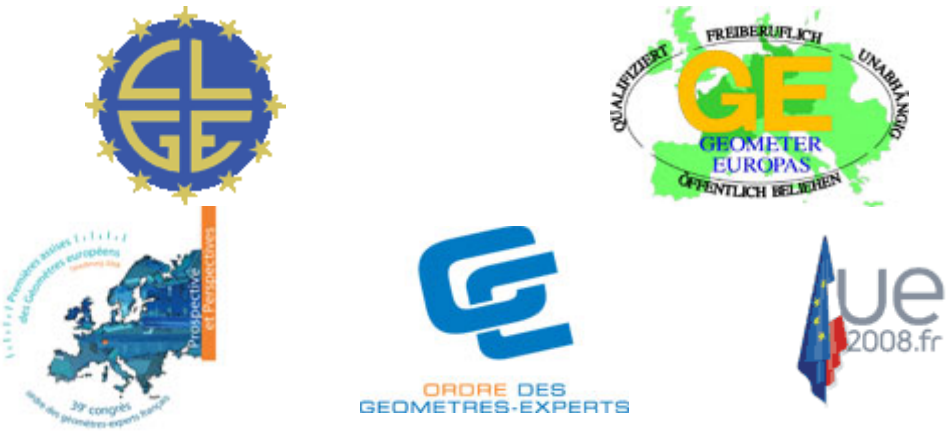

SURVEYING: A PROFESSION FACING A GLOBAL CRISIS?

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ABSTRACT

It has been clear for some time, at least in part from the evidence presented at a number of FIG events, that the surveying profession is heading for a global crisis. The profession is changing and the number of competencies in which surveyors are actively involve now numbers over 200.

Different parts of the world report a range of major problems, including low student numbers, closure of surveying courses, an aging teaching profession, inadequate job opportunities and the challenge of new technologies within both education content and delivery and, most damaging of all, non-specialist data uses. Combined with key policy drivers such as the EU Directive(s) on Professional Qualifications, InSpire, Galileo and national policy initiatives (such as the Marine Bill in the UK), the profession is presented with a historic opportunity to 'shuffle' off the chains of measurement and adapt to new markets.

Over-arching these is the lack of any clear international recognition of a 21st century definition of the profession of "surveyors" (as defined by FIG) and thus a failure to promote, at a global level, the full range of surveying skills to both our client base and to the broader public, thereby constricting both the supply of and demand for surveyors.

Our future is at stake, as the market in which surveyors operate finds itself under dynamic change. The challenge is for the profession to respond or be left behind, as others take advantage of the opportunities which we ignore.

This paper will identify and discuss some of these global issues, the presentation will highlight initiatives such as the RICS 'Adaptation' route(s) to membership, specific EU issues and challenge the

whole of CLGE to contribute to developing a range of global solutions to ensure the survival and future of our profession.

INTRODUCTION

As the surveying profession moves into the 21st Century, it does so facing a number of fundamental challenges. New technologies and new opportunities have enabled surveyors to broaden their skills and competencies, such that they may be involved in such diverse activities as estate management, digital image processing, boundary demarcation, engineering design, planning, and satellite orbit analysis. The RICS **[15]** identifies 104 competencies that can be required at various levels of its membership. Given the limited focus the RICS has on geospatial and data analysis skills and the ever emerging skills for which specific outcomes have not yet been defined, an estimate of closer to 200 competencies for surveyors would not be surprising. While such breadth could suggest that surveyors have developed into multi-talented professional people, it may also point towards a profession that has difficulty in defining exactly what constitutes its core expertise. Indeed, there is very good evidence to suggest that a professional skill seen as part of the surveying profession in one jurisdiction may be part of an entirely different profession in another jurisdiction. In addition, the profile of the profession is also aging (it appears to be struggling to replenish itself) causing questions as to where the next generation will come from. This has huge implications, both for the way the profession defines, educates and markets itself and also in terms of client perception.

Added to the above are new risks and a fundamental shift in how surveyors manage their professional activities. Threats and challenges emerge in the form of an increasingly litigious and consumer-aware society and, in particular, the information revolution which has introduced a vast array of, in some cases, previously confidential data into the public domain. A few years ago both the technology and the data required professional knowledge for its interpretation but this is now no longer considered to be the case. Professionalism has become increasingly subject to the twin challenges of deregulation and legal action. The skills of surveyors have also evolved as they have become increasingly involved in delivering a higher level of commercial advice **[15]**. All of the above leads to a number of questions being raised:

- What will constitute the core skills of professional surveyors in the medium to long term?
- What does the profession need to do in order to become better recognised and understood in the community?
- How should education develop to meet the challenges of a changing profession?
- How should the profession respond to the medium to longer term impact of globalisation on the profession?

This paper attempts to provide a broad perspective on these and other issues.

SUPPLY AND DEMAND

Surveyors are facing crucial supply and demand problems. Based upon advertisements in professional magazines and anecdotal evidence, there is now an unprecedented and unfulfilled demand for surveyors in North America, Australia, New Zealand and also in some EU countries. The suggestion in **[18]** of a limited future for long-established surveying skills within an environment of traditional professional surveying education, has not eventuated. In sub-Saharan Africa, a combination of circumstances has led to widespread closure of university departments across the region, as well as to a severe shortage of surveyors for public sector work. In the United Kingdom (UK), however, skills shortages are found in specialisms (such as hydrographic surveying) rather than across the broad spectrum of the profession whilst at the same time the profession is aging. New Zealand graduates moving to the UK for overseas work experience report high demand for surveyors with four-year surveying degrees from Australasian universities. Typically they find work in activities associated with engineering surveying, geographical information systems, or hydrographic surveying.

In the UK, not only is there recent evidence within the Land Group of the RICS of difficulties in recruiting staff, but also that there are a variety of non-RICS accredited courses producing very employable graduates **[16]**. This situation is exacerbated both by the absence of a protected market for surveying services in the UK and by the fact that the RICS does not recognise the academic qualifications gained from the majority of UK universities, thereby limiting its market for recruits. In addition, the current 'senior professional route' to RICS professional membership requires at least five years experience post MSc or ten years post BSc, hardly a palatable prospect for non-RICS land surveyors. Perhaps this is the cause of an apparently poor record of conversion rates from RICS student membership to professional membership.

In addition, both within the UK and New Zealand, there are major implications for surveying services given the lack of surveying technicians. To some extent, this paucity of skills stems both from poor government policy (resulting in the withdrawal by educational establishments from sub-degree level professional education), and from the failure of professional associations to market technical qualifications in a sufficiently attractive manner.

Associated with this demand for surveyors is the problem faced in many countries, namely, how to attract the very best students, into the surveying profession. The public perception of surveyors is varied, and the reality is that the profession has an extremely low public profile when compared to other professions. For over a decade, for example, almost every surveying degree programme in Australia has struggled to attract its full quota of students. Similarly, **[13]** suggests that attracting students is a problem in the UK. This problem of low incoming numbers is exacerbated by the relatively high average age of those in the profession – where will their replacements come from in the next decade when retirement beckons? This is a particular problem within academia, where, compared to the UK surveying profession as a whole, there is an aging profile of those in education. Indeed, a recent study has found that:

> *"nearly half of staff under the age of 45 are seriously considering a career outside higher education"* **[17]**.

It could also be argued that a "greying" faculty is itself a very visible barrier to attracting young people into University surveying education.

THE FUNDAMENTAL PROBLEM – LACK OF IDENTITY

In seeking to determine a path ahead for the surveying profession, it seems that a fundamental problem rests with a definition of what it means to be a 'surveyor'. In the global context, the skills and learning required of a surveyor vary greatly between countries. This is no better illustrated than by **[14]** who, using the 1991 FIG definition of "surveyor" **[3]**, outlined the variations of skill sets that comprise the profession of "surveying" in 16 European countries. Due to the fact that the professions have developed in isolation in different jurisdictions to reflect the needs of their respective markets, what may be considered to be the field of expertise of a surveyor in one country may be considered to be the expertise of some other professional person in another country. In the absence of an external driver to force international commonality within the profession, traditional structures are retained – structures that may no longer be appropriate for the 21st century challenges of the profession as a whole. This is not a new problem for even a decade ago **[18]** noted the struggle that the surveying profession had in finding an identity in both the developed and developing worlds. Without a clear, coherent and relevant identity, and without strong professional structures, the profession may survive, but it will struggle to thrive.

National and Regional Variations

Within regions there are clear variations in professional structures, skills, practice and expertise. In Australia, for example, the Institution of Surveyors Australia (ISA) has sought to join three other professional bodies and merge into a much broader Spatial Sciences Institute (SSI). This initiative, which has been the subject of heated and often acrimonious debate, is still not fully consummated. While the collective "fire-power" of the SSI, both in terms of membership numbers and in political influence, considerably outweighs that of the ISA alone, much of the debate in this merger has centred on loss of identity, educational standards, areas of core professional expertise, and professional entry criteria.

In the wider Australasian region surveyors are typically defined as specialists in spatial measurement and boundary demarcation. To be issued a cadastral surveyor's license or to be a "registered" surveyor, a candidate must have an appropriate four-year undergraduate degree (or equivalent) and show a defined level of knowledge, understanding and ability in spatial measurement, land law, land boundary definition, planning, and municipal engineering. In this context, land surveyors are not estate agents, they are not specialists in building construction nor are they land valuers – these are all distinctly different industry groups, typically with a sufficiently lower level of education and skills such that they would not meet the membership entry requirements of the surveying profession. However, even within Australasia, where reciprocal registration/licensing arrangements exist between all the Australian states and New Zealand, and where the cadastral systems are essentially the same, different professional flavours have emerged over the last 30 years. While all parties to the reciprocal agreement consider land law, spatial measurement and the definition of

cadastral boundaries to be the essential body of knowledge for a surveyor, surveyors in New South Wales and New Zealand tend to place added emphasis on education and training in municipal engineering. In these particular jurisdictions, the surveyor has traditionally been the designer of urban subdivisions, including all its engineering services.

By way of contrast, in the United States municipal engineering is strictly the domain of the professional engineer and certainly not that of the surveyor. There the surveyor tends to specialises in spatial measurement and land boundary definition.

In the European Union, the situation is quite different. For example, the structure of the Royal Institution of Chartered Surveyors (RICS) has a much wider range of specialisms incorporated into a United Kingdom centric model. Despite the increasingly global membership of the RICS, the idea of an antique valuer or real estate agent being a "surveyor" would be an alien concept and maybe even unethical in other parts of the world. Furthermore, the RICS specialism of "building surveying" is the sole preserve of architects within certain countries of the European Union. By the same measure, the functions undertaken by quantity surveyors (another RICS sub-speciality) are not usually functions of "surveyors" in other EU countries. While professional valuers in the UK often combine the roles of valuation advice and estate agency, this is traditionally unacceptable to professional valuers elsewhere **[6]**.

International Perception

Within the international community, there are documents that categorise the range of occupational and activity-based data often used to appoint appropriate people or organisations to undertake work. Two such documents, which show how surveyors and their professional skills are represented to the international community, are published by the United Nations - The International Standard Classification of Occupations (ISCO) and the International Standard Industrial Classification (ISIC) **[9, 10]**.

The ISCO, which was adopted in 1988 by the International Conference of Labour Statisticians as ISCO-88, provides a system for classifying and aggregating occupational information obtained by means of statistical surveys and is one of the standards of international labour statistics. Within ISCO-88, ten separate classifications for "surveyors" are listed. These do not cover the range of abilities and skills recognised by the International Federation of Surveyors (FIG). Thus, "surveyors" appear as having a fragmented and disparate range of activities with no cohesion, focus or single identity. The profession has developed significantly since these classifications were agreed upon. Unfortunately, "surveying" is not identified as a single profession, the full range of surveyors' activities are not currently described in the existing text, nor are surveyors identified as having the appropriate skills to deal with other relevant activities listed.

The ISIC is a basic tool for fostering international comparability of data and for promoting the development of sound national statistical systems. It is used in a wide range of demographic and social statistics, all of which need detailed data classified by the kind of activity involved. It is hard to identify clearly those categories in which the activities of surveyors should most appropriately appear. Since all of these "economic

activities" require the use of land and buildings, it could be argued that surveying should underpin them all. However, the classifications (e.g. manufacturing; electricity gas and water supply, public administration and defence, wholesale and retail trade, financial intermediation) do not mention the role of surveyors, with only 'agriculture, hunting and forestry', 'construction' and 'real estate, renting and business activities' providing any clear land-based linkage. Explanatory notes give more guidance as to what is and what is not included within each class. They are important, as much for the activities that are not mentioned as for those which are mentioned (as being included within the class or classified elsewhere), and it is within these explanatory notes that the activities of surveyors are best identified - both by their inclusion and their omission. This document too is somewhat dated, being produced in 1990.

It is suggested, therefore, that from an international perspective the surveying profession has a major identity crisis. While recent efforts by FIG to provide a clear coherent vision are to be applauded, these efforts have yet to filter into important international documents. Until this happens, how can the profession possibly present the globally coherent marketing message necessary not only to attract international clients but also young people into an increasingly aged and apparently fragmented profession?

Indeed, its failure to do just this, may well serve as the root cause of a number of other problems such as, poor public recognition, poor student numbers, poor understanding of the surveyor's skills and expertise and, in some cases, poor remuneration. While there may be international standards in professional practice, national professional associations, which regulate professional education and qualifications, either operate largely in isolation from one another, or only achieve a degree of co-operation at regional level.

SOCIETAL CHANGES

It is important to recognise that the traditional professional whose position in society was secured by the implicit integrity and trust which attached to that position, seems largely to have disappeared. The ready availability of information over the internet, consumer legislation, mandatory Professional Indemnity Insurance (PII) cover and an increasing litigious culture are combining to erode the traditional status of the professional **[1]**.

Professionals are emerging into facilitators who rely not only on their own knowledge base, but also expert teams around them **[12]**. Until recently, much of the surveying profession was based broadly upon high-end technology. Today, many in the profession are essentially working as part of the knowledge society, where careers are made through the provision of value added services **[11]**. The knowledge society, of which the profession is a major player, provides fundamental, well-trusted and quality controlled data sets upon which society is built. Surveyors need to recognize this shift if they are to be able to adapt and benefit accordingly.

Knowledge workers typically access their employment, specialism and social position through formal education, combining this with high manual skills. Thus, a neurosurgeon's ability relies on a combination of formal education and theoretical

knowledge and is interpreted through manual skills. Different knowledge work will require different levels and kinds of formal knowledge, the source of which is institutional learning. While the quality of teaching and learning is fundamental (and thus basic traditional schooling is important), it is opined that increasingly knowledge will be acquired later in life, through continuing education (or life long learning).

> *'Knowledge workers . . . give the emerging knowledge society its character, its leadership, its central challenges and its social profile. They may not be the ruling class of the knowledge society, but they already are its leading class. In their characteristics, their social positions, their values and their expectations, they differ fundamentally from any group in history that has ever occupied the leading, let along the dominant position."* **[2]**.

It is suggested that in the future, an 'educated person' will be someone who has not only learned how to learn, but throughout an entire lifetime will continue to learn, both in and out of formal education.

It is now common for the complexity of projects to be such that no one professional group can lay ownership to the project. Increasingly, multi-professional groupings are being created to generate holistic complete life cycles solutions, of which the surveying profession can form an integral component. If the surveying profession does not recognize this trend, and adapt accordingly, it runs the risk of becoming marginalised into providing technical services but with little high-end management oversight.

POSSIBLE SOLUTIONS

If, indeed, the surveying profession is to face these challenges in a positive manner, what solutions might exist? The following are suggested as avenues for action.

Reviewing the Definition of the word "Surveyor"

While **[3]** recognizes a wide range of skills as being within the possible competence of a 'surveyor' it would be most unusual, if not impossible, for all, or even a large number to be embodied in one individual. In the UK, there are recognized educational and qualification routes for different 'surveying' specialisms. In other countries, some of these specialisms (e.g., antiques valuation, quantity surveying, estate management) are considered to be separate professional activities with absolutely no link at all to what is otherwise recognised as the surveying profession. It can be argued that under these conditions, the resulting professional body has such complexity that it is almost impossible to come up with any single, coherent marketing message. This, in turn, must impact upon student recruitment and public perception, both of which are crucial to the profession's future. For most professions, such as doctors, dentists, engineers and, perhaps, accountants, there is a relatively clear public understanding of what these involve, although it may be necessary to establish in what area of specialism a doctor, for example, may practice. Clearly, a review is warranted.

In undertaking such a review, the question must be posed: "Is there a core set of knowledge and skills that at a global level are expected of a surveyor?" If so, then these might be identified as existing core competencies. As a starting point for discussion, a set of core knowledge and skill components might perhaps be those of the

collection and management of spatial (geographical) data, spatial measurement, land boundary demarcation, and land tenure arrangements, all embedded within a framework of clear professional ethics. Provided a succinct set of competencies can be identified, these would then become the basis upon which relevant UN documents (such as ISCO and ISIC) can be crafted. It is important to emphasise here that the intent of such an exercise would not be one of limiting or constraining the activities of the profession in its different jurisdictions, but rather to provide a measure of focus and coherency for the profession world-wide – qualities that are essential to any global marketing initiatives that might be undertaken, but would also form the basis for better articulation of professional arrangements between countries. Within individual countries, the surveyors' expertise would then be defined by these core knowledge and skill sets plus any others that might be country or region specific. The definition of such a core set of knowledge and skill sets also provides a useful response to the issue of the globalisation of goods and services.

Identifying and Learning from Past Successes and Failures

Within the FIG community, initiatives have been taken that have led to real success in gaining public recognition, in attracting students, in improving incomes, and in providing strong stable professional structures. These need to be evaluated and applied more widely. Equally, some initiatives have proven to be failures and their lessons need to be learned. The following observations can be made:

1. Changing names is not a panacea for all problems. In the early-1990s it became fashionable to change names from "surveying" to "geomatics" in an attempt to provide a more integrating title for a profession that was subject to significant technological change. It was to be a new name that reflected the breadth of subject matter encompassed in the profession, that had greater appeal than the old word "surveying" (although it is recognised within the profession as an umbrella term incorporating "land surveying") and that would attract students into a profession whose new vision had become one of producing and managing spatial data **[5]**. With the passage of time it has become clear that while a few programmes may have found benefit (possibly through their associated effort in re-inventing themselves), in many cases the anticipated gains from such a name change have not been achieved **[8]**. In recent years, at least one major university programme in Australia has dropped the name, "Geomatics", in favour of a return to "surveying and spatial sciences". Another is considering a similar move. On the other side of the world, the Department of Geomatics at the Dublin Institute of Technology has recently renamed itself the Department of Spatial Sciences. There is little indication to suggest that the use of the name "Geomatics" has done anything to solve the wider problem the profession has had in attracting new entrants.

2. Focused Marketing is Essential. Anecdotal evidence from the UK indicates that a relatively high proportion of surveying students are encouraged into the profession by personal contact with a practising surveyor who is either a member of the family or a close family friend. **[7]** opines that the primary culprit responsible for the skills crisis facing the surveying profession in Australia is the lack of public profile associated with the surveying profession. In reviewing the

success of the surveying programme at the University of Otago in attracting students, versus the difficulties experienced by the Australian universities, he concludes firstly, that it is essential to build marketing momentum, secondly, that a simple and attractive marketing message is essential (ideal inside/outside career, variety, superb career opportunities, excellent remuneration), thirdly, that it is important to use good communication tools and, finally, that target audiences must be identified and reached. With regard to this latter point, he notes that in New Zealand a surveying career typically appeals not to the highly urbanized teenager, but rather to those growing up in the smaller rural cities and rural areas. This is consistent with the indoor/outdoor marketing message promoted and also to contact with a practising surveyor at a relatively early stage in developing career choices.

3. Coordinated Marketing is Essential. Typically, in any given jurisdiction, coordinated marketing will require cooperation and input from the surveying profession, relevant educational institutions and government agencies that promote and advance careers. Professional bodies need members in order to survive, educational institutes need students and governments need an appropriately skilled workforce. All three groups thus have a vested interest in a successful marketing outcome. Nowhere is this more evident than in South Australia where the government, university, Board of Surveyors, profession and private companies have together recently employed professional marketing consultants to develop an integrated and coordinated marketing vision and strategy for the profession. While the results have yet to be fully apprehended, this visionary approach is to be applauded. In New Zealand, the very successful experience in attracting record numbers of students into a career in surveying appears to have been a function of the close coordination between the NZ Institute of Surveyors, and the educational institutions. Even here, however, considerable work has still to be done on strengthening the links to governmental agencies

4. High Levels of Remuneration are Attractive. One of the very clear benefits of the skills shortage in Australasia has been the marked increase in remuneration paid to surveyors at all levels. Average salaries paid to four-year BSurv graduates from the University of Otago increased from approximately $NZ 30,000 in 2001 to $NZ 50,000 in 2007. The national annual rate of inflation during this period was only between 2% and 3%. Over the same period of time increases of a similar (if not greater magnitude), have been seen throughout Australia where remuneration packages for new graduates of $A 60,000 are now common in the larger cities. In more remote areas, this number might double! Relativity effects have caused these salaries to flow through the profession and, despite protestations from those practitioners who complain about being unable to recover such costs, are now flowing into higher client charge-out rates. Indeed, in the New Zealand experience, those practitioners that offer a first-class professional service to their clients (as opposed to a technical service), have found the market place more than willing to pay these additional costs. Typically, the surveyors' expertise adds value to clients' project far beyond that which they have traditionally charged. High levels of remuneration are one

important factor leading towards higher levels of public recognition and in New Zealand have helped lead to higher levels of recruitment.

Refocusing Educational Programmes

The traditional tension within surveying education has been between providing a degree with a strong practical component (thus enabling a graduate to be almost immediately useful to the profession upon graduation) versus a more theoretical based approach to learning. Attempts have been made to bridge this gap by incorporating field camps and work experience requirements within degree programmes and/or by using problem base learning approaches to teaching. It is suggested that this issue is of minor importance compared to the much larger issue of educating a young person such that they have not only learnt how to learn, but also have the expectation of embarking upon a career as a lifelong learner. Furthermore, if surveyors are to lead multidisciplinary teams of professionals, they must be skilled in communication and people management. It is relevant to note that the Disciplinary Committee of the NZ Institute of Surveyors has observed over many years that poor communication between the surveyor and the client is the root issue behind most of the formal complaints lodged with it.

In looking to the future of the profession then, educational curricula must focus on four things. Firstly, the need to provide a foundation of general surveying and associated knowledge that has sufficient breadth to allow graduates to be able to read across sub-discipline areas with a reasonable measure of understanding. Specific, in-depth learning should then be built upon this foundation. Secondly, they must encourage the development of good communication skills at all levels (written, verbal and graphic). Thirdly, they must engender within graduates the expectation that part of the future professional life must include time for ongoing learning (both in a formal and an informal sense). Indeed, when graduates leave university it is essential that they do so with the expectation that this is not the end of their learning, but only a transition to a new phase. Finally, they need to convey to graduates the importance of professional structures and professional ethics. If all of the above can be achieved successfully, then the issue of being practically competent on the first day of formal employment will become of minor importance.

Requiring Ongoing Professional Development

It is self evident that change, at all levels, moves with ever quickening pace. As the half-life of knowledge and skills shortens, the professional person must be prepared to invest time and energy into his/her own professional development if they are to remain at the cutting edge of professional life. By undertaking such development on a regular basis, surveyors not only enhance their professional capabilities, but also enhance their opportunities of being very significant participants in the multi-professional groupings that generate life cycle solutions to problems. This in turn must ultimately lead to higher levels of professional, and thence public, recognition.

CONCLUSIONS

According to **[18]**,

> *". . . the surveying profession is fortunate [in] that it has a well developed sense of history, [and that] one of the important lessons that this historical perspective provides is that change in the profession is constant and inevitable."*

This being the case, change management should not be a problem. However, it is important to have a well defined sense of future direction and a clear plan as to what to change and how to manage that change. It will be important to reflect on how to market the profession to recruit future generations of surveyors and how to adapt to the evolving marketplace for surveying services, before others take over those markets.

While a unification of the profession would seem to be an overly ambitious goal, at this time, the authors advocate strongly a review of the core competencies that one might expect of a surveyor. If agreement can be reached, this would at least allow a measure of coherency in marketing our message to national and international agencies. It would also provide something of a response to the globalisation of services, by specifying a body of learning and a set of skills that could be expected of those who were participants to the agreement. Concurrently, it would be helpful to establish mechanisms to overcome the relative ignorance about the nature, structure, education and regulation which occurs in the profession in different countries. National professional associations operate largely in isolation from one another, and it is only through the global influence of an organisation such as FIG that the forum to discuss and share ideas is available to the profession. Indeed, it is only within such an organisation that any hope to achieve a co-ordinated and cohesive profession rests.

Given that professional recognition is a major issue and that improved marketing of the profession is needed, the sharing of marketing resources, or indeed the development of a new core set of resources may well prove to be crucial. This would certainly be true for educational institutions whose ability to attract quality students is essential to the long-term health and future of our professional institutions.

It is clear that professional remuneration is a function of skills and learning, the quality of professional service, the capacity to add value to clients, public perception and, in an open market economy, demand. For younger people, remuneration and life style is a very important influence on the attractiveness of a particular career option. In many countries, the existing demand for those with measurement science skills and associated skills is driving remuneration higher, thus presenting the profession with a unique opportunity to invest out of its abundance rather than out of meager returns. Now is the time to invest in ongoing education and to develop smaller, more profitable client bases. Equally, now is the time for the profession to be seen to evolve more clearly from a focus on technical tasks that are typically lower paying, to those of professional facilitating, data interpretation and advice that offer higher returns, and thereby secure its future.

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