



**EUROPEAN COMMISSION**

**INFORMATION SOCIETY TECHNOLOGIES  
(IST) PROGRAMME**

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



**Executive Summary of the 3rd PRISM Plenary Meeting**

**Copenhagen, September 19-20, 2002**

## **Introduction**

The PRISM project group convened for the third time in Copenhagen on September 19-20, 2002, marking the end of PRISM's first year. The session was well attended by both project and Advisory Council members; the list of attendees can be found in Appendix 1.

The objective of the seminar was to achieve greater integration of the interim findings of the different research and case study teams, to fuse the collective work into some key messages and to pinpoint areas of critical concern for the remaining research time. The emphasis of the research work in the second year is to achieve closure by developing practicable recommendations in some specific areas. Some questions will inevitably remain posed but unanswered.

The seminar was organised around a series of panels. Participants were asked to make short-position statements to stimulate interactive discussions on the key findings and policy-related recommendations.

This report captures the major points of each of the seminar, summarising the status of our thinking around the four major themes which PRISM is addressing:

- 1) The first theme concerns the new and emergent theory of the firm. The PRISM group believes that management challenges and practices are changing due to the changes taking place in the context in which they operate. What is it about the "new" economy that requires the development of new tools?
- 2) The second theme leads on from the first. If there *are* indeed new management challenges and practices, then there is a consequent need for a different set of practices in accounting for, measuring and reporting such practices. Our current practices were devised when firms were clearly and vertically-defined and their resources were physical and owned. Only with new tools that reflect the new value drivers can we hope to improve the chances of effective capital allocation decisions both by management - both within firms and within government - and by the financial community.
- 3) The third theme is concerned with the perspectives of different economic actors. What do our findings mean for corporate executives? How are the banks and venture capitalists adjusting their analytical methodologies?
- 4) The fourth theme concerns the policy implications. What needs to be changed and regulated in this "new" economy? In particular, what could 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?

## **Executive Summary**

The Executive Summary has been written in four parts, representing the four major themes to our work as described in the Introduction. These "headlines" represent the beginnings of PRISM's contribution to a much larger effort being conducted by many different groups around the world to complete a jigsaw puzzle. Not any straightforward jigsaw puzzle, however, as none of us has the box (illustrating what the successfully completed puzzle would look like) nor do any of us have all the pieces.

## 1. The evolving theory of the firm and what we have learnt about the 21<sup>st</sup> century economic context in which we are operating.

- There has been a gradual shift in both the processes by which economic value is produced and the sources of competitive advantage.
  - They are no longer exclusively tied up in physical capital
  - On the contrary they are entangled within the organization and within the individual people. As the Economist put it:

*“Economies are increasingly based on knowledge...what is new is that a growing chunk of production in the modern economy is in the form of intangibles, based on the exploitation of ideas, rather than material things....”<sup>1</sup>*

- A “new-look” economy might be said to have emerged – one in which innovation, human and organizational capital are more important than ever.
  - This is evident quantitatively (albeit not systematically produced by the main sources of economic accounting):
    - OECD countries are annually investing in the acquisition of knowledge somewhere between 50-100% of the amounts they are spending on the acquisition of physical assets.
    - Knowledge workers are the fastest growing segment of the OECD’s labour force, growing at an annual average of 3%.
    - By 1998 only 15% of the S&P500’s market value was attributed to tangible assets, compared to 62% in 1982.<sup>2</sup>
    - 50-90% of the value generated by a firm is attributable to intangibles.<sup>3</sup>
  - This is also evident anecdotally:
    - PRISM’s case studies reveal the existence of intangibles across a wide range of companies and industries, small and large, old and new. For example:
      - Cass’s studies have shown the tension between the need to enable innovation and the ceding of control that that requires.
      - KTH’s cases have shown the values generated between the tangible and the intangible in the music and publishing industries – but the lack of methodologies on how to measure and capture those values.
- Knowledge has become central to the production of value.
  - Knowledge is embodied in people who effectively lease intellectual services as an input into companies’ production process.
  - Balance must be achieved by companies between strong codification strategies or loose individualism designed to permit room for creativity.
- Organizational forms are changing to cope. Networks have become more important and we are relatively inexperienced in managing and measuring networks’ performance.

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<sup>1</sup> The Economist September 23, 2000

<sup>2</sup> Daum J (2001) “Business management in the new, new economy”

<sup>3</sup> Hope and Hope (1998), “Competing in the third wave: the ten key management issues of the information age”

- Networks are required because organizational strategy needs to change faster than organizational forms possibly can and because the complexity of the projects undertaken are beyond one firm's capabilities.
- The loose ties of networks, the available resources and the dynamics of power are very different from a traditional, hierarchical industrial firm.
- The "strength" of a network is dependent in part on the degree to which the intangibles are made explicit. The higher the knowledge, the higher the common goods, as a result of which the barriers to both entry and exit will be raised.
- One real danger that exists with networks is their capacity to "over-produce" knowledge – to be over-innovative and not grounded in reality. The danger is that the network will not be able to manage the innovation and flow of knowledge and proceed to a production and execution phase. And this will ultimately cause it to fall apart.
- The economy is characterised by rapid and increasing commoditization.
  - As a result, firms are intensifying their search for sources of differentiation, comparative advantage and "monopolistic" rent.
  - This often leads them to pursue strategies of creating, maintaining or invading intangibles-based monopolies.
  - As intangibles typically have low barriers to entry, Intellectual Property Rights (IPR) become increasingly important since they offer the possibility of an exclusive window of protected rent.
- The European IPR framework requires attention in three particular ways:
  - Fragmentation and the need for the Community Patent to urgently be made a reality:
    - It is disproportionately expensive to both get protection across the EU – at least in the case of patents – and to enforce those protection rights (as one cannot sue across the Community).
    - Power politics is obstructing the development of the European economy since the expense of protecting European innovation disincentivises the rise of new entrepreneurial businesses.
  - Proportionality and the need for rebalancing:
    - The cost of patents is arguably out of proportion with the incentives and the rewards.
    - The way the current IPR regime operates clearly favours the large company over the SME. Large companies have the financial resources (and arguably the time resources) to outlast the SME in any legal battle. Accordingly, they feel they can infringe and get away with it.
    - Copyright was developed when production processes were long and crude. The tenors of protection (life plus 70 years for example) make no sense in the 21<sup>st</sup> century economy where tastes change so fast and the production and distribution processes are now both inexpensive and close to real-time.
  - Exclusion and the need for clear parameters:
    - Not everything must be allowed to be protected and monopolised. Discoveries and business processes should be kept "sacred".
    - More clarity is required here as market forces (particularly in the US) and the desire to secure monopoly rents will continue to push the boundaries.
- Value has become highly contextual and uncertain.

- UCC's study of the M-Commerce industry reveals the complexity of the problems in trying to generate value on the basis of value delivered according to context as opposed to time on a network.
  - This is an example of the apparent shift in services from selling time to selling "assets" (know-how, expertise, innovative design, etc.)
- The growing importance of context, the pace of commoditisation and the imperfections of the IPR regime all suggest that value is highly uncertain. This is particularly a problem for financial investors who often rely on "snap-shot" institutionalised views on asset values.

## **2. This "new-look" economy requires the development of new measurement tools.**

- The measurement tools required are first and foremost to assist internal management.
  - External reporting on Intellectual Capital is regarded as a secondary benefit. It would be unreasonable to expect management to report externally on what they may not feel wholly comfortable with.
  - This has been well illustrated by the 4-year experience of the Danish project into Intellectual Capital:
    - At the outset, it was considered that the point of developing companies' intellectual capital measurement was to inform outsiders, particularly investors. However, it has become apparent that a far more important and valuable aspect to the exercise has been the internal learning.
    - From the continuing dialogue between companies and researchers, and between companies and companies, management has learnt a great deal about how to manage knowledge better, how to develop their organisations and enhance their culture in line with their strategic and knowledge-based aspirations.
  - Devising alternative measurement techniques and indicators is primarily about reviewing one's own asset/resource base (through IP/Knowledge audits): it is about understanding the dynamics of one's own business, how one creates value and generates cash, what the risks are and how they might be mitigated.
- Measurement needs to re-orient around the value drivers of economic production
  - Recognition of R&D and Intellectual Capital formation as value-driving activities would be a good place to start for national accounting.
  - AIAF's work with University of Ferrara has shown that for Italian companies disclosure is weak in the areas of "Customers and Market" and "Innovation and IPR". Disclosure in the latter field has not improved at all in 5 years.
    - They have also found that disclosure was weak for younger companies listing on the Italian New Market – and these would tend to be intangibles-intensive companies.
- The idiosyncrasy of these value drivers does not lend itself to a "one size fits all" solution.
  - The array of resources at the disposal of any firm are varied and complex, and are found both within and outside the firm.
  - Different "rules" exist in as much as assets which are disentangled can be institutionalized and taken and valued out of context.
  - Those resources which are entangled within the corporation are guided by corporate norms and practices, and therefore are "resistant" to the imposition of external rules and guidelines.

- A number of guidelines for intangibles measurement do exist.
  - It is hard to argue that we need more guidelines, since each company will be different and will develop their own means of tracking performance. It may be relevant to be mindful of the current “rules vs principles” accounting debate.
  - Different means of sub-dividing the field of intangibles likewise proliferate – even within our own research group. Examples of terminologies used for sub-dividing intangibles include:
    - Disembodied/Embodied
    - Disentangled/Entangled
    - Inanimate/Animate
    - Tangible/Intangible
    - Human/Non-human
    - Produced/Non-produced
  - It is equally hard to see that we are in a position now to form standards – firstly, because we are still learning and secondly, because this is not really a “one size fits all” problem which can be solved by some form of external imposition of a standard.
    - A parallel can be drawn with the development of social and environmental reporting which began life as a discussion item in the Operating and Financing Review and has now developed into a “standard”.
    - Remember measurement of tangibles can be just as arbitrary and judgmental as that of intangibles. Experimentation is required – this is a learning process
- At the moment there are insufficient pressure points to inject real momentum into changing the face of corporate reporting.
  - There are large vested interests in place who are either resistant to change or not cognisant of why they need to change their practices or what is in it for them.
  - Things are moving – but slowly.
    - FASB was the only real “outlier” in the accounting standards world but now positive discussions are ongoing with the IASB concerning business combinations and a new standard for reporting performance.
    - Indeed, the FASB is moving forward 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."
- The measurement problems are similar at a macro level
  - The SNA is poorly aligned to measure the economic realities.
  - The scale of the problem is both significant and urgent when one considers the size of the sums involved and the enormity of the decisions which are taken on the basis of the output of national accounts.
  - 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. Such expenditures in the business sector amount to a figure approaching 3% of GDP.
  - 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.

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- This intellectual capital is owned by the household sector of the economy and is in effect then leased by companies as an input into their production.
- 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 “defined” economically active work-force by about 10%.

### **3. Issues for key interest groups : messages to the business community**

#### **3 (a). What is at stake for all of us?**

- Enhanced management and measurement techniques is about re-building trust in the functioning of the markets
- This is about enhanced productivity and profitability
- This is not about a novel management fad, but about 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.
- The issues go well beyond accounting and economics. This is ultimately about survival in the 21<sup>st</sup> 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
- This is about assisting corporate boards become more comfortable with their remits in the expectation that levels of scrutiny and accountability are on the rise by finding a compass with which to see what is really going on within one’s company.
- This is about creating a learning organization – IC measurement is a key component of a feedback loop in a learning organization. Measurement is a powerful tool in so doing.
- This is about creating an organization to be as innovative as you choose – choice between providing the space or limiting it. Measurement is a powerful tool in so doing.
- This is very 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 to develop relationships internally; now we need to develop the competences to engage with others from the outside.
- This is about the long-term, about creating new forms of governance in the younger generation.

### **3 (b). Considerations for corporate executives**

- It is noteworthy that in a survey of the members representing multi-national firms of the KM Forum, measurement issues have now risen to the top of people's agendas having languished lowdown during the height of the bull market.
- Motivations for change do exist
  - A number of motivations for corporate executives to change their management techniques and look more seriously at measuring intangibles and/or intellectual capital do exist.
    - First and foremost, measurement is about managing better – it is about improving internal processes and systems.
    - Enhanced external communication is a secondary benefit and leads naturally from the first – particularly if we believe the assertion that managers do not want to report anything they do not understand.
  - Some of the motivations for corporate executives we have identified are noted below:
    - Human Resources – a means of attracting and retaining talent
    - Knowledge Management – a means of attracting other organizations into their networks
    - IPR/Technology policy
    - Improved stakeholder communication – including investors
    - Improved corporate governance
    - Risk management
    - Growth – used by companies as means to reflect on how they might identify areas of growth
    - Employee compensation/rewards systems
  - Additionally, it might be argued that change is coming regardless, whether it be from economic and market forces or from external regulation. History suggests it is best to be at the forefront of such change, influencing it, not following it.
- Help is at hand – some knowledge points of reference do exist
  - Cases of best practices exists such as the IESE case on Union Fenosa
    - This case provides strong evidence that those organisations which 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
  - At a national level, Denmark has gained a lot of experience in its ongoing project into intellectual capital measurement in which 17 companies are involved.
  - Few will be starting right at the beginning
    - The University of Ferrara has shown there to be a great deal of overlap between environmental and social reporting and intellectual capital reporting.
  - Business Combinations will provide a learning experience for corporate executives, accountants, and investment bankers.
    - Acquisitions will be more closely scrutinised for what the goodwill paid is actually composed of
    - The exercise of trying to account for and justify a valuation by identifying those intangibles which can be disentangled should prove fertile ground for learning.

- Technology platforms such as XML and XBRL offer the prospect of permitting data to be captured more cheaply and efficiently, as well as the prospect that the data can be cut and sliced to suit the end user.

### **3 (c). Considerations for investment analysts**

- The development of a more idiosyncratic and holistic information set challenges the current business model of the analyst industry (which is under legal attack in the US anyway).
  - This would require analysts to formulate “ecologies” of these individual and idiosyncratic measurements into an overall picture from which to take some value judgements as to how well managed the resources of the business are – how the resources are produced, maintained, and exploited, for example.
  - Given the potential change in the analysts’ business model – in particular how they get rewarded - such developments provide challenges:
    - If they are not going to get paid for research, they will likely be wanting information in a “ready-to-go” format.
    - This leads to some interesting questions about 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?

### **3 (d). Considerations for providers of capital**

- In a knowledge-based economy, where business models and organizational forms are changing, providers of capital need to be provided access to the information which will allow them to allocate and circulate the scarce resource of financial capital.
  - They will also need to “re-skill” to be able to make good use of such information.
- It is too easily assumed – often by the very people themselves – that providers of capital are not concerned with measuring and evaluating intangibles.
  - The reality is that they have been doing so – however crudely and subjectively – for some time; they may simply not use the same language as intangibles or even recognise what it is they are doing. These examples illustrate the point:
    - In IPO prospectuses, many professionals write comments about the listing entity’s business plan and indeed sign it off. Some underwrite them with their own capital and reputations. They are doing so on the basis of judgements made on a number of loosely-collected reference points – 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 granting different entities’ different levels of default risk on their debt obligations. 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 intuitively making judgements on intangible factors, particularly in their extension of credit to small 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 SME’s? Is there a need for a new form of bank?

- Some providers of capital are known to be developing their own methods.
  - Calpers, for example, is developing a checklist of sustainable performance indicators.
  - Some banks are known to use scoring methodologies to take into account intangible factors.
  - Perhaps a tool such as IC Rating will emerge as a “standard” to assist capital providers.
    - IC Rating<sup>4</sup> is 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. It is an attempt to inject more meaning into the intellectual capital indicators used today.

#### **4. Implications for EU Policy**

The emergence of this “new-look” knowledge-based economy has challenged existing rules. Policy intervention is possibly required now that we have seen that the market has failed to adjust its own practices, and failed to invent new tools and instruments to cope with the changes.

The USA has witnessed market failure at its most extreme but it would be too easy to dismiss this merely as an American corporate governance failure. Underneath the headlines lies a deeper, longer-term and more international problem – we are running today’s knowledge-based economies with tools inherited from 19th century industrialism. Knowledge is the basic generator of value, but we don’t have a common understanding as to how to measure that knowledge and value.

Different policy intervention is needed at different levels – EU, regional, national, industry, company, etc. 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 which are already in place.

##### **4(a). A starting-point for policy lies in the need for more transparency in the market**

A starting-point for policy lies in the need for more transparency in the market, a level playing field on disclosure, to build trust. Then the business and academic communities might be better empowered to fix the measurement instruments through further study and experimentation.

Policy should look at these issues from the perspectives of competition, trade and social policy interests – and recognise the constant tension between them. Consider IPR’s in this regard:

- Competition – arguments for the strongest protection regimes can encourage anti-competitive behaviours (look at the price of CD’s, look at the way the music industry fought digital music distribution)
- Trade – policy is concerned with stimulating trade, but problems arise when imports come back to hurt your “protected” markets (e.g. imports of pirated CD’s, DVD’s, imports of cheaper generic drugs, etc.)

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<sup>4</sup> IC Rating is a tool developed by Intellectual Capital Sweden AB

- Social – policy must also consider the development of neighbouring countries (both eastern Europe and northern Africa) – the issue of anti-AIDS drugs is a prime example.

On a different tack, policy needs to concern itself with the promotion of policies for the development of common, public goods. In this domain we are concerned with education and innovation policies. How do you create the best environment for knowledge development? How do you facilitate individual development? How do you stimulate the rise of economically-productive networks?

In the same way that networks are increasingly important for firms, so do they need to be at the core of future EU innovation policy. Prior knowledge then on how they operate, on how they create knowledge and other forms of “capital”, and on how they are made stable is critical. This is especially so since the EC spends disproportionately more time and money in creating networks than in looking after the conditions that make them flourish.

#### **4 (b). Methods of policy and regulation**

Broadly speaking there are two ways to regulate. One is to impose standards from the outside, from top-down; this might be in the form of legislation and might typically work for disentangled resources. The other is to nurture self-regulation along the lines of norms and good practices; this might work better for entangled resources. Top-down regulation is limited in its effectiveness when there exists no common sentiment amid the regulated community. Self-regulation can be more powerful. Indeed, there is a fear in the business community that government is championing more information and disclosure to identify more taxable values. This resistance needs to be appropriately dealt with.

The cost to the market of “free-riding” is high as demonstrated by the effect on the Italian wine industry after a free rider bottled methanol and water under the label “wine”. The action of the free rider destroyed the market for all wine makers. A common sentiment emerged among the other market players to fix the problem by not only trying to produce better wine, but by labelling the wine in distinctive ways. The end result 20 years later has been a more vibrant and dynamic market than would have been the case without the common sentiment emerging.

The lesson from this story is that imposing top-down regulation, say about transparency, only works when there is a consensus in the business community about what is actually in their common interests.

#### **4 (c). Barriers to Innovation are much in evidence**

In this seminar, we have found a number of different ways in which the growth of a more entrepreneurial Europe is arguably being impeded. These are:

- The transaction costs of doing business in Europe – such as the costs of protecting and maintaining IPR across the EC
- The inefficiency in the way the IPR regime is processed – the resultant costs of money and time favour the large incumbents.
  - There is no “safe” environment, no institutions, in which the start-up can interact with the larger companies.

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- Large companies are using the system in ways for which it was not intended. They are amassing portfolios of patents, for defensive and negotiating reasons
- EC loses vast royalty revenues in the US due to the high costs and risks of litigation there.
- The inadequacy of measurement methodologies impedes the free-flow of capital – banks, for example, are poorly equipped to assist the growth of intangible-intensive businesses.
- The accounting treatment of future-looking investments such as R&D and education (including training and development in companies) arguably sets the wrong mindset as to the importance of innovation and knowledge in the economic production process

Richard Youngman  
October 2002

## **Appendix 1 – List of Participants**

### **PRISM members**

Bianchi	Patrizio	University of Ferrara
Brown	Jim	CASS Business School, City of London
Courtney	Nigel	Courtney Consulting
Donati	Fabio	University of Ferrara
Eustace	Clark	Mantos Ltd
Feller	Joseph	University College, Cork
Giganti	Mauro	Ernst & Young, Milan
Grau	America	IESE, Barcelona
Hendry	Chris	CASS Business School, City of London
Hoad	Tim	IntangAbility Ltd
Holtham	Clive	CASS Business School, City of London
Hill	Peter	CASS Business School, City of London
Lara	Emma	IESE, Barcelona
Masino	Giovanni	University of Ferrara
Millar	Carla	TSM Business School, Enschede
Morck	Frede	Copenhagen Business School
Mouritsen	Jan	Copenhagen Business School
Thrane	Sof	Copenhagen Business School
Truch	Edward	Henley Management College
Wallis	Roger	KTH, Stockholm
Woodward	Sally	CASS Business School, City of London
Youngman	Richard	Perle Consulting
Zambon	Stefano	University of Ferrara

### **Advisory Council**

Caredda	Sergio	Summit Consultancy, Milan
Cohen	Larry	McDermott, Will & Emery
De Vitis	Tomaso	CONSOB
Enqvist	Reinhold	Nordic Industrial Fund
Giganti	Mauro	Ernst & Young
Guimon	Jose	E*Know-Net Project
Haberman	Mandy	Haberman Associates
Hoffmeister	Jan	Skandia
Hofman Bang	Peder	Intellectual Capital AB
Kjolby	Birgit	Minsitry of Science, Technology and Innovation
Ramin	Kurt	IASB
Roberti	Paolo	ISTAT, Rome
Schweitzer	Stuart	UCLA
Shillingford	Joia	Freelance Journalist
Thomas	Alison	PwC
Welzl	Alexander	ARCS, Austria