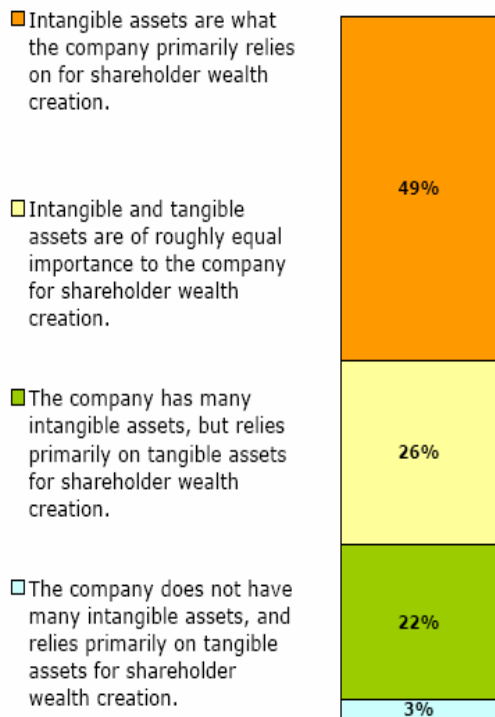
Source: Morgan Stanley

Executive Perceptions on the Importance of Intangibles and Measurement

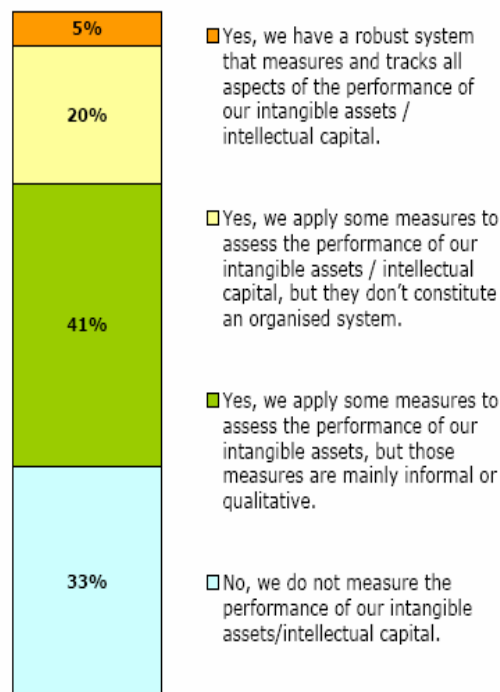
Accenture conducted a global survey of senior executives in conjunction with the Economist Intelligence Unit on the value management of strategic assets both tangible and intangible (September 2003). Overall, executives believe intangible assets are of high importance to their company’s long term shareholder wealth creation. Nearly half consider intangibles to be the primary source of shareholder wealth creation for their company, while another 26 percent see intangible and tangible assets being of roughly equal importance. While the importance of intangible assets and intellectual capital is largely recognized, measurement of their performance,

according to the vast majority is lagging or even nonexistent. Only 5 percent of executives claim their company has a robust system that measures and tracks all aspects of the performance of intangible assets and intellectual capital.

How important are intangible assets to your company's long-term shareholder wealth creation?



Does your company measure the performance of its intangible assets and/or intellectual capital?



What do we do about it?

There is general agreement that traditional accounting based information systems do not provide adequate information on intellectual capital, innovation performance and their economic impact. Lack of this information results in mis-estimates of the value of innovation which can increase the cost of capital to intellectually intensive enterprises, hindering their investment and growth. Some suggest leaving the issue to the free market to sort out. Others argue for a significant overhaul of corporate accounting and financial reporting practices. In between are various proposals for encouraging voluntary corporate disclosure of intellectual capital.

There is growing interest in voluntary disclosure. Much of the leading work for voluntary supplemental disclosure is underway in the UK, Canada, Denmark, Australia, Sweden, Netherlands, OECD, and European Union. *See Attachment 1: Selected Innovation Disclosure Initiatives.*

DETAILED RECOMMENDATIONS

1. Industry should initiate voluntary and supplemental disclosure of intellectual capital, innovation performance and expected returns and risks.

Firms with strong intellectual assets and well conceived innovation strategies and management procedures could enhance market valuations and stability through greater disclosure of intellectual capital and innovation performance measures. What is necessary to encourage this process is a developing corpus of best practices. We recommend that industry associations in concert with various reporting and disclosure experts and practitioners from industry, academia, and the investment community develop guidelines, methodologies and best practices for companies interested in adopting enhanced disclosures.

In order to better inform markets of the value of long term innovation strategies firms would undertake sectoral specific initiatives to disclose:

- Non financial information and performance metrics.
- Forward looking indicators related to projected innovation investment and outcomes
- More information about the firm's intellectual and intangible assets.

Improved supplemental and voluntary disclosures of intellectual assets and performance would provide significant benefits to investors as well as the businesses providing such disclosures. Many of the biases against longer term innovation strategies could be overcome. Longer term innovation strategies can be encouraged and help ensure market valuations that support this objective.

2. Government should enhance the legal and regulatory framework and “safe harbor” provisions to encourage the disclosure of longer term innovation strategies in a way that enhances investor trust and provides for better disclosure.

It is in public interest to have more information about firm innovation capabilities. However, business reporting is subject to complicated certifications and inspection processes, possible litigious action and serious regulatory challenges from government. This concern has been heightened by recent examples of managements abusing investors by providing false and misleading accounting reports. The existing safe harbor provisions may not be sufficiently strong to overcome potential negative consequences of supplemental disclosures. The trick is to give management the ability to present information on intellectual capital, performance and future values without leaving too many degrees of freedom for managerial manipulation. Government should pursue development of a legal and regulatory framework that protects voluntary disclosures. Public intervention should be catalytic—not controlling through regulation. Government regulatory agencies such as the SEC could provide valuable analytic support and expertise by working with industry associations and networks.

3. Industry and universities should partner to educate themselves and financial analysts and consultants on emerging technological trends, innovation management practices and more comprehensive methodologies for assessing long term innovation strategies, risks and potential returns.

Management and analysts benefit from better information on innovation trends, innovation performance and methodologies for assessing the link between innovation activity and future financial outcomes. Industry and universities should partner with the financial analyst community to proactively generate such information as well as support research to improve valuation

methodologies. Such research and education program would accelerate more disclosure and improve the credibility of market analysis.

The NASD, SEC and private non-profit and for-profit organizations and media organizations currently provide investment related training and training materials to investors and financial planners. To enhance long-term valuations, our recommendations should encourage all educational entities (governmental, non-profit and for-profit) to provide focus to the long-term and away from short-term evaluations.¹

Such education should provide a focus on value creation and innovation rather than simply the basics of financial reporting: net income and cash flow.

The corporate sector should also be encouraged to provide this kind of education, specifically financial services firms selling 401(k) and other retirement and investment services. In addition, all corporations should be encouraged to provide this kind of training to their own staff in order to reinforce, within their own company, the commitment to long term outcomes that support innovation. Many firms today embrace open book management. This kind of training should be extended, expanded and modified to focus on long-term outcomes including innovation that drive real value.

4. Corporate boards of directors should consider new management incentive structures that encourage long-term intrinsic value creation rather than short-term objectives.

To promote longer cycle innovations, corporate boards of directors should implement CEO and management incentive structures that encourage long-term intrinsic value creation rather than short-term objectives (such as annual net income targets). In addition, boards should not focus on market valuation because market valuations are subject to the laws of supply and demand and other extrinsic issues outside the control of managers. Such focus can muddy the laser like focus that boards, CEOs and their managers should have in creating long-term value through innovation. Incentive structures should reflect the realities of business structures which today are reliant on intellectual capital and innovation. This means incentive structures that reflect multi-year outcomes, and payouts that are based on long-term results. Boards should be consistent in their approach and encourage managers to use similar long-term views when evaluating the performance of their employees.

The incentive structures of professional money managers should likewise be based on longer-term outcomes. A recent report has shown the negative consequences to investors of short-term thinking by portfolio managers.² Financial services firms should be encouraged to lengthen the time horizon for bonus structures so that when their employees make investments on behalf of their clients, longer time horizons are encouraged. The SEC and others should create investor awareness

¹ For example, Mary L. Schapiro, Vice Chairman, President, Regulatory Policy and Oversight, National Association of Securities Dealers wrote: "Educated investors are essential to successfully functioning capital markets. At this critical time in our financial history, restoring the confidence in our financial system lost over the past year will depend upon financial advisers and investors truly understanding the companies they invest in. As *Economic Value Management* shows, being educated means more than understanding the unique language of the stock market, it is more than reading a prospectus or an annual report, it is more than listening to an analyst's opinions. Being educated requires a genuine understanding of the value of a company."

² Buy and hold, the strategy most commonly recommended to stock investors, is being increasingly abandoned by the professionals, with US mutual funds holding stocks for an average of just 10 months, a record low. At the same time the average annual turnover of a fund's portfolio has risen to a record high of 118 per cent, according to figures from the Bogle Financial Markets Research Center.

around this issue and encourage full disclosure of portfolio manager bonus/incentive arrangements. (See disclosure and communications for more on this topic.)

Management Systems. Imbedded management structures must also be changed. To encourage innovation and long-term intrinsic value creation, managements must redesign the way in which numbers are reviewed and analyzed. While many corporations have extensive processes in place to respond to monthly and annual results and their forecasts, the processes and conversations around innovation and longer-term value are often less imbedded in the management process, if they are present at all. So in support of these efforts, managements must make a concerted effort to create the structures for this review and analysis so that the focus is clear and present in the organization's day to day interactions. Examples of this lack of focus abound. And studies show that the effects are wide reaching.³ These management approaches harm innovation and the ability of organizations to realize value from creativity and innovation.

Metrics. The metrics organizations use to describe their results must shift from short term measures (i.e. short time horizon/duration) to long term ones and from net income or cash flow to long term intrinsic value creation. To do this, corporations must educate themselves on metrics that describe long-term intrinsic value and implement them in their management systems. Management systems (as described above) must use these longer-term measures of performance not only to assess whether to undertake a project (NPV) but also to judge the organization's performance and improve it over time. Such actions will not only encourage innovation but also a learning process focused on realizing the value of those investments. These broader metrics of intrinsic long-term value creation provide the context necessary to promote reduced usage by corporations of short-term yardsticks while placing the measurements of intangibles in the broader context. This will help prevent corporations and investors from treating intangibles disclosures as a sideshow. With these metrics in place, corporations will have real measures of whether or not their innovations created value; if not, what to do about it; and if so, how to duplicate it.

Disclosure and Communications. Consistent with first recommendation corporate communications to the street and to employees should be re-focused to the longer-term, to innovation and long-term intrinsic value creation. Over reliance on quarterly earnings projections concentrates the focus on meeting forecasts (as well as the shorter term) rather than on investment, innovation and the operations of corporations. The media should also be encouraged to report on longer time horizons and on performance from a broader perspective than earnings results, recognizing the longer term cycles involved in innovation and the deployment of intellectual capital.

5. Established enterprises should develop and pursue new approaches to improving the productiveness of their innovation investments including looking to the portfolio-based risk taking and creative destruction dynamics of the entrepreneur/venture-capital ecosystem for insights and lessons.

Given the large amount of talent and capital within established enterprises, enterprises must join entrepreneurs as central figures in the nation's innovation engine if we are to leverage the full resources of our economy. There is, however, an intrinsic challenge to fueling innovation within

³ According to a survey of 401 financial executives and in-depth interviews of an additional 20, conducted through the joint efforts of Duke University, the National Bureau of Economic Research, and the University of Washington, 55% would avoid initiating a very positive NPV project if it meant falling short of the current quarter's consensus and 78% would give up economic value in exchange for smooth earnings. The implications are that potentially even demonstrable value-creating innovations will not be funded if they interfere with the production of short-term results. Citation for the study: Graham, John Robert, Harvey, Campbell R. and Rajgopal, Shivaram, "The Economic Implications of Corporate Financial Reporting" (January 20, 2004). <http://ssrn.com/abstract=491627>

an on-going concern: the capital and talent deployed in established companies are largely engaged in, and tailored to, delivering the current business. Innovation, then, which requires different skills, risk-taking decision making, patient capital, etc., is often found competing for resources that are not well suited to its purpose. Companies should be considering why it is that entrepreneurs and open markets are more effective at developing breakthrough innovations and how they can translate some of those lessons to their own management system.

Attachment 1: Selected Intellectual Capital Disclosure Initiatives

Initiatives	Description
Denmark—Intellectual Capital Statements	This 2003 guideline for intellectual capital statements is the result of an extensive cooperative project between researchers, companies, industry organizations, consultants and civil servants and coordinated by the Danish Ministry of Science, Technology and Innovation. The report presents elements of the intellectual capital statement, how to prepare a statement and content of external statements.
Australia—Invisible Value: the case for measuring and reporting intellectual value	The identification, measurement and reporting of intellectual capital emerged as an important issue at the Australian National Innovation Summit in February 2000. The Government's innovation initiative, <i>Backing Australia's Ability</i> is based on the recognition that intangible assets are outstripping traditional assets as drivers of growth. The papers reviews internal and external measures of intellectual capital and the accounting treatment of intangible assets and also consider international experiences.
Sweden-- Skandia	Skandia, a financial services company, was the first in the world to develop an integrated intellectual capital model which defined and classified intangibles not shown in the balance sheet.
Canada—Canadian Performance Reporting Initiative	This initiative was designed by the Ontario Premier's Council in partnership with the Canadian Institute of Chartered Accountants to increase the effectiveness investment innovation capacity in Ontario in the early 1990s. The main perceived barrier to increasing investment in innovation was the lack of clear measures of the returns these investments could generate. The work is aimed to develop a set of standards to account for the cost of ideas and the productivity of knowledge workers.
United Kingdom—Creating Value from Your Intangibles	This is a self-assessment tool designed to be complementary to financial accounting by focusing on the non-financial aspects of a business which influence future cash flows and the value of the business to its shareholders and stakeholders. The guidelines build on the first intangibles report "Creating Value from Your Intangible Assets".
European Union—(PRISM) Policy-making, Reporting and Measuring, Intangibles, Skills and Management	Initiated in 2000, the PRISM group believes that intangible investments - in areas such as R&D, know-how, software, brands, licenses, copyrights, and organizational design - are the drivers of both competitive advantage and economic value creation. The <i>PRISM Report 2003</i> compiles research along four key themes: emerging new theory of the firm, measurement implications, issues facing the business community and policy issues. The research has generated insights on the connections between macro (national economic accounts) and micro measurement issues at the firm level.
OECD—several projects intangibles	Work on intangible investments within OECD is according to two main theories: human capital theory and the theory of innovation and technical change. A number of OECD directorates work on this issue and numerous publications are available.
United States -- Financial Accounting Standards Board (FASB) –	Disclosures about Intangible Assets project. The objective of this project was to establish standards that will improve disclosure of information about intangible assets that are not recognized in financial statements. A comprehensive special report was completed in 2001: <i>Business and Financial Reporting, Challenges from the New Economy</i> authored by Wayne Upton. In January 2004 the Board removed this project from its research agenda.

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