



**EUROPEAN COMMISSION
INFORMATION SOCIETY TECHNOLOGIES
PROGRAMME**



**POLICY RESEARCH INTO
INNOVATION AND MEASUREMENT
PRACTICE IN THE INTANGIBLE ECONOMY
(PRISM)**

Interim Research Findings

Edited draft, January 2003

Preface

This document contains a synthesis of the main research findings of the PRISM initiative at the end of its first year. It also covers the various plenary forums and workshops that have been held under the auspices of PRISM and, in particular, a seminal debate that took place at Copenhagen Business School on 19-20 September 2002.

A list of PRISM research papers is contained at appendix I. The PRISM consortium members and academic researchers are listed at Appendix II. Appendix III lists the Advisory Council members as at 30 September 2002.

PRISM is supported by subventions from the European Commission's IST programme and the private sector.

Contents

INTERIM RESEARCH FINDINGS..... 4

Introduction 4

KEY FINDINGS AND CONCLUSIONS 5

 A. The Emerging New Theory of the Firm 4

 B. The ‘Hidden’ Productive Economy Demands New Measurement Tools..... 10

 C. Issues for the Business Community..... 13

 D. Policy Implications 17

Future research programme..... 18

Conclusion..... 20

Appendix I: PRISM – Interim Research Papers..... 21

Appendix II: Consortium Members and Academic Researchers 23

Appendix III: List of Advisory Council Members..... 24

INTERIM RESEARCH FINDINGS

Introduction

1. The PRISM research programme and its dissemination activities are based on four key themes around which the lines of research are converging¹:

(i) The first theme centres on the new and emerging theory of the firm. It is often argued in business and academic circles that the global economies have undergone a structural shift in the mode of wealth creation over the past few decades, driven mainly by changes in the architecture, pace and connectivity of the corporate value system. If this is so, management challenges and practices will be evolving in response. What is it about this ‘new’ economy that requires the development of new tools?

(ii) Our second theme leads naturally from the first. If there are fundamentally new management challenges, then this will impact directly on the established norms of measurement practice. These business routines and metrics were devised when firms operated within fixed boundaries and the management focus was geared to resources that were physical, and owned. An important feature of today’s digitally-enabled economy is the separation of the physical and legal boundaries of the enterprise, and the fragmentation of the old legal entity into a labyrinth of licenses, contracts and other trading agreements, often involving multiple jurisdictions.

(iii) The third concerns the perspectives of different economic actors. What do our findings mean for corporate executives? How are the banks, venture capitalists and other members of the investor community adapting their analytical models, standards and regulatory practices?

(iv) The fourth theme concerns the implications for the established policy set. What are the principal policy and regulatory implications of the ‘new’ economy? What should the EC be doing at a policy level to improve Europe’s chances of delivering on the Lisbon objective of becoming the most dynamic, competitive and knowledge-intensive economy in the world by 2010?

KEY FINDINGS AND CONCLUSIONS

A. The Emerging New Theory of the Firm

3. In traditional business economics, competitive advantage is often attributed to the successful exploitation of economies of scale underpinned by a unique technology or dominance of geographical markets or supply-chains. This is an over-simplification and it is now widely accepted that winning corporate strategies are more often grounded in the accumulation and creative exploitation of intangibles. The empirical evidence suggests that successful players in competitive markets are those that have access to a corpus of unique - or at least difficult-to-replicate - capabilities and competences. It is these that form the mainspring of competitive advantage. They are systematically exploited, first internally (via monopoly rent and scale effects) and then externally through licensing arrangements (scope effects), until eventually they end up as a pool of commodity assets - open to easy replication by competitors and new low-cost entrants².

¹ A bibliography of the first-year research papers published by PRISM (25 papers and 9 case sets) is included as appendix I. Copies of the papers, together with conference proceedings and reference to other key works in the intangibles field can be found at our website www.euintangibles.net

² Or as Don Tapscott succinctly puts it “ It used to be that competitive strategy was all about the internal challenge of either creating differentiated products or services or having lower costs. The key to strategy now is architecting capability”

4. Our thinking is based on the following hypotheses to explain the competitive behaviour of firms today³:

- We are in economies of surplus (characterized by mature markets for goods and services but also the non-exhaustion/ non-rivalry characteristics of intangibles)
- As markets have become increasingly mature (commoditized), so firms are having to compete harder for (monopoly) profits or comparative advantage
- This has forced firms - not only in the 'new economy' sectors but in mature industries struggling to stabilize their value chains - to intensify their search for new factors of differentiation and market leverage. As a result, they are increasingly competing using non-price factors of competition
- They are therefore trying to create, maintain or invade monopolies founded on intangibles
- Intangibles typically have low barriers to entry - hence the growing critical importance of IPR to provide an exclusive market window (monopoly rent)
- Established IPR practice is being challenged, especially by the maturing business services sector as it shifts from selling time to selling assets (institutionalized and codified know-how).

5. The PRISM research to date would tend to confirm that a major structural change in the global economies has taken place over the past few decades. A key contributory factor is the accumulation and aggressive deployment of a new generation of enterprise value-drivers based on intangibles - characterized by R&D and proprietary know-how, intellectual property, workforce skills, digitally-enabled supply networks, software and brands.

6. It is now widely accepted that a nexus of intangible assets, quasi-assets and competences in the form of unique or distinctive capabilities deriving from innovation and knowledge, are essential ingredients of the economic production process. Despite significant empirical research effort on both sides of the Atlantic however, the mechanics of their value-generating processes are, as yet, poorly understood.

7. Economic theory has not kept pace with these market developments, mainly because the processes and causal links are complex and have been slow to yield to analytical methods. Adding to this, the business and academic research pioneers have been frustrated by deeper cognitive and measurement problems whose roots go deep into the backbone of our existing macro and micro information systems, which are unable to produce routine, systematic information on the stocks and flows of the modern economy⁴. Instead, we have to rely on other studies for glimpses of what has been happening:

- Investment in knowledge intangibles has been rising steadily for many decades and is now a substantial feature of the expenditure of national economies, companies and individuals. This has not only transformed the economic landscape but also acts as a social catalyst to promote changes in work and leisure patterns. Intangible investment in the major OECD

³ See WP1 discussion paper: "The Shifting Corporate Asset Base", by Eustace & Youngman

⁴ Hill & Youngman: WP5 interim report, September 2002

economies is now running at between 50-100% of their outlays on acquiring and building physical assets. It also shows significant country variations across the EU

- Nakamura⁵ estimates that in 2000, US corporate investment in intangibles was US\$ 1 trillion - comparable to investment by the US business sector in property, plant and equipment. Half of this was related to R&D and software, the balance was directed towards other intangibles such as brands, human resources and organizational processes
- Creative occupations in the U.S. rose from 1.9% of the total in 1950 to 5.8% in 2000 (Nakamura)
- Knowledge workers are the fastest growing segment of the OECD's labour force, with an average annual growth rate of 3% during the 1990s
- The proportion of the Australian labour force engaged in the production of intangible capital rose from 16% in 1971 to 31% in 1996 (Webster)
- By 1998 only 15% of the S&P500's market value was attributed to tangible assets, compared to 62% in 1982
- 50-90% of the value generated by a firm is attributable to intangibles⁶.
- PRISM's research and case studies reveal the existence of intangibles across a wide range of companies and industries, small and large, old and new⁷.

8. A second main conclusion is that knowledge has become central to both the production and value-delivery systems in the modern enterprise. This knowledge may be *embodied* or *disembodied*⁸. Embodied knowledge is tacit and embodied in people who effectively lease intellectual services as an input into the firm's production process. Disembodied knowledge is codified and can be stocked, bought, sold and otherwise traded like physical and financial assets. In certain circumstances it can also be used as debt security:

- A balance must be achieved by companies between strong codification strategies and loose individualism designed to permit room for creativity
- 'Adaptive efficiency' and human capital are key to sustainability. Therefore, key aspects to measure would include:
 - The ability to innovate
 - The ability to productively change
 - The capacity for continuous learning.

⁵ Nakamura, *Proceedings of the 4th US conference on intangibles*, New York University, May 2001

⁶ Hope and Hope (1998), "Competing in the third wave: the ten key management issues of the information age"

⁷ A review of the impact of intangibles is contained in the WP3 discussion paper "The geography of intangibles", by Tomasso, Paci and Schweitzer

⁸ Hill & Youngman (*ibid*)

9. But the value of intangibles is highly contextual, uncertain and volatile. Innovation, and the drive to invade new areas to monopolize rent – through existing IP instruments where possible – are apparent throughout the economy. Markets are rife with interconnectivity, and brands, corporate reputations and patents that were previously judged to have a robust future lifespan may be impaired without warning, with dramatic loss of value.

10. Our third contention is that organizational forms are changing in response to the new business environment. In this context, networks have become more important, but our understanding of their value-processes is limited:

- Networks are vital strategic assets, in part because organizational strategy needs to change faster than traditional organizational forms and closed competency groupings can possibly respond, but also because the complexity of the projects undertaken is often beyond one firm’s capabilities or resources
- The loose ties of networks, the available resources and the dynamics of power are very different from a traditional, hierarchical industrial firm⁹.

11. Evidence suggests that hi-tech and bio-tech industries cluster in the same way we have seen in other industries throughout history, stretching from automobiles in Detroit to banking in London. The creation of new intangibles such as new competencies and technological breakthroughs requires interactivity. Uncodified knowledge does not travel well: only with the growth of social capital (in the shape of trust) does such knowledge start circulating within networks¹⁰.

12. The explanation of intangible clustering, at least from the U.S., seems to revolve around the role of venture capital in financing intangible capital. The complexity of under-developed or rapidly-changing industries often means that the traditional sources of capital do not work well. Capital markets tend to be more generalist and so partially rely on the expertise venture capitalists have built up. The venture capitalist’s function is to acquire specialist knowledge (a key form of intangible capital) by focusing on a particular industry segment and learning more and more about less and less. Such knowledge does not necessarily travel well. Hence, a growth circle builds up whereby the capital is attracted to the ideas, often found in and around universities, which leads to the offspring of companies. As these companies grow and more venture capital and associated knowledge clusters, new players on the scene are likewise attracted to the region by the pre-existence of financial and intangible capital in the form of knowledge, ideas and skills. Silicon Valley is but one of a number of examples¹¹.

⁹ WP6 paper: “ *Networks, Intellectual Capital and the Management of Knowledge: Performing the ‘New Economy’*”, by Thrane, Mouritsen & Johansen

¹⁰ As argued in the Ferrara WP3 paper “*Why is Social Capital a Capital*”, by Galassi & Mancinelli

¹¹ *ibid*, Tomasso, Paci and Schweitzer

13. A fourth conclusion is that the efficiency of the EU's IPR regime is one of the keys to incentivising economic growth and innovation. An IPR is a distinct form of intangible asset and needs 'tender loving care' to uphold its value. The external environment, in particular the legal environment, impinges heavily on this asset class. Policy-related issues in relation to the operation of the EU IPR system are summarized below¹².

(i). Fragmentation and the urgent need for the Community Patent to be made a reality:

- Despite many years of debate and countless studies it is still disproportionately costly to obtain protection across the EU (especially in respect of patents) and to enforce those protection rights (since one cannot litigate for patent infringement across the Community)
- The national protectionist lobbies are obstructing the development of the Single European Market in intellectual property, both in respect of the Community Patent and the Community Patent and Trademark Court of First Instance¹³
- The high cost of protecting European innovation acts as a disincentive to the growth of new entrepreneurial businesses.

(ii). Proportionality and the need for rebalancing:

- The cost of patents in the EU¹⁴ is arguably out of proportion with the incentives and the rewards
- Copyright protection (life plus 70 years for example) makes little sense in the 21st century economy, where consumer habits and expectations can change rapidly. In addition, the shrinkage of time and space in the digital economy mean that many production and distribution processes are now close to zero cost and real-time, especially in the hi-tech, software, media and telecoms sectors.
- Exclusion rules need to be redrawn with clear boundary parameters, especially regarding the patentability of business modes and practices. Certain classes of fundamental discovery and many emerging areas of commercial practice should be treated as public goods and not monopolized¹⁵. This is a sensitive judgmental area and more clarity is required as market forces (particularly in the U.S.) and the desire to secure new monopoly rents will continue to push the boundaries¹⁶.

¹² A more comprehensive discussion of the IPR regime is set out in the discussion papers prepared by L. Cohen for the IPR workshop at MW&E, London, on 10 September 2002

¹³ The tragedy is that draft legislation has been available for both reforms for about 2 years, but not yet implemented.

¹⁴ This is largely a translation problem, as validation on grant requires translation into up to 11 national languages.

¹⁵ But rewards may be appropriate for the discoverer, by way of license fees. A doctrine of compulsory licensing for the use of an "essential facility" needs to be developed. The rudiments are already available.

¹⁶ Examples often cited are the 18th Century Watt patent which is held to have stifled the exploitation of steam power for over 40 years, and the genome patent.

(iii) Deficiencies in the current system are costing Europe dear. It is a matter of great urgency for the EC to address if it is to deliver on its Lisbon objective:

- The way the current IPR regime operates clearly favours the large company over the SME, particularly for patents. Large companies have the financial resources (and arguably the time resources) to outrun the SME in any legal battle in a fragmented legal market. Accordingly, they feel they can infringe and get away with it, as against an SME¹⁷, and even if caught, are only stopped in one jurisdiction at a time
- The technology multinationals are amassing portfolios of patents for defensive and negotiating reasons, and are using the system in ways for which it was not intended
- The net effect is the disincentivization of innovation-based SMEs, since the financial and time costs of protection erode their more constructive efforts and eat away at their invested capital

(iv) The US is additionally advantaged by the prohibitive costs of US litigation:

- The sheer cost of litigating in the U.S. (added to the fact that legal costs are not recouped in the event of a favourable judgment) will often put companies (particularly SMEs) off the idea of pursuing infringers in the U.S. courts¹⁸
- Europe is losing billions of euros of net income from such loss of royalties. Precise measurement of this loss might bring the message home – it is estimated to be in excess of €10bn for the UK alone
- Given the importance of the U.S. as a market, this is a further disincentive to the growth of entrepreneurial SMEs in Europe.
- A more cost effective patent system in the EU would rebalance some of these disadvantages.

¹⁷ Some low cost countries have poor enforcement procedures, which take a long time to final injunction, and inadequate damages

¹⁸ This is ameliorated by contingent fee litigation, but discovery and depositions act as a big disincentive to SMEs from Civil Law jurisdictions.

B. The 'Hidden' Productive Economy Demands New Measurement Tools

14. There is a strong relationship between reporting and management tools. Generally speaking, management only wants to report externally on things they are confident they can predict and control, and where disclosure makes sense in the context of the business strategy and operating plan.

15. Broadly speaking, there are two classes of measures in use:

- Historically-based data points whose position and 'momentum' may provide a basis for predicting the future. Such data might include a more comprehensive breakout of investment spend on R&D, ICT or workforce development and training¹⁹. Alternatively, it might be liquidity ratios, load factors, innovation revenue, repeat-order profiles or customer or employee turnover rates. However, past events are a notoriously poor predictor of future performance
- Asset-like indicators, which form a broad spectrum²⁰ from 'hard' indicators - such as annuity contracts, patents and other income-generating licenses, to 'soft' indicators such as the profile of workforce qualifications. The problem with these measurements is that they only have context and meaning in relation to one's competitors. In absolute terms, management cannot decide saturation levels - for example, is an investment of 5% of turnover in research and product development enough, about right or too much? What are the expected returns on these investments? What are the pre-requisites for future success? IC rating tools are available that may be useful for CEOs who have an intuitive feeling about the state of their intellectual capital, but have no generally recognized way of communicating it to the board, or the organization at large.

16. New measurement tools are required to assist management with internal capital allocation and tracking the 'hidden' productive assets:

- This is primarily about reviewing one's own asset/ resource base (through IP/ knowledge audits) and understanding the dynamics of one's own business – what are the drivers that generate value and cash, what the risks are and how they might be mitigated?²¹
- Efficiency, renewal and risks are key aspects of intellectual capital to track - measures of the capacity to act (together) are central
- In a recent survey of the multinational members of the Henley Knowledge Management Forum, measurement issues have risen to the top of the agenda having languished lowdown in the height of the bull market²².
- External reporting is a secondary benefit

¹⁹ See also Brookings (2000) "Unseen Wealth", by Blair and Wallman, pp 61-65

²⁰ *ibid*, Eustace & Youngman

²¹ See Cass WP9 case studies on skills development in the technology and consulting sectors

²² Plenary contribution by Edward Truch (WP8), Copenhagen, 19 September 2002

17. A number of guidelines for intangibles measurement do exist²³ but different means of subdividing the field of intangibles proliferate. Examples include:

- Disembodied/ embodied (as used throughout this report)
- Produced/ non-produced (a sub-classification used prominently in the System of National Accounts)
- Disentangled/ entangled
- Human/ non-human
- Animate/ inanimate.

18. Each firm will be different and will develop its own, necessarily idiosyncratic means of tracking key indicators of performance, but there is a growing acceptance that common performance indicators can be synthesized at the industry sector level²⁴. It is difficult to lay down standards, firstly because we are still learning but also because this is not a simplistic 'one size fits all' problem which can be solved by externally-imposed standards. Standards should aim to enshrine best practice rather than set out to prescribe new and untested protocols:

- A parallel can be drawn with the development of social and environmental reporting which began life as a discussion item in the Operating and Financial Review (OFR) and has now developed into a standard
- The recent spate of high-profile corporate failures and the loss of investor confidence in the integrity of company and financial analysts' reports will open up new opportunities to reform corporate reporting
- In accounting standards, the U.S. FASB proposals of April 2001²⁵ were an important step forward and the IASB is currently keeping under review the results of U.S. reporting on intangibles in business combinations with the aim of reforming the global financial reporting standards in this area^{26 27}
- FASB is moving ahead with a project whose goals include "improving the quality of information displayed in financial statements so that investors, creditors, and others can better evaluate an enterprise's financial performance."

19. If Italian managers are typical of European corporate executives, then it is clear from the headline results of the SUMMIT survey of Italian executives²⁸ that the answer to these issues does not lie in expanded financial reporting:

²³ Notably, in Europe, the guidelines published by the Danish, Meritum and Nordika projects, and the U.S. Brookings and GRI initiatives

²⁴ As shown by PwC's research into future reporting models (see footnote 29)

²⁵ FASB: *The Upton Report (2001) and SFAS 141/ 142*

²⁶ Related technical issues, such as revenue recognition and the treatment of assets and liabilities arising from long-term annuity contracts (licenses and other operating leases, multi-annual and executory contracts), are also being addressed by the accountancy regulators

²⁷ Monitoring this is part of the WP4 (Ferrara) research remit

²⁸ Survey of 1400 senior managers (of companies with more than 250 employees) in July/August 2002 – they received 680 replies

- 80% do not trust financial reporting – as it can lead to erroneous valuations, especially in regard to prospective forecasts
- Only 18% said that financial statements have anything useful to say about the future
- 85% agree with the idea of seeing more non-financial information published
- 54% claimed they were already doing it
- 79% said that such information should be presented in a separate report – with numbers to be accompanied by narrative.

20. The various guidelines published in recent years by the Danish/ GRI/ OFR initiatives address different aspects of the performance measurement problem and in so doing serve their own user (stakeholder) communities. From a policy angle however, we urgently need a holistic reporting framework that is recognized by and acceptable to the key interest groups internationally. A recent development by the multinational accountants, PwC, may provide a useful reference point of convergence. PwC²⁹ propose a multi-layer model conceptually similar to the OSI model that laid the groundwork in the 1960s for today's global telecoms standards and data exchange protocols. Arguably, this laid the foundations for the ICT revolution of the last quarter of the 20th century and provided a launch pad for the digital networked economy, the internet, etc. This firm's research with industry and investor groups in the U.S. and Europe would suggest a 3-tier corporate reporting model:

- Tier 1: A financial reporting layer based on global generally-accepted accounting principles (GAAP).
- Tier 2: Industry-specific performance indicators. This will involve separate performance standards, developed by industries, that should allow meaningful comparison between firms
- Tier 3: Company-specific information

The basic information layers, once laid down and agreed, could be supplemented with additional layers to accommodate CSR, environmental reporting, human resource reporting, etc.³⁰

21. Similar cognitive and measurement problems exist at a macro level:

- The SNA is poorly aligned to measure the economic realities
- Measurement needs to be reoriented around the value drivers of economic production
- The scale of the problem is both significant and urgent when one considers the size of the sums involved and the impact of the policy decisions that are taken on the basis of national accounts data
- Recognition of R&D and intellectual capital formation as value-driving activities would be a good place to start for national accounting

²⁹ In "Building Public Trust – The Future of Corporate Reporting", by S. DiPiazza and R. Eccles (2002)

³⁰ The Ferrara WP4 research package is also contributing to and monitoring these developments

- Research and development adds to the stock of knowledge and should be viewed as a capital stock which is used repeatedly over a number of years in the production process – like fixed assets. Although long-standing problems of definition mean that official R&D data is notoriously unreliable, in many countries reported expenditures by the business sector are now approaching 3% of GDP³¹
- In this connection, the need for reform of the measurement protocols for R&D and productivity in service industries is now an acute issue that requires urgent attention from the policy community and statisticians
- Educational expenditures, including training and development and other lifelong learning pursuits, are not final services consumed at the point of delivery, but are actually intermediate services which students consume for the purposes of forming intellectual capital. This intellectual capital is owned by the household sector of the economy and is in effect then leased or rented by companies as an input into the production process.

22. Our first estimates, performed on the UK economy, suggest that the effect of taking this perspective on intellectual capital formation would increase GDP by about 7% and would increase the official economically-active workforce by about 10%³².

C. Issues for the Business Community

23. In the following section we summarize the key issues for the business community.

Considerations for corporate executives

24. The overriding issue is about rebuilding trust in the functioning of the markets. The starting point is better performance information – multi-dimensional indicators, ratios etc. that enable more enlightened, rational judgments to be made about the productivity and profitability of firms, and their prospective performance. This means bringing together a number of initiatives and perspectives which already exist – knowledge management, intellectual property management, human resource accounting, etc. – and creating a holistic picture of the business and what is going on within its strategic (as opposed to legal) boundaries.

25. Motivations for corporate executives to change their management techniques and look more seriously at measuring intellectual capital and other intangibles do exist. For example:

- The HR differentiator – as a means of attracting and retaining talent
- Knowledge management – to attract other organizations into their networks
- Better returns on IPR/ technology investment
- Improved stakeholder communication – starting with investors
- Improved corporate governance
- Risk management
- Growth – a diagnostic to identify areas of growth, serendipity, etc.
- Employee compensation/ reward systems.

³¹ A recent survey among the European Roundtable of leading industrialists found that their average R&D investment was 9% of turnover. This also highlights one of the problems of our simplistic R&D measurement system, which is not discriminatory

³² Hill & Youngman, *ibid*

26. The issues go well beyond business economics and accounting to survival in the 21st century economy:

- There will be big winners and losers as these dynamics play out, and the early and successful adopters gain prominence
- It is vital for the business community to enter the debate – act now or be left behind
- It is about assisting corporate boards become more comfortable with their remit in the expectation that levels of scrutiny and accountability are on the rise, by finding a way to see what is really going on within the company.
- It requires us to rebuild public confidence in the lines of defence that protect shareholders and investors against securities fraud and other unwarranted ‘insider’ manipulation of financial information. This will require a fundamental change of discipline and reward systems to curb the culture that incubated many of the recent corporate excesses and failures, and re-draw the line between the poachers and gamekeepers. One policy concern here is the erosion of governance discipline over the past decade in relation to professional gatekeepers such as CFOs, auditors and legal advisors (internal and external) and their self-regulatory bodies³³.

27. This is challenging as it affects the whole organization – structurally and culturally:

- We are mostly trained to think and act with a financial capital perspective. Creating a new type of dialogue around knowledge creation and its circulation is tough
- We are trained and conditioned by our reward systems to develop relationships internally; now we need to develop the competences to engage with others from outside
- This is about creating new modes and reference models of governance for the younger generation
- At a national level, Denmark has amassed valuable experience in its on-going project with intellectual capital measurement in which 17 companies are involved. The Nordika FRAME project has also involved a wide cross-section of the business and user communities
- Business combinations will provide a learning experience for corporate executives, accountants, and investment bankers. Acquisitions will be more closely scrutinized for what the goodwill paid is actually composed of. Trying to account for and justify a valuation by identifying those intangibles which can be disentangled will be a useful exercise
- Cases of best practice exist, such as the IESE case on Union Fenosa³⁴. This case provides strong evidence that those organizations that are taking steps to manage their intangible assets better are getting positive, measurable results. It also shows how difficult it is and how much sponsorship is required

³³ *Exhorting the accounting profession to embrace reform and change, Paul Volker, former Chairman of the US Federal Reserve observed recently “I see the role of an auditor as guardian of the ‘truth in markets’, acting in the public interest to maintain reliable and consistent financial reporting ... what is at stake is the credibility of a profession that, in fact relies on that credibility as the bedrock of all it does” (World Congress of Accountants, 2002, Hong Kong)*

³⁴ *See IESE WP9 case study “Union Fenosa Corporate University: teach and learn from experience”*

- Technology platforms such as XML and XBRL will enable data to be captured more cheaply and efficiently, with the benefit that the data can be cut and sliced to suit the end user³⁵.

28. There is a growing acknowledgment that change in the corporate disclosure culture is coming, whether it be from market forces or external regulation. A key question for policy is how to respond to the issue of information asymmetry. History suggests it is best to be at the forefront of such change, innovating and influencing it, not following it.

Considerations for the investment community

29. The development of a more holistic information set challenges the current business model of the analyst community (currently under legal and regulatory review in the U.S.):

- This would require analysts to formulate ‘ecologies’ of measurements into an overall picture from which to take some value judgments as to how well-managed the resources of the business are
- Given the potential change in the analysts’ business model - in particular how they are rewarded - such developments provide challenges
- If they are not to be paid for research, they will want information in a ‘ready-to-go’ format
- What is the future of such traditional professional intermediaries and their roles? Are all these forces at work going to lead to the emergence of new kinds of info-mediaries who are willing and trained to package such information together?
- And as a matter of IPR how will those info-mediaries protect and benefit in the longer term from the information packages they put together?³⁶

Considerations for providers of capital

30. In a knowledge-based economy, where business models and organizational forms are in a state of transition, providers of capital need to have access to the information which will allow them to allocate and circulate the scarce resource of financial capital. They may also need to invest in some re-skilling to be able to make good use of such information.

31. It is often assumed that providers of capital are not concerned with measuring and evaluating intangibles. The reality is that they have been doing so - albeit intuitively and subjectively - for some time; but without using the same language as intangibles, or recognizing what they are doing³⁷. For example:

- In IPO prospectuses, many professionals comment on the listing entity’s business plan and indeed sign it off. Some underwrite them with their own capital and reputations. They do this on the basis of judgments made on a number of loosely-collected reference points -

³⁵ As discussed in the WP4 paper: “XBRL as a New Language for Business and Intangibles Reporting” (Ramin), and the UCC WP9 case studies

³⁶ Data base law may assist for EU originated data based research.

³⁷ As outlined by Mørck in the WP7 paper “Intangibles and risk assessment by bankers and VCs”

financial information, track record, quality/ experience of management, dynamics of the industry and market, assessment of the risks and opportunities

- The rating agencies consider a similar set of non-financial information in delineating the different levels of default risk on the debt obligations of nations and corporations, and a variety of securities and other financial instruments. Financial information is the result of how many of these factors play out
- Venture capitalists tend to invest in a management team and its ability to extract economic value from a particular business model, or a particular market
- Bankers are also making intuitive judgments on intangible factors, particularly in their extension of credit to small and medium enterprises on the basis of budgets and forecasts. However they will likely remain more interested in present value so long as their risk/reward model stays the same. Is this a potential block on the growth of European SMEs? Is there a need for a new form of bank?

32. Some providers of capital are known to be developing their own methods:

- The California Public Employees' Retirement System (CalPERS), which provides retirement and health benefit services to more than 1.3 million members and nearly 2,500 employers, is developing a checklist of sustainable performance indicators
- The UK pension fund manager, Hermes, is developing a framework of indicators of corporate governance best practice³⁸
- Some banks are known to use scoring methodologies to take into account intangible factors
- It is not inconceivable that IC rating tools will mature as a standard to assist capital providers³⁹. IC rating tools are a response to the notion that companies want to use their own indicators. A common rating standard for intellectual capital is seen as a complement to the financial rating systems of the major rating agencies, Moody's and Standard & Poors. It is intended to 'score' companies against their idiosyncratic measures to result in a comparable standard and give more meaning to the intellectual capital indicators used today.

³⁸ A copy of the rules, known as the *Hermes principles*, has been sent to every listed company in the UK in a move that increases pressure on poorly-performing businesses

³⁹ At least two commercial IC rating products, from ING Bank (Netherlands) and IC Rating (Sweden), now exist in Europe

D. Policy Implications

33. The digitally-enabled knowledge economy poses a considerable challenge to our existing policy framework and regulatory conventions, and the implications for policy analysis span many academic disciplines and professional and regulatory interests.

34. Since the fall of 2001, the United States has witnessed market failure at its most extreme, but this cannot be dismissed merely as an American corporate governance failure. There is a deeper, longer-term and more international problem - we are running today's knowledge-based economies with tools inherited from a 19th century manufacturing era. Knowledge is now a fundamental component of our value-delivery systems, but our understanding of how to measure that knowledge and value is, at best, immature.

35. Our preliminary policy conclusions are based on the following assumptions:

(i) EU policy will continue to be built around the three main pillars of competition, trade and social policy (and reflect the changing tensions between them)

(ii) Broadly speaking there are two approaches to regulation. One is to impose standards from the outside, top-down. The other is to foster better self-regulation based on clearly articulated norms and good practice. Top-down regulation is of limited effectiveness unless it has a consensus of support among the regulated community. Also, the sheer scale of the corporate and financial governance problem in the U.S. has shown that a prescriptive rule-based approach is not necessarily the best answer for complex and dynamic markets. Self-regulation is generally more effective⁴⁰

(iii) Policy intervention may be required if one or more interest groups exhibits institutional delinquency or undue resistance to changing mindsets and practices, for example in reinforcing effective governance or adapting reporting conventions to keep pace with the changing economic landscape. How this scenario pans out will depend on the response of the market players and their regulatory institutions.

36. Set against this background our initial view is that:

(i) There is an urgent need for much more transparency in the operation of the EU's capital, product and labour markets, and the activities of their intermediaries. We need to build a level playing field on disclosure in order to rebuild market confidence. If policy intervention is required, different policy mechanisms will be needed at different levels - EU, regional, national, industry, company, etc.

(ii) Regardless of whether direct policy intervention is deemed necessary, or appropriate, a common thread is required to create and inform the linkage between these levels - in the shape of 'meso' information systems to complement the various macro and micro systems already in place. At the corporate level, we urgently need a European version of the U.S. SEC's Edgar information system. The big question is how the system should be approached politically, since the hardest part is getting agreement between countries and regulators. In addition, there are only limited calls for increased disclosure, like that of the U.S. Sarbanes-Oxley Act of 2002

⁴⁰ In this connection there is widespread fear in European business circles that government is championing more information and disclosure to identify more taxable values. This resistance needs to be taken into account in any policy response on the intangibles issue

(iii) Given the weight and influence of services across the modern economy, the EU should take steps to build a better understanding of their fragmented (and generally hidden) productive processes. This is an acute problem that requires a response from the policy and statistical communities. Given that two-thirds of Europe's GDP now comes from services, agreement on an EU-wide framework for tracing and reporting on their productivity and their different value-generating mechanisms should be afforded a top political priority

(iv) Attention is also needed to a long-overdue reform of the measurement protocols for R&D investment in services. In particular, the problem of capturing reliable R&D information for the business and financial service sectors requires priority attention at the EU level. Its resolution will be an important plank in achieving the Lisbon objectives and the drive to raise R&D investment from 1.9% to 3% by 2010

(v) In respect of a Single European Market for intangibles, renewed political pressure is needed to address the persistently high transaction costs of doing business in Europe. In particular, the costs and inconvenience of obtaining and protecting IPR across the EU, and the costs and time delays of cross-border payments (notwithstanding the introduction of the euro) warrant closer attention at the EU level

(vi) These policy reforms will impact directly on the academic syllabus, since the universities (especially the European business schools) will need to be brought centre-stage in a wide ranging interdisciplinary research programme. In addition, young people need to be exposed early to these new perspectives, with less emphasis on the old-world deterministic accounting model (with its backward-looking obsession with transaction-driven costs) in favour of a mindset geared to a much better understanding of the real value-drivers (and destroyers) in a context of active, imperfect markets that are rife with connectivity and arbitrage opportunities.

Future PRISM research programme

37. The research to date has raised a number of other policy questions relating to recognizing, measuring and reporting on the intangible economy that will be examined in more detail in the second phase, in particular:

(i) *Intangible goods:* What are the characteristics of the intangible goods sector – size, growth, dynamics & productivity models? How should the System of National Accounts be reformulated to track intangible goods? Does the EU have a competition policy?

(ii) *R&D investment:* Given the EU's strategic goal to increase R&D investment from 1.9 to 3% of GDP by 2010, what reforms to the macro (SNA) and company accounting conventions might be helpful in underpinning this?

(iii) *Investor communications:* What policy actions might be appropriate in the area of investor communications and information asymmetry? What form might a European version of the SEC's Edgar information system take, and what might its structure and content look like?

(iv) *Company reporting:* What is an appropriate role for the EU and its governmental agencies in fostering a holistic company reporting model?

38. In the second year the mainstream academic research will continue to focus on the four principal research domains:

- The emerging new theory of the firm. This is the main focus of CBS and the bulk of the case studies. The University of Ferrara is also undertaking research in this domain (Co-ordinator Jan Mouritsen)
- Measurement and reporting perspectives - Ferrara and Cass (Co-ordinator Richard Youngman)
- Implications for the main interest groups - Ferrara and CBS (Co-ordinator Patrizio Bianchi).
- Policy analysis - Ferrara with support from HMC (Co-ordinator Patrizio Bianchi).

Case co-ordination and integration with the mainstream research rests with Nigel Courtney.

39. Although not foreseen as a central feature of the research methodology, we have found that small thematic workshops under the PRISM umbrella are particularly effective in flushing out insights on market-related issues, especially where there is a high-level of engagement with Advisory Council members. Accordingly, further workshops are planned.

Conclusion

40. This report sets out the interim findings and conclusions of the PRISM research initiative, which is a pan-European dissemination programme with embedded academic and industrial research. These represent the synthesis of a programme of meetings and studies launched in October 2001, which presents new evidence on the impact of non-material, intangible factors of corporate performance and productivity in the modern economy. It also lays out some of the implications for financial markets, companies, institutions and regulators.

41. Special thanks go to Professor Leif Edvinsson of the University of Lund, Sweden for his contribution as an expert coach to the group and to the following Advisory Council members who hosted thematic workshops and conferences: Alison Thomas, Director, PricewaterhouseCoopers; Larry Cohen, Partner, McDermott, Will & Emery; and Sergio Caredda of Summit, Milan.

42. The report builds on an earlier study by a European Commission high-level expert group entitled "The Intangible Economy: Impact and Policy Issues", published in March 2000.

Clark G. Eustace, Chairman
January 2003

Appendix I: PRISM – Interim Research Papers

This table lists all research documents published under the auspices of PRISM in the first year, ended 30 September 2002. A comprehensive set of PRISM papers will be found at www.euintangibles.net. The total is 25 research papers and 9 case sets.

WP	Focus	Title of paper
1	IPR	<p>“The shifting corporate asset base”. Authors: Eustace & Youngman</p> <p>“Intellectual property - where Europe can improve”. Author: Cohen</p> <p>“On IPR policy recommendations”. Author: Cohen</p>
3	UF: Policy implications	<p>“EU policies for innovation and knowledge diffusion” (proof of concept report). Authors: Bianchi, Iorio, Labory & Malagoli</p> <p>“The geography of intangibles”. Authors: Tomasso, Paci & Schweitzer</p> <p>“Why is social capital a capital? Public goods, co-operative efforts and the accumulation of intangible assets”. Authors: Galassi & Mancinelli</p> <p>“Rationale and modalities of public intervention in research and innovation: traditional and innovative aspects in the example of space agencies”. Author: Iorio</p> <p>“Evolution, innovation and competition in networks”. Authors Cottica & Ponti.</p>
4	UF: Accounting & financial analysis	<p>“Accounting, Intangibles, and Intellectual Capital: An Overview of the Issues and Some Considerations” (proof of concept).</p> <p>“The Communication of Intangibles and Intellectual Capital: An Empirical Model of Analysis” Italian Association of Financial Analysts (AIAF) in collaboration with the University of Ferrara, <i>Official report No. 106, December 2001 - January 2002</i></p> <p>“A regulatory competition? A critical comparison of the extant guidelines and recommendations on IC statements and intangibles reports”. Author: Del Bello</p> <p>“A scoring methodology for ranking company disclosure on intangibles”. Authors: Begamini & Zambon</p> <p>“XBRL as a new language for business and intangibles reporting”. Author: Ramin</p> <p>“Intangibles and the performance measurement systems of healthcare organizations: an empirical research in Tuscany (Italy)”. Author: Donato</p> <p>“IC Statements vs. environmental and Social Reports: an Empirical Analysis of their Convergence in the Italian Context”. Authors: Zambon & Cordazzo</p>
5	Cass: Macro-economic statistics	<p>“The measurement of intangibles in macroeconomic statistics”. Authors: Hill & Youngman (proof of concept)</p> <p>“Intangibles in macroeconomic statistics” (papers: 1- 4). Authors: Hill & Youngman</p> <p>“The Measurement of Intellectual Capital Formation in the System of National Accounts”. Authors: Hill and Youngman</p>

6	CBS: Indicators for business intangibles	<p>“Networks, intellectual capital and the management of knowledge: Performing the New Economy” (proof of concept). Authors: Thrane, Mouritsen & Johansen</p> <p>“Intellectual capital and the capital market: the circulability of intellectual capital”. Author: Mouritsen</p> <p>“Alliances, joint ventures, networks: a comparison”. Authors: Kaleva, Thrane & Mouritsen</p>
7	CBS: Banking & VC metrics	<p>“Banking and Venture Capital Metrics (proof of concept). Author Morck.</p> <p>“Intangibles and risk assessment by bankers and VCs”. Authors: Morck & Vali</p>
8	HMC: Govt. sector cases	Technical output reports Nos. 1&2. Author: Truch
9.1	UCC: XML	<p>Case 9.1.1: “Measuring and managing intangibles in mobile commerce: the potential of mediation standards”. Authors: Fahy, Feller, Finnegan & Murphy</p> <p>Case 9.1.2: “News ML: Measuring and managing the value of news reporting”. Authors: Fahy, Feller, Finnegan & Murphy</p>
9.2	KTH: Tangible/ intangible dynamic	<p>Case 9.2.1: “The music industry in a digital networked world. Three firms – two who didn’t make it, one still hasn’t quite made it”. Authors: Wikstrom, Enlund & Wallis</p> <p>Case 9.2.2: “Newspapers on the web - giving it all away? The dynamics and relationships between digital and printed products at three Swedish newspaper companies”. Authors: Wesslau, Enlund & Wallis</p>
9.3	TSM: Entrepre- neurship	Case 9.3.1: “Creating and justifying intellectual capital value: Entrepreneurial networking for business development on the WAP protocol”. Authors: Groen, Wakkee & Millar
9.4	Cass: Skills & competences	<p>Case 9.4.1: “A case study on measuring skills in technological leadership: Thales Optics”. Authors: Brown & Hendry</p> <p>Case 9.4.2: Skills and organizational competencies for managing intangibles in small management consultancies. Authors: Woodward & Hendry</p>
9.5	IESE: Knowledge management	<p>Case 9.5.1: “A case study of knowledge management at Cap Gemini Ernst & Young”. Authors: Lara, Andreu & Sieber</p> <p>Case 9.5.2: “Union Fenosa Corporate University: teach and learn from experience”. Authors: Grau, Lara, Andreu & Sieber</p>

Appendix II: Consortium Members and Academic Researchers

WP1	MCL	C.G. Eustace
WP2/5	Cass Business School, London	Prof. C. W. Holtham Prof. T.P. Hill R.D. Youngman
WP3	University of Ferrara	Prof. P. Bianchi Prof. S. Schweitzer (UCLA, visiting) Dr Sandrine Labory (University of Bergamo, visiting) A. Cottica M.R. Di Tommaso F. Galassi R. Iorio N. Malagoli S. Mancinelli D. Paci G. Ponti
WP4	University of Ferrara	Prof. S. Zambon Prof. B. Lev (NYU Stern School, visiting) Prof. M. Abernethy (University of Melbourne, visiting) Prof. F. Donato Prof. G. Masino I. Begamini M. Cordazzo V. Crosara A. Del Bello S. Droghetti
WP6/7	Copenhagen Business School	Prof. J. Mouritsen F. Morck G. Kaleva M. Johansen S. Thrane
WP8	Henley Management College	Dr E. Truch
WP9.1	University College, Cork	Prof. Ciaran Murphy M. Fahy J. Feller P. Finnegan
WP9.2	KTH Stockholm	Prof. N. Enlund Prof. R. Wallis K. Wesslau O. Wikstrom
WP9.3	TSM Enschede	Prof. C. Millar Dr A. Groen I. Wakkee
WP9.4	Cass London	Prof. C.N. Hendry J. Brown Dr S. Woodward
WP9.5	IESE Barcelona	Prof. R. Andreu Prof. S. Sieber A. Grau E. Lara
WP10	IAL	T. Hoad
WP11	CCL	Dr N. Courtney

Appendix III: List of Advisory Council Members

The PRISM Advisory Council membership currently includes the following organisations. In some cases members are active participants in the research programme.

AIAF (Italian Association of Financial Analysts)	Italy
ARCS (Austrian Research Centers Seibersdorf)	Austria
Barclays plc	UK
BP plc	UK
Cap Gemini Ernst & Young	USA
Coloplast	Denmark
CONSOB	Italy
Deloitte & Touche	UK
Deutsche Telekom	Germany
Ernst & Young	Italy
GRI	Netherlands
Haberman Associates	UK
Hermes Focus Investment Management	UK
IBM EMEA	UK/ France
IMD Lausanne	Switzerland
Intellectual Capital AB	Sweden
IASB (International Accounting Standards Board)	UK
ISTAT	Italy
PricewaterhouseCoopers	UK
McDermott, Will & Emery	UK
McKinsey & Co.	UK
Nordic Industrial Fund	Norway
NYU Stern School	USA
OECD	France
SAP AG	Germany
Skandia Insurance Co.	Sweden
Summit srl	Italy
Telecom Italia	Italy
UAM (Universidad Autonoma de Madrid)	Spain
UNIC	Sweden
Union Fenosa	Spain