STANDARDS – SHOULD SURVEYORS CARE?

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ABSTRACT

Historically, surveyors have been interested in completing tasks for clients, and have not been unduly concerned about standards. In recent years, however, the spread of standardisation has reached the area of operation of many surveyors. There are two possible approaches that surveyors can take to this development – to attempt to ignore it (in this direction lies the probability of marginalisation); or to embrace standards, working with the standardisation process to produce workable, timely documents which meet the needs of surveyors, their customers and the wider community. This paper provides some background on the spread of standardisation, and describes how FIG (the International Federation of Surveyors) has adopted the second approach. Initial results and continuing challenges are presented.

1 INTRODUCTION

Official standards have always been important in production operations, with many originating in military activity: the ISO 9000 series of standards on quality management is a good example of this. Many surveyors have come across ISO 9000 and other official standards. Other surveyors are very familiar with legal standards, for instance legislation on land registration and cadastral surveying. All of us are increasingly subject to *de facto* standards in all that we do – for instance Microsoft personal computer operating software.

Standards are not a fashionable subject. Standardisation is, however, something which is becoming increasingly relevant to the surveying profession and a topic which threatens to overwhelm surveyors if they do not input to the process.

This paper sets out the importance of the issue, summarises the information gathered and conclusions drawn by FIG to date, and moves on to plans for the future. In doing so, it attempts to convince professional surveyors that they *should* care about standards.

2 THE MARKET IN WHICH WE OPERATE

Before examining how standards are impacting on the life and work of surveyors, and how we can influence to best effect the process of developing and using standards, we should stand back and reflect on the world in which we live and operate. What are the main developments underway? The themes summarised below draw heavily on such an analysis completed by the author a few years ago (Greenway 1997).

- Politically, trade is becoming increasingly global. This alters dramatically the pool of work and competition with which any survey firm is faced. It also draws into sharper relief the need for level playing fields to be maintained across national

boundaries. In some parts of the world (for instance, Western Europe), such levelling is one of the most central purposes of the regional government (the European Commission). Numerous other pieces of legislation are designed to maintain fair competition within and between nations, and the last completed round of world trade talks led to the creation of the World Trade Organisation which has this task as its main focus.

- Another political theme is a transformation of public services. The public sector is now generally there to undertake activity that cannot appropriately be undertaken by the private sector. Such a shift of political emphasis leads to an increased need for fairness of competition between the private sector firms bidding for what historically had been public sector work.
- Economically, control is increasingly becoming centralised into the hands of a few mega-corporations (for instance, Microsoft, which has already been cited in this paper as an important source of *de facto* standards).
- Socially, our expectations as customers have changed radically. We all now expect a product or service which meets our requirements precisely, rather than making do with something standard. This change has been facilitated by developing technology, particularly in the computer field. We expect to specify exactly what we want – and then for it to be delivered, on time and at a fixed price. The service elements are being specified as closely as the product elements (indeed, it is very often hard to determine where one starts and the other ends).
- Perhaps the most profound changes in much of the surveying community are technological. In the 1950s, the operation of a theodolite was the work of a professional, served by several porters and bookers. Compare that with the present day, where the push of a button will provide a position accurate to millimetres, where deformation monitoring equipment will transmit results down a telephone line without the presence of an operator being required at all. Such rapid change requires manufacturers, practitioners and standards to keep up with the developments, if they are to be used to best effect for clients and the economy.
- These technological developments are also resulting in industries becoming far more intertwined than they once were – in our own field, geographic information is now simply a small part of the much wider information market. This requires language and standardisation across industries that in the past might have seen themselves as independent.

The globalising world, the rapid advance of technology, and increased customer expectations, point to the need to specify required results clearly across national boundaries. A common language of expectations is needed for this dialogue; a language which transcends national boundaries. This paper sets out how standards attempt to provide this language.

3 WHY ARE STANDARDS IMPORTANT?

This is perhaps the most fundamental question which this paper must answer. There are perhaps three ways in which to make a case that standards *are* important.

Firstly, the breadth of standardisation activities. To put some numbers on this, the International Organisation for Standardisation (ISO) has 135 national standardisation bodies as members, and 2,867 technical bodies. At the end of 1999, there were 12,524 ISO standards in print, amounting to 356,427 pages. The current standard set includes:

- ISO 2172 – Fruit juice – determination of soluble solids content – Pycnometric method
- ISO 2729 – Woodworking tools – chisels and gouges
- ISO 6806 – Rubber hoses and hose assemblies for use in oil burners – specification
- ISO 8192 – Water quality – test for inhibition of oxygen consumption by activated sludge
- ISO 11540 – Caps for writing and marking instruments intended for use by children up to 14 years of age – safety requirements
- ISO 12857 – Optics and optical instruments – geodetic instruments – field procedures for determining accuracy

Secondly, there are the benefits of standardisation. Recent research undertaken by the Technical University of Dresden and the Fraunhofer Institute for Systems and Innovations (DIN 1999) found that:

- The benefit to the German economy from standardisation amounts to more than US$ 15 billion per year;
- Standards contribute more to economic growth than patents and licences;
- Companies that participate actively in standards work have a head start on their competitors in adapting to market demands and new technologies;
- Transaction costs are lower when European and International Standards are used; and
- Research risks and development costs are reduced for companies contributing to the standardisation process.

These figures provide a very significant justification for standardisation – but point to the very real need to ensure that the process works as effectively as possible, producing workable, timely documents that ease the processes of trade and commerce, and benefit suppliers, purchasers and citizens – a small inefficiency in any stage of the processes will significantly reduce the economic and related benefits.

Thirdly, at a very practical level, the attendance of each delegate at this meeting required standardisation in very many fields: in telecommunications, to ensure that our booking forms were received correctly; in aeronautics, to ensure that safe and efficient fuel was used in the aeroplane; in IT, so that overheads could be projected successfully by speakers. Perhaps the difficulties caused by the lack of standardisation in some areas make the benefits more clear: how many times has anyone forgotten their international plug adapter and been unable to charge electronic equipment in another country? And how often have we all been frustrated (or worse) by the American insistence on using a

different standard paper size (and a different measurement system) from the rest of the world?

Turning more specifically to the field of surveying, many of the disciplines within the profession have not to date been subject to *de jure* international standards. Some standards have existed for land survey instruments (for instance ISO 12857 cited above), but these have not been widely used. In the valuation field, national standards have long existed for the process of valuing a building. For the suppliers and users of geographic information, however, 2001 will be a very important year, with the publication of about 20 standards in the series ISO 191xx currently being developed by ISO Technical Committee (TC) 211, covering a broad range of issues relating to geographic information. Further information on the work of TC211 can be found in Knoop (1998), Ostensen (1998), Slaboch (1998), Hothem et al (2001) or from the TC211 web site.

At a specific and at a generic level, therefore, standards are important to surveyors. The German research referred to above shows the potential positive power of standards. Such positive results, however, do not occur without effort by the stakeholders of the field in question. The next issue to address, therefore, is the identity of the key actors in the standardisation process.

4 WHO CREATES STANDARDS?

There are many organisations creating standards. This section provides some information on the main players.

ISO is the key player in international official standards. The International Organisation for Standardisation (ISO) is a worldwide federation of national standards bodies from 135 countries. It was established in 1947. The mission of ISO is *to promote the development of standardisation and related activities in the world with a view to facilitating the international exchange of goods and services, and to developing co-operation in the spheres of intellectual, scientific, technological and economic activity*. ISO's work results in international agreements which are published as International Standards.

The official goals of ISO are to facilitate trade, exchange and technology transfer through:

- enhanced product quality and reliability at a reasonable price;
- improved health, safety and environmental protection, and reduction of waste;
- greater compatibility and interoperability of goods and services;
- simplification for improved usability;
- reduction in the number of models, and thus reduction in costs; and
- increased distribution efficiency and ease of maintenance.

National standardisation bodies are generally government-run or supported in part, in recognition of their work in supporting free competition, trade and public order. Their key tasks are the production of national standards where this will support the national economy and/or protect citizens, and the promotion of the use of relevant international standards – with the growth of global trade, the latter role is increasingly important and

fewer national official standards are being produced. They are generally encouraged to cover part of their costs through selling materials, offering certification services, etc.

In addition to national and international standardisation bodies, there are some regional standardisation bodies such as Comité Européen de Normalisation (CEN) for Europe. Increasing globalisation is reducing the general impact of these bodies.

A number of other international standardisation bodies exist, the most relevant of which for surveyors is the International Valuation Standards Committee (IVSC). The IVSC was founded in 1981 and its membership comprises professional valuation associations from around the world, with almost 50 countries currently represented. IVSC's objectives are *'to formulate and publish, in the public interest, valuation Standards for property valuation and to promote their world-wide acceptance; to harmonise Standards among the world's States; and to identify and make disclosure of differences in statements and/or applications of Standards as they occur'*.

In July 2000, the IVSC published the International Valuations Standards 2000 (IVS 2000), the first publication under the three-year IVSC Standards Project. This project began in January 2000 and aims to have produced, by 2002, *'a set of comprehensive and robust international standards that will facilitate cross-border transactions involving property and contribute to the vitality of global markets by promoting transparency in financial reporting'*.

Moving to the field of legal standards, national governments are important sources of regulations for cadastral surveyors, in their role as protectors of the right to hold land (on which so much economic development and stability depends). As with official standardisation activities, such laws can lag significantly behind technical developments and, through setting input controls, can inhibit effective use of resources.

A whole raft of other legislation affects surveyors as business people and employers, for instance legislation on health and safety, taxation, etc. The move to globalisation has also affected legislation, with the role of the European Union being the prime example. At a global level, the OECD attempts to spread good practice around the world. In the surveying field, organisations such as EuroGeographics attempt to ensure that European National Mapping Authorities work together to best effect.

Commercial firms are becoming increasingly important in the development of *de facto* standards. Microsoft (MS) is a classic example – other software manufacturers need to ensure that their programmes interface successfully with Windows and other MS products if they are to be successful.

A number of other international bodies have an interest in standardisation activities. Of particular interest in the surveying arena are:

- The OpenGIS Consortium (OGC), a commercial body representing the manufacturers of GIS hardware and software, and the providers of geographic data. As its name suggests, the OGC is working towards the adoption of open standards, allowing the flow of data between different GI systems;
- The International Cost Engineering Council (ICEC) which created an International Standards Working Group in 2000 *'to promote and manage the development and promulgation of world-wide best practices and/or standards in cost management as*

represented by the fields [of] cost engineering, quantity surveying and project management';

- The International Hydrographic Organisation (IHO) which creates international standards covering hydrography; and
- The International Association of Geodesy (IAG) and the International Cartographic Association (ICA), which have both in recent years increased their focus on standardisation activities and adjusted their structures accordingly, and the International Society for Photogrammetry and Remote Sensing (ISPRS).

The World Trade Organisation (WTO) is a very interested party in standardisation. The WTO, based in Geneva, has more than 130 governments as members, between them accounting for over 90% of world trade. It is the only international organisation dealing with the global rules of trade between nations. Its main function is to ensure that trade flows as smoothly, predictably and freely as possible. It does this through the creation of trade agreements, which are ratified by members' parliaments. The result is assurance: consumers and producers know that they can enjoy secure supplies and greater choice of the finished products, components, raw materials and services that they use. In addition, producers and exporters know that foreign markets will remain open to them. The result is, in theory, a more prosperous, peaceful and accountable economic world. The missions of ISO and WTO point to their needing to co-operate – standards underpin free trade and they need to work together to achieve this. This is formalised in the Agreement on Technical Barriers to Trade (TBT), which sets out how international standards should be used by governments to facilitate trade.

5 THE VOICE OF THE SURVEYOR – WHY IS IT NEEDED?

The process of creating standards is a lengthy one – many of the draft ISO standards on geographic information (19101 *et seq.),* for instance, have already been under development for more than three years. This time scale has to be shortened in a world where technological developments are happening more and more frequently; standards will otherwise constrain development. The same difficulties can arise with legislation – the cadastral survey regulations of many countries prescribe methodologies which must be used, thereby often disallowing GPS methods.

The main participants in the process of developing standards are generally academics and public servants – people whose organisations can afford for them to spend time on, and travel to, the necessary meetings. In general, practitioners are present in much more limited numbers. This means that standardisation bodies will often have limited knowledge of other initiatives – they will assume a 'green field site' when in fact a good deal is already in hand. A relevant current example for surveyors is the area of Spatial Data Infrastructures (at national, regional and global levels) – these will be profoundly impacted (for good or ill) by standards and it is therefore vital that there are clear links between the various professional and standardisation activities.

These difficulties are recognised by the various standardisation bodies and solutions are allowed for in their statutes. ISO, for instance, recognises Liaison bodies. Such organisations can participate fully in the process of developing standards, with the single exception that they do not have voting rights (whereas national standardisation bodies –

the members of ISO – do have such rights). There are currently over 500 liaison bodies recognised by ISO, including Consumers International, the European Aluminium Association, the International Association of the Manufacturers of Stocks and Soups, and Visa International. In the surveying field, FIG, ICA, IAG and ISPRS are all registered as Liaison bodies and are active (to differing extents) in relevant ISO activities. Further details of the way in which ISO operates can be found in Greenway (2000) and in the draft FIG Guide on Standardisation (FIG 2001).

6 A REAL EXAMPLE

The current ISO work, within its Technical Committee (TC) 211, on the Certification and Qualification of Geomatics Personnel provides an example of how surveyors can have a voice in the development of a concept – and of the limitations on the power of that voice. The concept behind the work item is one with which it is easy to agree – that, in an increasingly international world, the mobility of qualifications and certification is important. Following the rules of ISO, the Canadian national standardisation body prepared a proposal for a new work item to cover this field, leading to an international standard in the area. This was debated within the Technical Committee meetings, supported by some countries and opposed by others. It was strongly opposed by the professional survey bodies, on the basis that official standardisation risked fossilising the process. Written submissions, however, have nowhere near the impact within ISO as being present at meetings. Many of the survey Liaison bodies were not present and their written submissions could therefore be more easily ignored.

The point at which significant change was introduced into the Canadian proposal – to develop an informative report rather than a standard – was a meeting of interested parties in Brighton, in the margins of the FIG Congress in July 1998. This meeting showed the importance of continued, personal lobbying to get points across, particularly bearing in mind that Liaison bodies do not have a vote at any stage of the standardisation process. In the ensuing postal vote, the proposal to set up such a work item was passed by 12 votes to 9 (many of the larger, active members voted against the proposal but smaller, non-active national standardisation bodies were not aware of the debate raised by the proposal and voted in favour). Once the working team was set, Liaison bodies again varied in approach. Some bodies chose to ignore the working group. FIG, however, felt that it was important to be a part of the discussions, shaping the process as much as possible whilst, in parallel, continuing its own work in the Task Force on Mutual Recognition chaired by Stig Enemark (see Enemark and Plimmer, 2000 and 2001, for more information on this Task Force).

The working group is currently drafting a report (which is due in the autumn of 2001); one of its convenors is a regular attendee at FIG meetings and is a member of the FIG Task Force on Standardisation. FIG's presence has allowed us to make our case clearly, but our influence within the working group is limited – we are one voice among many, and the final vote on accepting (or not) the report will be made by postal vote, with again organisations who have had no involvement (and very limited interest) holding key votes. The working group's progress and conclusions are summarised in Knoop (2001).

In summary, surveying Liaison bodies to ISO have had limited effect to date in influencing the process of developing material on certification and qualification of surveying personnel. Such bodies are, however, recognised by key players as providing a useful input to the process. They are also, of course, key players in encouraging the use of standards when they are finally published. The reasons for limited impact include a limited understanding of the processes of ISO and how to influence them to best effect; a fragmentation of the surveying communities voice, with limited coordination between FIG, ISPRS and the other bodies; and not using the full range of communications possible. There has, perhaps, also been a tendency to give up in the face of perceived lack of understanding of professionals' point of view by the ISO, without fully appreciating the situation as ISO (and the individuals involved) see it.

7 FIG's RESPONSE

Following representations from various internal communities as to the importance of standards for surveyors, FIG decided to establish a Task Force on Standardisation. The Task Force started work in earnest in 1998. It created a work plan which covered a wide range of activities. A key input to the work plan was a questionnaire on standards, distributed to FIG member associations and others in early 1999. Over 50 responses were received, a very heartening result. The results provided information on the priorities of FIG members. In summary, the following points are worthy of note:

- The important geographical level for standard setting was seen to be international (ISO); two regional bodies were mentioned – CEN in Europe and PASC covering Asia and Australia – but these were seen as of declining importance in surveying fields.
- The key ISO activities were seen as those in Technical Committees 59 and 172 (on survey instruments), TC211 (Geographic Information/ Geomatics), and TC204 on transport information and control systems.
- The ISO standards in greatest use amongst surveyors were the ISO 9000 series on quality management, those on modelling languages, and those defining entities such as codes, dates and time.
- The key relevant activities of national standards bodies reported in the questionnaire replies were data exchange standards, tolerances, digital maps, and GIS standards.
- In the arena of *de facto* standards, exchange formats such as DXF and RINEX were particularly mentioned.
- The focus proposed for the Task Force was to gain more influence in ISO TC211, to ensure that practitioners have more impact as standards are developed, and to make surveyors more aware of existing standards (so as to avoid duplication of effort).

The Task Force has spent much time understanding how ISO works (recognising that the scale and scope of ISO's operations dwarfs that of most other standardisation bodies). This has included active involvement in ISO TC 211, attending meetings, commenting on work in progress, and reporting on FIG activity. FIG also has a longer history of involvement with ISO TCs 59 and 172 covering the general field of survey instrumentation. Professor Jean-Marie Becker (Chair of FIG Commission 5) is actively

involved in this work, attempting to simplify the current standards and make them more relevant to practising surveyors (for more information, see Becker et al, 2000 and Zeiske, 2001).

In light of the learning to date, and recognising that FIG's funds are limited, the Task Force has created a draft FIG policy on standardisation. The key parts of that policy read as follows:

'Overall, FIG's aim in the field of standards is to assist in the process of developing workable and timely official and legal standards covering the activities of surveyors. FIG is also committed in its objectives to developing the skills of surveyors and encouraging the proper use of technology, activities which are becoming increasingly shaped by standards.

FIG will generally seek to ensure that *de facto* standards become official standards as technology matures, or at the very least that all relevant official, legal and *de facto* standards are produced in full knowledge of all other related material.

FIG sees the following roles for professionals in the standardisation process:

- Assisting in the production of workable and timely standards by proposing material which can be transformed into international standards (rather than relying on work developed by others) and by participating in the process of developing standards; and
- Disseminating information and creating explanatory material and guidance notes to ensure that all members of FIG are aware of the most recent standardisation activities, standards and regulations, and their implications for surveyors.'

During 2000 and 2001, FIG has also been working closely with IVSC, to gain a voice in the process of developing international valuation standards. IVSC is a much younger and less complex body than ISO and more rapid progress has therefore been possible, with the professional surveying community seen as providing an important input to the process and being invited to do so. This will, hopefully, lead to a formal recognition of this role for FIG within IVSC.

Working with ISO and IVSC, and within FIG, the Task Force has developed a draft Guide on Standardisation, to provide a clearer understanding of how professional bodies such as FIG can influence the development of standards. The Task Force also proposed the FIG Statement on the Cadastre (FIG 1995) to ISO for fast tracking to become an international standard. It has not been accepted for fast-tracking, on the basis that it is a field generally covered by national legislation, so the Task Force is currently considering what other FIG material might be suitable for fast-tracking, taking forward the first of the two roles set out in the Policy. One active area at the moment is on determining how the FIG Multi-Lingual Dictionary can be consolidated to best effect with ISO terminology activity in the surveying field (see Graeff, 2001).

On the educational side, the Task Force has set up an area of the FIG web site and maintains it, providing information on current standardisation activities. The number of papers about standards activities at FIG meetings is also increasing, as the topic gains profile in the surveying community. Documents such as FIG Publication No 9 on the testing of EDMs (FIG 1994) are another example of the explanatory material which FIG produces.

At this stage, it is fair to say that FIG's increased focus on standardisation has created a higher profile for FIG within this field, and for standardisation within FIG. Much greater coordination of activity, within and beyond FIG, is however needed to build the efforts to date into meaningful, concrete progress.

8 NECESSARY ACTIVITY

As described in the previous section, some solid work has been done in a number of areas since the creation of the FIG Task Force. Over the next year or so, there are a number of key tasks for the Task Force. The general areas are described in this section.

8.1 Interpreting and promoting published standards

Standardisation work items have to progress through a complex and lengthy process before they become published standards. It is unrealistic for FIG to be able to control the progress of individual standards, and FIG will have to accept that many of its proposals for changing documents will not be accepted. Similarly, standardisation bodies will not readily accept new work item proposals unless there is a proven market need for them. FIG should, however, be well aware of the needs of its 250,000 individual members and can therefore expect standardisation bodies to listen to it. To achieve the greatest degree of success, therefore, FIG needs to coordinate its efforts, and to recognise the needs of the standardisation bodies as well as those of FIG's members.

Standards tend to be fairly dry documents, with lengthy glossaries and definition sections. ISO figures give the average length of a standard as nearly 30 pages. It is unlikely that the average person in the street or even the average professional has read any standards, or is aware first hand of their requirements. Much more likely is that people encounter standards through their practical manifestations (products created to conform to particular standards).

It is important to remember that, in most circumstances, a practitioner has the choice of whether to follow a particular standard or not. In many circumstances, a standard's detailed provisions will not be appropriate. One example of this is the very complex ISO standards which exist on the calibration and testing of EDM total stations and other surveying equipment. The detailed requirements of the standards may be appropriate for industrial metrology-type applications, or for the calibration of equipment by manufacturers and national laboratories, but are almost certainly not relevant for the average land surveyor to undertake on a regular basis.

For further advice, individual practitioners will often turn to their national professional association. In turn, they will often look to international bodies to provide guidance to them, and so FIG and in particular its Commissions need to ensure that they are fully aware of key standards and are able to provide timely guidance to FIG's Member Associations on necessary activity and priorities. In this way, FIG can provide a service to its Member Associations, can avoid duplication of effort at a national level, and will be well placed to feed back suggestions for improvement to the relevant standardisation body.

Another role for national and international professional associations is the pooling of best practice, which may often be ahead of the content of standards. For instance, many professional institutions produce best practice material which can be used by all practitioners and clients as a basis for defining requirements. FIG is keen to spread knowledge of such documents, developed by individual member associations, throughout its membership.

8.2 Influencing the existing work programmes of standardisation bodies

FIG needs to coordinate the inputs it makes to the creation and development of standards by the various standardisation bodies. This is both at international level (through FIG continuing to work with ISO and IVSC) and at national level (through FIG's member associations lobbying their national standardisation bodies).

At the international level, FIG (as a Liaison body to ISO) can appoint Experts to ISO's working groups. In this way, FIG has commented on a number of the key TC211 documents and has influenced ISO's work on survey instrumentation. Funds, however, are limited, and it is vital to prioritise activity.

It takes time for individuals to understand the sometimes arcane ISO processes and language. It is also vital, if Experts are to have the greatest possible effect and influence, for them to be involved in the relevant drafting activity from the beginning. This means that FIG must maintain an up-to-date list of possible Experts, with their field of expertise. It is also important that the many FIG members who represent their national standardisation bodies in ISO activity are aware of FIG's requirements and views, as they can input views to the process without the need for FIG funding. Influence at a national level is crucial if FIG is to achieve as much as possible with its limited budget. Particular care will be needed where FIG and national needs may conflict.

8.3 Proposing new work areas for international standardisation

The work of ISO grew out of manufacturing. It is therefore of no surprise that the activities of the technical commissions of FIG are well-covered by international standards, even if these at times are out of date or don't allow for new technology. Recent work around the world on national and global spatial data infrastructures has catalysed ISO work (particularly in TC211) in this area but has left open the possibility that such infrastructures will be adversely impacted by standards.

Some of FIG's other Commissions, however, are less well covered by ISO activity and may well be working in areas where there are not international standards, and where they believe that there should be. These are therefore particular areas where FIG can consider the submission of material to ISO for fast-tracking, and the Task Force has been trying for some time to determine particular areas which might be suitable for this.

In this area in particular, but across its range of work, FIG should continue to review the needs of the market in terms of published standards before drawing up its work programmes, and continue to liaise with the Secretariats and Technical Committees of standardisation bodies over particular gaps in activity. Wherever possible, these gaps should be filled through the development of material by FIG, in close liaison with the

relevant standardisation body, so that the completed FIG work can successfully be fast-tracked to become a standard, and so that the timing of the production of FIG's deliverables fits with the needs of the standardisation body (and the market).

8.4 Coordination of activities

It is important for FIG to co-ordinate its influencing and informative efforts with other international NGOs to ensure that the combined efforts are coordinated to best effect. This can probably best be achieved through the Memoranda of Understanding (MOUs) that FIG is developing with sister NGOs, following the disbanding of the International Union on Surveying and Mapping (IUSM), and the Task Force will continue to seek to ensure that standardisation issues are covered by such MOUs.

9 CONCLUSIONS

It is the author's strong belief that standards *are* important to surveyors – the economic benefit to Germany of standardisation to the tune of $US 15 billion per year is clear evidence of the importance of standards to all businesses and professionals.

The process of creating a standard, however, is complex and time-consuming. Many professionals do not give a high priority to understanding the processes, or to getting involved. This means that the standards created can ignore work or documents which have already been produced, and can be unworkable in practice or not taken up because they are produced at the wrong time. The involvement of surveyors in the standardisation process can help to overcome these shortcomings, and therefore to produce more effective documents. ISO recognises this, and allows for the involvement of professional bodies through mechanisms such as Liaison body status, and fast-tracking of documents.

FIG has responded to this need for surveyors to become involved in standardisation processes. The Task Force which was set up to coordinate this activity has learned a good deal over the last three years and has produced various material to assist surveyors in understanding the processes. One of the results is a draft FIG Guide on Standardisation. The Task Force has also been building links with FIG's national member associations, and with other international NGOs which represent surveyors, to ensure the most effective use of limited resources in this work.

The overall conclusion is that surveyors need standards, and that standards need surveyors. The work done to date, however, is a fragile plant and one which is not naturally of interest to professional businessmen. Continuing effort will therefore be needed to convince surveyors of why they should be interested in, and get involved in, standardisation.

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