GIM INTERNATIONAL INTERVIEWS CHUKWODOZIE EZIGBALIKE

Spatial Data for Africa

A love of mathematics set one of Africa's foremost geo-information specialists on a mission to drive the development of spatial-data infrastructure across the continent Partnership and communication lie at the heart of spatial-data infrastructure advancements. As civil servants, local communities, universities, NGOs and companies on the African continent adopt geographic information systems as a tool, they are increasingly able to exert pressure on governments for improved functionality, products, and services - all of which are essential for driving development and progress. Dr Chukwudozie (Dozie) Ezigbalike, head of the Geo-information Systems Section (GiSS) in the ICT Science and Technology Division (ISTD) of the UN Economic Commission for Africa is a key player, working to raise awareness about the benefits of geospatial data and the activities and opportunities it enables.

How did you get to where you are today?

I started out as a land surveyor, with a Bachelor's degree from the University of Nigeria, Enugu Campus. My Master's degree, from Ahmadu Bello University in Zaria, Nigeria, was also in land surveying. There, my thesis project was to develop a prototype for a geodetic records management system, in the programming language Fortran. I then completed my PhD at the University of New Brunswick in Canada, where I looked at the software and management considerations involved in developing multi-user land-information systems. Bear in mind that these were pre-spatial data infrastructure (SDI) days: you had many government departments sharing and exchanging information.

Career-wise, I worked on highway and other civil engineering construction projects after completing my BSc. When I finished my PhD, the natural place to seek employment was then in academia, so I ended up at the University of Zimbabwe, where I spent two years before moving to the University of Melbourne for eight years, followed by a two-year stint at the University of Botswana. After that I spent six months as a research fellow with the Sasol Centre for Innovative Environmental Management (SCIEM) at the University of the Witwatersrand in Johannesburg; there I provided support for the data centre of the SAFARI 2000 project. Finally, in 2001 I joined the United Nations Economic Commission for Africa (UN ECA), where I now head the Geo-information Systems Section (GiSS) in the ICT Science and Technology Division (ISTD).

Why did you choose to study land surveying?

In high school I was good at mathematics and I wanted to continue studying that. However, a relative who was a university professor advised me that it would be better to take a professional course involving maths, rather than do the subject in isolation. A classmate whose father worked in the construction industry told us about quantity surveying (QS). So when I enrolled in Enugu Campus, I actually thought I was going to study QS. But the University of Nigeria only offered land surveying, so I settled for that and later discovered that it actually required a greater knowledge of mathematics than QS!

What have been the highlights of your career thus far?

There have been a few. As a young graduate I made the case for, established and headed a surveying section in the then new Kano State Ministry of Rural and Community Development in Nigeria. Next I worked as a field surveyor on highways and civil-engineering projects. I also had the opportunity to lecture at several universities, during which time I championed the case for 'non-cadastral' alternatives to land-information management in rural Africa.

In 1995/96, as a visiting scholar to the UN's Food and Agriculture Organisation (FAO), I participated in the team that advised the government of Eritrea on implementation of their land proclamation.

I also took part in the joint UN-FIG workshop that produced the Bathurst Declaration on Land Administration for Sustainable Development in 1999.

During my brief stint at Wits University's SCIEM, where I worked on the SAFARI 2000 project data centre, I developed the stand-alone 'ME Lite' application to enable offline editing of scientific metadata.

Today, as head of the Geo-information Systems Section at ECA, I am leading this organisation's efforts to move African geo-information activities towards spatially-enabled government services.

What are you most proud of having achieved?

I am most proud of my role in setting the geo-information agenda in general, and SDI activities in particular, in Africa. The SDI adoption process was catalysed by ECA's position paper on Future Orientation of Geo-information in Africa, the result of an ad hoc experts' group meeting in 2000. I was the person who drafted the background paper for that meeting, and collected and edited contributions to the final document that set the tone for continuing discourse.

What is your impression of SDI achievements in Africa?

Slow but sustained progress is being made. About the time that ECA released the just mentioned position paper recommending SDI, there was lack of support on the part of representatives of some member states, who preferred the 'mapping' that they understood.

Now every delegate to the Committee on Development Information, Science and Technology (CODIST-Geo), a body which reviews challenges and issues pertaining to ICT, geo-information, science and technology to help address Africa's development challenges, is in agreement that the way forward in providing geo-information services to their constituents is through the SDI framework. However, this awareness still mostly holds among members of core geo-information industries, and has not permeated allied disciplines.

Please describe any differences in SDI adoption across the African continent.

The UN recognises five sub-regions for Africa: East, West, North, South and Central. There are no notable regional trends. The differences are highlighted at national level, with each sub-region boasting at least one 'shining star' in terms of progress. These are South Africa for the South, Nigeria for the West and Kenya for the East. Progress in Central Africa has been slow, and in North Africa geo-information is closely linked to security and therefore not much is publicised.

Language is also a factor. The Anglophone countries tend to be more receptive to the concept, while the Francophone countries argue, and rightly so, that the term 'Spatial Data Infrastructure' does not really translate into a sellable concept in French. Also, French-speaking countries tend to take their developmental cues from France, which has not really been supporting activities in the SDI field; as a result, they have been left behind.

Why is SDI important to Africa; what benefits does it hold for the continent?

SDI is of great value to Africa, firstly because geo-information is fundamental. Whichever way you look at it, it is almost a prerequisite for development of the continent. In addition, scarcity of resources means we have to adopt approaches that will maximise the little investment that is being made. Geospatial data should be collected once and used in as many applications as possible, hence the need for SDI.

What are the roles of the RCMRD and RECTAS in SDI implementation in East and West Africa?

The Regional Centre for Mapping of Resources for Development (RCMRD) is an inter-governmental organisation which promotes the development and use of geo-information and IT in the sustainable development of Africa. The Regional Centre for Training in Aerospace Surveys (RECTAS) is a joint project between several countries that provides training, research, consultancy and advisory services in geo-informatics. The major role of both organisations is in building capacity and raising awareness. Both centres disseminate SDI concepts and related knowledge through their governance structures, mainly meetings of their governing councils and administrative committees. They also organise specific courses for practitioners drawn from their member states and beyond. They undertake projects in and on behalf of their member states and agencies, and ensure that geo-information activities adopt the SDI approach.

Are there similar centres for North and Southern Africa?

RCMRD members include Eastern and Southern African countries, and one from North Africa; and RECTAS includes one from Central Africa. But in their activities they are not strictly limited to the sub-regions where they are based. There are similar centres in other sub-regions, but their mandates and scope differ slightly from those of the RCMRD and RECTAS.

The Centre Regional de Télédétection des États d'Afrique du Nord (CRTEAN) in Tunis is a structure for the co-ordination and exchange of know-how, and for validation of existing capabilities in the sub-region within the fields of remote sensing, GIS, mapping and applied activities.

The Southern African Development Community (SADC) Regional Remote Sensing Unit (RRSU) in Gaborone is a centre of technical expertise which facilitates training programmes and technical support in remote sensing, agro-meteorology and GIS, in support of early warning for food security, natural-resources management and disaster management.

What has helped to move SDI adoption forward in Africa?

SDI adoption has been advanced by the concerted (and sometimes individual) efforts of several partners, notably ECA through CODI (now CODIST), the UN Environment Programme through the SDI-East Africa initiatives, the Global Spatial Data Infrastructure (GSDI) Association, US Geological Survey, EIS-Africa, the African Association of Remote Sensing of the Environment (AARSE), ITC and, of course, the regional centres. Then there are events such as AfricaGIS, AARSE and MapAfrica Conferences that feature SDI.

What has been the biggest obstacle to SDI adoption?

Lack of financial resources needed to support development and implementation of medium- to long-term aspects of SDI.

What would you wish for in order to accelerate SDI adoption on the continent?

I wish that the general public could be more aware of the link between availability of geospatial data and the everyday activities that depend on it. The problem of lack of awareness and non-allocation of funding for SDI activities is due mainly due to the fact that people do not readily appreciate the role of geo-information in activities such as healthcare delivery and management, basic education planning, water and sanitation, none of which can be effectively and efficiently carried out without adequate geo-information. Of course, that puts much of the responsibility on the geo-information practitioners themselves; they need to use appropriate language that people can understand if they want to get the message out there.

Our previous interviewee, GSDI president Bas Kok, took the opportunity to ask Ezigbalike an important question. The GSDI 11 World Conference was held in Rotterdam in June, with the theme 'Spatial Data Infrastructure Convergence'. What will be the opportunities and challenges for the African region in this convergence process over coming years?

The main opportunity for the African region in convergence is the possibility to benefit from the resulting global services. Take climate change, for example. The information services needed to tackle this collective challenge to the human race must be provided as a collective resource, thereby benefiting smaller countries that may not be able to implement such services on their own.

Another example of SDI convergence is the UNSDI. Its main objective is to provide geospatial data and services to the UN community to make evidence-based informed decisions. First, the countries in the region will benefit from improved data support for decisions that affect them. Then they will further benefit by having access to the data that may be useful for them to make their own decisions.

The challenges remain the fact that some countries may not have the supplemental resources (human, data, technology, institutions) to actually make the best of the opportunities. The datasets that are becoming available are mainly at a scale that would support global and regional decisions. There is need for additional data, both in terms of scale and themes, to fully exploit the available ones for local day-to-day services. And they would need adequate technological and human resources to make use of them.