

“Geospatial Information Technolo

Geospatial Perspectives From One of Today’s Most Influe

At the end of December 2006, Prof. Dr-Ing Holger Magel will bring his tenure as the President of FIG for the past four years, to a close. Magel has played, and continues to play, a significant part in championing the role of the surveyor in today’s global geospatial community. Geoinformatics asked him his views on the future of the profession and the challenges facing FIG today.

by Frank Artés



Holger Magel: “Personally I am very happy with the progress FIG has made as an international body and as the ‘global mother of all surveyors and surveying’”.

FIG has an official presence in more than 110 countries and as such is recognized as a leading representative by many UN agencies. In this regard, what do you see as FIG’s role in the global economy?

Holger Magel (HM): The role of FIG has increased remarkably during the last four years, to the point where we are truly a global federation. This is not just the result of a membership expansion (more than 20 new member associations) but also because of the focus of our work and the actions we have taken. Today FIG is a major partner, or as it has even been expressed, a premium partner

for example with the Food and Agriculture Organization (FAO) and UN-Habitat, on all issues related to land and property. This is partly because FIG is the only truly international National Government Organization (NGO) in this field, which is composed of both academics and practitioners.

Our success is based on our own activities in promoting secure tenure, sustainability and the UN Millennium Development Goals. The role of land issues has increased dramatically now that the international community and national governments recognize the importance of tenure in solving the economic and social problems in developing countries: without

secure tenure there is no investment and no economic progress. In technical fields we work in close cooperation with other international organizations. FIG also has expertise in combining technical and GIS knowledge to management issues, which are of tremendous benefit. I am happy that FIG was in the first row when we established the Joint Board of Geospatial Information Societies (JBGIS) in Cairo, in 2005, which I am currently chairing.

What is the biggest challenge facing FIG in today’s climate of global urbanization in what is often referred to as the urban-rural divide?

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HM: Perhaps the biggest contribution that FIG has brought to this discussion is that problems in urban growth cannot be solved in the cities alone. Instead, a new kind of dialogue is needed between those actors in urban and rural areas and the concrete actions of joint development. Ongoing argument on this topic should be replaced with fruitful cooperation. Traditionally the urban and rural issues have been discussed in different fora. The truth is that the biggest problems facing humankind are in mega cities, especially in Africa and Asia, and are primarily a result of migration from rural areas. Therefore, we have to solve both the problems found in the countryside and the challenges of the urban slums. Since the Regional Conference 2003 in Morocco, FIG has started to focus on the topic of rural-urban-interrelationship and has published the important Marrakech Declaration. The other factor that needs much more attention is how we can solve the challenges in coastal zones. Most of the world's population lives in cities and a large part will be living in coastal areas that are expected to face a big threat from global climate change.

You recently attended the Geoinformatics 2006 conference in Wuhan, China. As a country much in the public eye with a thriving economic engine and tremendous growth potential, what is the current status of China's geospatial industry?

HM: I was impressed by the high standard of the Chinese GIS and ICT community, which was demonstrated at this, now very international, conference. The best proof of growing Chinese expertise and its worldwide appreciation are experts like Vincent Tao, who has studied in Wuhan and who is now working with Microsoft in Seattle, and responsible for Virtual Earth. I could mention some other Chinese colleagues who are working in the States or elsewhere thus demonstrating the changed status of China. Let me cite a European scientist with worldwide reputation, who said to me on the occasion of the impressive Geoinformatics conference 2006: "If you want to see the future of and the driving forces in Geoinformation you have to go to Asia, especially to China."

In recent years there has been a decline in the enrollment of students entering the Geomatics field. Can you attribute a reason for this?

HM: One of the main concerns in FIG is how to attract more students and young people to the profession. This was why I visited the International Geodetic Students Meeting (IGSM) in Cracow, Poland, this year encouraging the students to join FIG events much more. It was really great that we had many more students at FIG 2006 in Munich than ever before. Our problem is that we have had too few students for many years – at least in developed countries. The basic problem is that we have to compete with other professions that sometimes are, or at least look, more fashionable. And the basic public infrastructures and private houses, which have to be measured, are already built. Students are very well aware of the employment market and trends in the job market, and of the attractiveness of a job. Surveyors have not been successful in marketing their profession. There is even an unclear profile or wrong image of a merely cadastre surveyor and the image of a job with less influence. Too few students know that there are many attractive fields in the surveying branch such as in real estate management and GIS/GIM or outer space activities. Traditional surveying has not been that attractive. To me the question is not that much about definitions: surveying is still a good term and after the first boom of launching 'geomatics' it has not really changed the interest in the market. That has also happened in Germany. We should indicate much more clearly that there is also a big demand for surveyors in mature markets because so many surveyors will be retiring in Europe during the next 5-10 years. The profession has to be promoted as being more attractive and rewarding as a profession of 'well-grounded specialized generalists'. More than ever we publicly should demonstrate our large range of responsibilities, activities and related education according to my favourite metaphor: from the single parcel to the planet Mars. There are chances for everybody. When discussing the Western European and US situation where we have had too few students for many years we often forget that the profession is very attractive in most developing economies. But even there the profes-

sion also has to broaden its range of activities and education. That was my message at the 50th Anniversary celebration of the (former) Wuhan Technical University for Surveying and Mapping in October 2006.

From an educational standpoint, how do you see the future of surveying, particularly with the rapid technological advances being made in measurement, positioning and imaging systems?

HM: During my terms as FIG Vice- and as President I have often spoken about the broad basis in the surveying education and profession. Academics in this profession should have a broad education and at the same time go into details in certain field of expertise. It is true that the demand for traditional field surveyors will go down (due to 'black boxes') and that this work will mostly be done by craftsmen with lower education. We need however to remember that there will always be a need for engineering surveyors, geodesists, GIS, land management and other experts in a lot of state, private, business and even societal sectors. Our strength in the future will be in combining technical skills and social and managerial skills. The need for improved management skills is number one in merging markets, and to get a better public and social reputation surveyors need more awareness and openness to politics and society. They have to better understand the world.

Various geospatial disciplines, such as surveying, photogrammetry, GIS, and geodesy, are merging under the Geomatics umbrella. Do you see individual identities and industry expertise being lost as a result, particularly with today's emphasis on automation across the industry?

HM: As mentioned I am not sure whether the trend to describe the whole profession as 'geomatics' is completely correct (for Germany for example I would deny this completely) and that this will be the real trend also in the future. Most of the disciplines involved in 'geomatics' are per se multidisciplinary. Of course, as automation moves on, all disciplines involved in 'geomatics' are refocusing their fields of work but I don't see any individual

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industry expertise lost at all. Even with rapid technological changes in individual professions they still have their own characters. Cooperation of professions is an ongoing trend. A solid education including IT and mathematics are the common ground for all these professions. The cooperation among geospatial sciences, as I have mentioned earlier, is well established on an international level (JBGIS is an impressive example). Geoinformation is something that will be needed in almost all professions and it will not be an umbrella only for traditional land-related professions. Geoinformation is a tool which is used more and more by everybody and not just seen as the identity of one particular profession. There must be more: such as the identity of a land manager who uses GIS or the identity of a valuer who also uses GIS etc.

Why do you think it has taken so long for business and government to recognize GIS technology as a mainstream information tool?

HM: GIS technology has been well recognized for at least 10 years but most of the efforts and investments have addressed only the level of single departments or single institutions. In recently overcoming the 'silo' mentality there is now added value in institutional cooperation on different administrative levels on different scales. Let me demonstrate a popular example: IMAGI in Germany is aiming at Spatial Information infrastructure on a national level similar to the activities on European level (INSPIRE-initiative) and on a global level (Global Monitoring for Environment and Security, GMES). All that requires a cooperation of institutions across professional boundaries.

On the other hand GIS has always been very demanding as far as hardware resources, the (financial) effort for collecting (purchasing) geospatial data, and personnel training are concerned. Therefore GIS has for a long time been a tool for specialists. Web technology and free access to spatial data help leverage GIS technology. GIS is now an accepted technology and is on its way to becoming a mass media. We can also blame ourselves as we have been speaking 'technology' instead of 'politics' or the language of decision-makers

and media. That should be a serious warning for our profession. The topic of Land Information Systems (LIS) had already been discussed in 1978 at a FIG seminar of commission 3 in Darmstadt, Germany. But it was all too introverted. Nobody realized that surveyors belonged to the pioneers of LIS and GIS.

Geospatial Information for Sustainable Development was a key focus in your address at Map Asia, 2006. Was it aimed primarily at developing economies or do you think it also has relevance globally?

HM: My address at Map Asia was not only aimed at developing economies. In any country a high percentage of political decisions has a spatial component and impacts the environment. Making good decisions requires access to high quality geospatial information. Today, more and more spatial information and related technologies are available to all citizens (GIS-non-experts). Access to geospatial information means empowering citizens because they are better informed about their environment, can better assess the effects of political decisions and have therefore a better background for political participation – a key prerequisite for sustainable development. My message for the developing countries is that spatial information is a key infrastructure similar to road networks 100 years ago. Countries with lower GDP are more often wasting their resources by not tuning investments in spatial information. The issue that I also want to raise when discussing developing countries is the role of good governance in relation to GIS and promoting sustainable development. Geospatial Information Technology is even a means to more democracy.

What do you see as the major trends developing within today's geospatial community - where is the industry headed in the next 10 years?

HM: Geospatial information is on the way to breaking out of the innovation centres managed by technicians and will be of common use. In 10 years from now the mainstream will be to use spatial information for decision-making, similar to the trend 10 years ago when everybody got a mobile phone. These tools for



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decision-making do not only apply to data (like Google Earth), but also to tools for moving in space (navigation) and managing time in space (observing and forecasting trends). In 10 years from now nobody will have the excuse of not knowing local and global trends in our environment - similar to the major improvements in weather forecasting of today. Technical trends include web GIS (including Earth Viewers such as Google Earth) and GNSS and (airborne) laser scanning as effective data acquisition techniques. I think that we could even become better prepared for disaster and risk management.

On other issues the level of professional education will increase, moving from educating surveyors to educating surveyors and managers. The role of land administration, including new tools for tenure in developing countries and of comprehensive and actively shaping land management, will be the focus. We will also see an increase in so-called low cost technologies.

Our societies need more participatory planning, more options, more transparency and thus better decision-making, in order to become sustainable. Seeing a trend in time is the precondition for measures on preparedness. The industry is ahead because it earlier and better knows the challenges and needs of politics, societies and markets. The professions must waste no time in preparing methods for proper tuning of tools with data and how to incorporate these into planning and decision-making on a political level.

'Shaping the Change' has been the motto of your FIG presidency. In the last four years has there been any one solution or particular development that best exemplifies that phrase?

HM: In today's complex world there are no unique solutions or receipts. What we have been doing is to get surveyors to be better prepared to face global changes like globalization, environmental changes, increasing civil

society, a need for better education and life-long learning (Continuous Professional Development), the free movement of labour and the need for standards of qualification. From the achievements of the FIG Council during the past four years I would like to pick the improved cooperation with sister organizations such as the International Association of Geodesy (IAG), International Society for Photogrammetry and Remote Sensing (ISPRS), International Cartographic Association (ICA), and the United Nations (UN), together with some new projects such as those related to disaster risk management and land tenure pro poor. Furthermore the growing awareness within our membership of the need for broadening surveyors activities and education. According to the changed challenges to our profession, we have amended our FIG definition of a surveyor. Personally I am very happy with the progress FIG has made as an international body and as the 'global mother of all surveyors and surveying'. This progress has been well received by academicians and practitioners. We have achieved a high standard and professionalism for our events and work, and have restructured our internal organisation with a highly efficient working FIG Director, and a separate office responsible for administration. As mentioned we have a lot of new members and much bigger attendance to our meetings. The Munich FIG with INTERGEO Congress 2006 has marked new records. This increases the status of FIG in speaking to world leaders and provides a good basis for the next FIG President and Council.

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