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ALUMNI MAGAZINE
FACULTY OF GEO-INFORMATION SCIENCE AND EARTH OBSERVATION
UNIVERSITY OF TWENTE

ITC NEWS

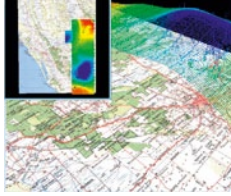
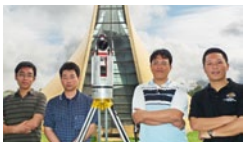
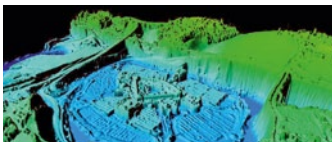
REFRESHER COURSE IN UGANDA

ASSESSMENT AND PLANNING OF HIGHWAYS

BIOFUELS IN ZAMBIA

DIRECTORATE IN INDONESIA

GIM INTERNATIONAL

FACTSHEET

GIM International started out as a print magazine in 1986 and soon developed into the multimedia platform it is today, featuring a successful website and respected weekly e-newsletter. In 2012, *GIM International* is celebrating its 25th anniversary.

GIM International magazine is published twelve times a year, plus a yearly Buyers Guide. The magazine has a worldwide scope and focuses on reporting the latest news and communicating new developments and applications in geomatics. Its main aim is to provide its readership with overarching insight into state-of-the-art developments in geomatics. Its readers are involved in land surveying, GIS, photogrammetry, remote sensing, LBS, Lidar, cartography, GPS/GNSS, cadastres, 3D city modelling and geo-databases.

Magazine Circulation

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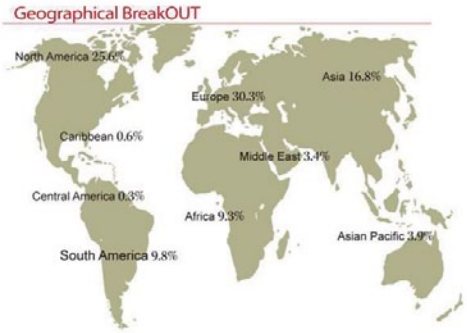
GIM International is published monthly and has a truly worldwide circulation, since 1998 audited by BPA Worldwide. Founded in 1931, BPA Worldwide is an independent, not-for-profit, self-regulating organisation; its media audits provide assurance and insight for media buyers. Our data was subject to audit in June 2011, as it is every six months.

Circulation Analysis	
Average Total Circulation	10,541
Average Total Qualified Circulation	9,603
Average Total Non-qualified Circulation	938
Number of Countries	158



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We are always looking for interesting press releases. Contributions and any further queries may be directed to Joost Boers, news editor: pressreleases@geomares.nl

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Fieldwork conducted during the Nuffic refresher course *Application of Synthetic Aperture Radar and Interferometric SAR in Geo-environmental Mapping and Modelling* in the surrounding of Jinja and the source of White Nile (Uganda)

INTRODUCTION

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Managing Editor
Janneke Kalf

Editor
Jorien Terlouw

Editing
Janice Collins

Design&PrePress
Composer DTPservice
Henk Scharrenborg

Printing
Zalsman Zwolle B.V.

Correspondence to
Managing Editor
ITC News
PO Box 217
7500 AE Enschede
The Netherlands
Phone +31 (0)53 487 44 11
Fax +31 (0)53 487 45 54
E-mail itcnews@itc.nl

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Just what does the year 2012 hold in store for us? Despite major advances in early warning systems, life still manages to surprise us – pleasantly, we hope, in the year ahead. But in a time of continuous change, it's good to know there are some things you can rely on: for example, regular copies of *ITC News* in your post box.

As always, you'll find some challenging information on a variety of topics between its pages. Maybe a link between Dresden, South Durban and Sub-Saharan Africa doesn't readily spring to mind but all will be revealed if you turn to page 7. EO2HEAVEN is a research project that is exploring the complex relationships between environmental changes and their impact on human health – a subject currently dear to our hearts in the Netherlands during this season of coughs and sneezes that spread diseases.

In the last quarter of 2011, ITC staff and partners were very active in Africa, conducting refresher courses on erosion studies, biodiversity, synthetic aperture radar and biofuels in Kenya (page 11), Namibia (page 14), Uganda (page 12) and Zambia (page 9), respectively. Participants were highly enthusiastic about their experiences, and indeed so dedicated to the pursuit of science were those in Kenya that even on their final evening they found a novel way testing the theory on water balance modelling.

A basic requirement in the transfer of knowledge is printed literature, and here the ITC Faculty Library has taken a practical step towards boosting the library collections of our partners. To date 39 users are registered for this donation programme and, if this recycling scheme appeals to you, you'll find the necessary guidance on page 18 to lay claim to the 40th position. Another resource of growing importance in today's education, and one of particular benefit when finances are limited, is free and open source software. The advantages and potential of this software are featured on page 15, along with some useful links to encourage further investigation.

It's quite common for *ITC News* to report on a "first", and this issue is no exception. The three-day workshop on base registers organized by the UNU School for Land Administration Studies and the Polytechnic of Namibia was the first of its kind. But from the account on page 23, it seems likely that we'll be hearing a lot more on this subject in the future.

So we trust you will find plenty of interest in this newsletter, and also hope that, as the events of 2012 unfold, some readers may be spurred on to become some of our writers too. A New Year's resolution perhaps?

Virtually yours, Janneke Kalf *Managing Editor* Jorien Terlouw *Editor*

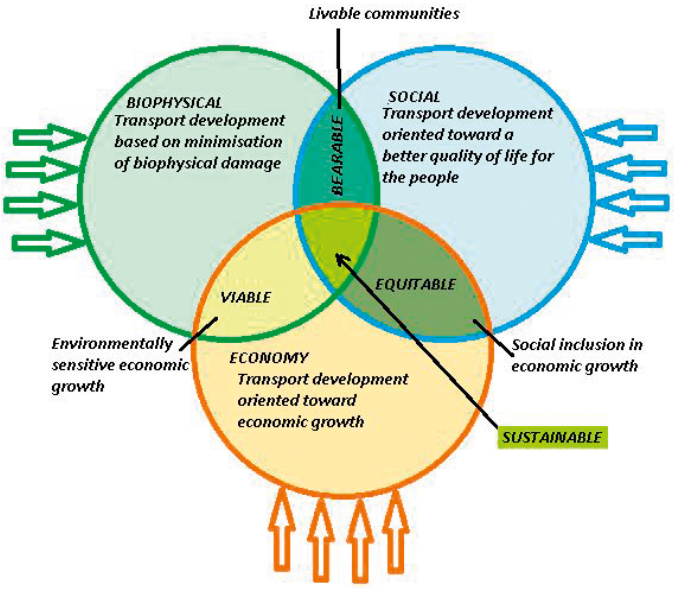
MAIN FEATURES

Scale in the Assessment and Planning of Highways

Sukhad Subodh Keshkamat kesh14740@alumni.itc.nl

On 13 December 2011, ITC PhD student Sukhad Keshkamat successfully defended his PhD thesis on highway planning and impact assessment and how to bring about greater coordination of the two. Using a combination of several remote sensing and GIS techniques brought to the field of impact assessment, he showed how multi-tiered impact assessment is connected with multi-tiered planning and can bring about more sustainable highways.

It is worth mentioning that the very first PhD thesis at ITC, by Professor Akinyede from Nigeria in 1990, was about highway route selection using GIS. Although much progress has been achieved since then in GIS as well as in the detailed engineering design of pavements and geometrics, the planning of the route, or route alignment, has consistently remained a grey area in highway planning. Current techniques of highway route planning suffer from some shortcomings. Most alignment processes are not spatial by nature, and so fail to address the issue of scale in planning. They also lack the use of impacts in the planning process.



Sustainable development, showing the principles behind this research

The impact assessment of highways usually occurs too late in the highway development process and can therefore only mitigate, not avoid, serious negative impacts. Impact assessment is focused on negative impacts only, and is thus unbalanced. At the same time, cost-benefit analysis, although it produces credible and salient information early in the process, is increasingly being perceived as a black box without legitimacy, and its moral relevance is being questioned. Besides this, it aggregates information into a few monetary indicators and therefore cannot address issues such as highway planning, where indicators, relationships and effects are essentially spatial by nature. If assessment processes are pulled upstream in the planning process, geospatial techniques (such as GIS) and geospatial technologies (such as remote sensing) can improve the process of highway alignment by furnishing decision makers with rational and scientifically derived alternatives as information.

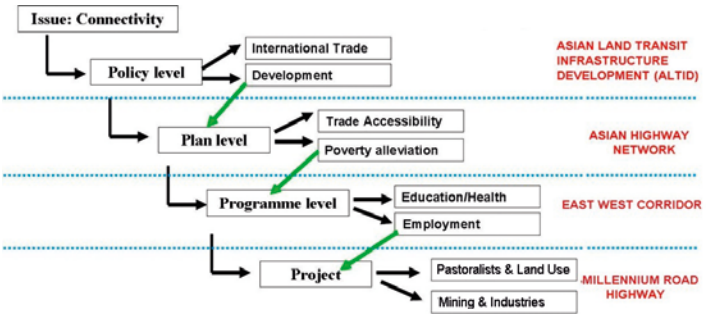
Proponents in highway development projects are usually national, provincial or local governments. Therefore with a view to transparency, equitable implementation and robust public participation in the planning and implementation processes, the requirements

for environmental sustainability, salience, credibility and legitimacy also need to be considered intrinsically and holistically in the planning processes. However, these requirements are highly scale-dependent characteristics, which force upon us the need for a deeper and better understanding of scale and its effects on processes and their outcomes. The need for transparency also creates and highlights the need to explain and be able to negotiate the use of scales in planning.

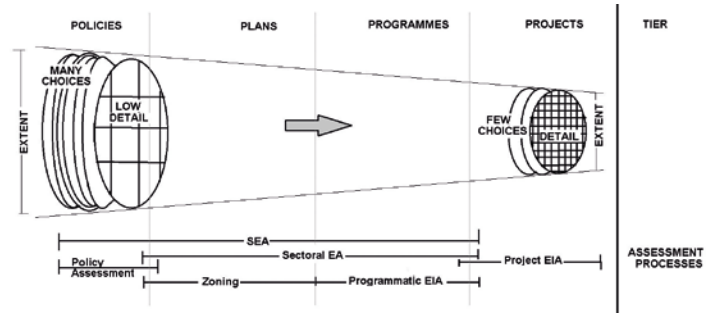
However, despite copious amounts of research on scale, to a large extent it still remains poorly understood and usually understated in the planning and assessment processes. In research practice too, it has remained steeped in individual disciplines. A transdisciplinary perspective and understanding of scale is needed. Boundary objects – frameworks that are flexible enough to apply to across different disciplines, yet robust enough to maintain the core ideas – offer a means of understanding, explaining, negotiating and choosing appropriate scales across disciplinary boundaries.
A boundary object in which the choice of scale is represented as a three-dimensional framework whose dimensions consist of reality, model and data scales is proposed in this thesis. This boundary object can be used where scale choices are made within the context of space, time, and analytical, administrative or planning hierarchies in which space-time plays a role.

The outcomes of this planning process would first be networks: links and nodes that are aligned with broad policy goals. In the tier below, links are formed into corridors of specific widths. These corridors will be used to limit and identify route alternatives in the tier below that, and then in the subsequent planning tiers below, to prioritize projects. Thus, positive impacts can be maximized and negative impacts can be minimized in each tier.

This research proposed and demonstrated the planning of rational and scientifically derived highway alignment alternatives through different geographical and administrative scales and through the four planning tiers of a SEA-like structure. By encouraging consideration of both positive and negative impacts in the planning of large highways, highway planning practice can become more objective and more transparent. The research showed that by improving the practice and outcomes of the planning process, stakeholder satisfaction, environmental protection and economic benefits from the projects can be greater than before, and can be well within existing institutional capacities. ■



The issue of connectivity translated to a regional highway project



Processes and product characteristics of an Environmental Assessment.

On 13 December 2011, ITC PhD student Sukhad Keshkamat *(right)* successfully defended his PhD thesis.

FOSS for Geoinformatics

Uttam Kumar uttam@ces.iisc.ernet.in

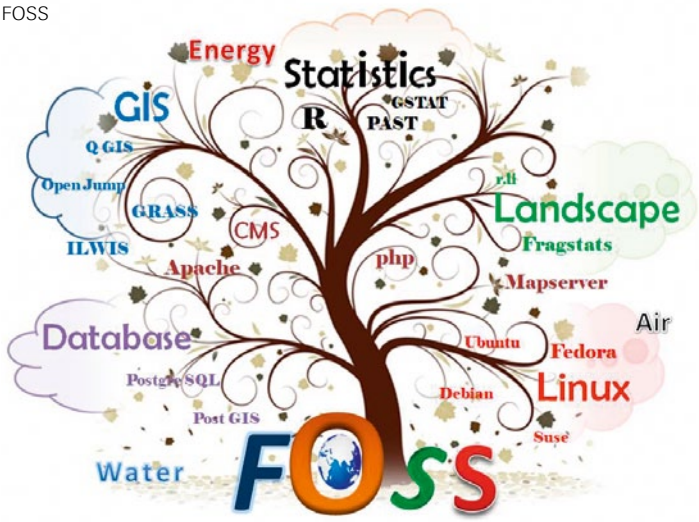
T. V. Ramachandra cestvr@ces.iisc.ernet.in

Free and Open Source Software (FOSS) is liberally licensed to grant users the right to study, change, and improve its design through the availability of its source code. It has more scope for availability in multiple languages and for being adapted or tweaked to particular needs. FOSS enables users to freely copy and distribute the software. This option benefits students, researchers, teachers and scientists with modest budgets who want to use legal software appropriate to their needs. FOSS has gained both acceptance and momentum in India, and indeed worldwide as the potential benefits have become increasingly recognized globally. reproduced, adapted or distributed.

Open source software packages are those for which the human-readable source code is made available under a copyright licence (or arrangement such as the public domain) that meets the open source definition (www.fsf.org/). Copyleft (such as GNU General Public License) is a form of licensing and may be used to modify copyrights for works such as computer software, documents, etc. It also allows the work to be reproduced, adapted or distributed.

Over the last decade, the paradigm of FOSS development has made strides in the GIS arena, resulting in the creation of several highly sophisticated GIS software projects for numerous purposes. FOSS for Geoinformatics aids study of the variation in landscapes over multiple spatial and temporal scales, encompassing a variety of research areas, such as land use and land cover change, climate change, water resources, urban development, and natural disaster mitigation. Increasingly, FOSS GIS is being used as the principal tool for digital exploration of the variation in landscapes, as it provides the necessary functions for spatial data collection, management, analysis and representation. Among the many GIS tools that are frequently used, desktop GIS, mobile GIS, remote sensing and image processing software, GIS extensions and libraries, spatial database management systems, Mapserver and geostatistical tools are those most commonly used to facilitate customization, provide good support via forums and e-mail lists, and maintain up-to-date documentation.

FOSS



OSGeo-Live is a self-contained bootable DVD, USB thumb drive or virtual machine based on Xubuntu that allows a wide variety of open source geospatial software without installing anything. It provides preconfigured applications for a range of geospatial applications, including storing, publishing, viewing, analysing and manipulating data (http://live.osgeo.org/en/index.html).

FOSS avoids reinventing the wheel and allows adaptation without restrictions. In addition to these general research advantages, the use of FOSS licences can enhance education and knowledge transfer, particularly in developing countries that lack (financial) resources. Students can freely and legally download the software and study the algorithms. Finally, it benefits society in general, as the use of free software licences can facilitate the application of new technologies and knowledge, thus enabling a sustainable use of resources. If such unified software development and research efforts can be initiated, then we see great potential for accelerating geoinformatics research worldwide.

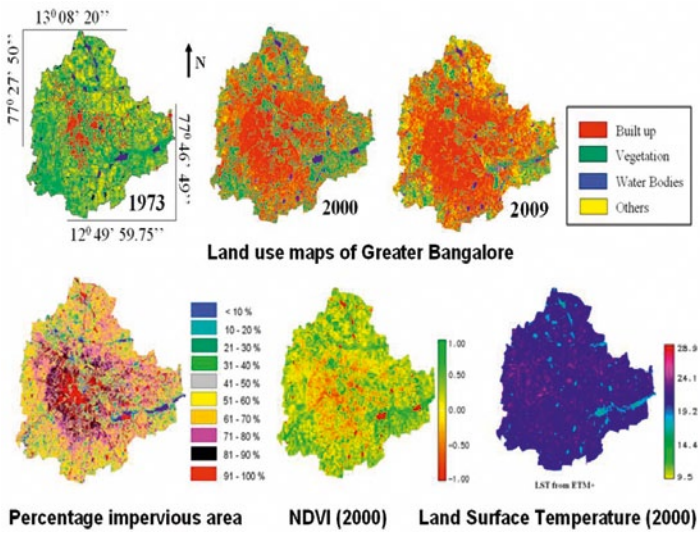
Based on GRASS GIS (http://wgbis.ces.iisc.ernet.in/grass), GRDSS (Geographic Resources Decision Support System) is one such FOSS GIS that aids data management, image processing, graphics production, spatial modelling and visualization (http://wgbis.ces.iisc.ernet.in/foss).

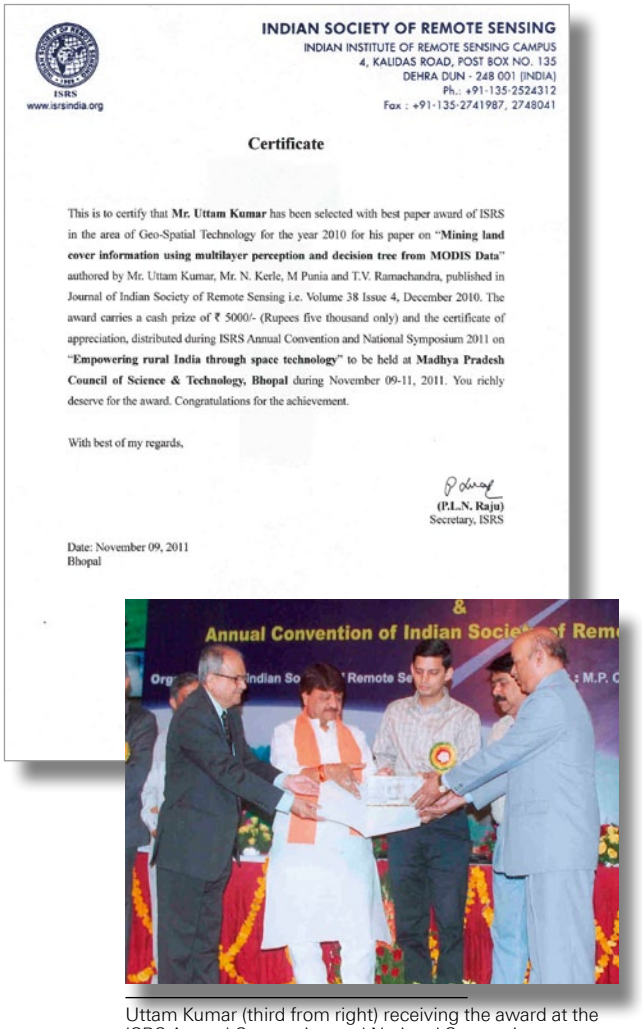
Case Study

Bangalore, one of the fastest growing cities in Asia, has been experiencing unprecedented urbanization and sprawl in recent times, owing to concentrated development activities with the impetus on industrialization for the economic development of the region (http://wgbis.ces.iisc.ernet.in/energy/water/paper/P25_1/index.htm). This concentrated growth has resulted in an increase in population, with the consequent pressure on infrastructure and natural resources, and ultimately giving rise to a plethora of serious challenges, such as climate change, enhanced greenhouse gas emissions, lack of appropriate infrastructure, traffic congestion, and lack of basic amenities (electricity, water and sanitation) in many localities. Using GRDSS, a study was carried out using multi-resolution remote sensing data, which showed 632% urban growth over 37 years (1973 to 2009). The urban heat island phenomenon is evident in a large number of localities, with higher local temperatures with an increase of 2 to 2.5°C. Natural resources such as vegetation have declined by 76% and water bodies have decreased by 79%, necessitating appropriate strategies for sustainable management (http://wgbis.ces.iisc.ernet.in/energy).

Urbanization and the consequent loss of vegetation and water bodies have led to the decrease in catchment yield, water storage capacity, wetland area, number of migratory birds, flora and fauna diversity and ground water table. As land is converted from an agricultural to an impervious surface, it loses its ability to absorb rainfall. The relationship between land surface temperature and NDVI investigated through Pearson's correlation coefficient at a pixel level and the significance tested through a one-tailed Student's t-test confirmed the relationship for all land use types. The urban growth poles are towards the north, northeast, south and southeast of the city, indicating an intense urbanization process attributable to growth agents such as the setting up of IT and biotechnology corridors, industrial units, etc. Newly built-up areas in these regions consist of the maximum number of small-scale industries, software companies, multi-storied buildings and private houses, which have sprung up in the last two decades. The growth in the northern direction is attributed to the new Bangalore International Airport, encouraging other commercial and residential hubs. ■

Greater Bangalore





Uttam Kumar (third from right) receiving the award at the ISRS Annual Convention and National Symposium

Useful links:

- http://wgbis.ces.iisc.ernet.in/foss
- http://live.osgeo.org/en/index.html
- www.osgeo.org/
- www.opensourcegis.org
- www.spatialanalysisonline.com

The Indian Society of Remote Sensing has awarded ITC alumnus Uttam Kumar (Department of Management Studies and Centre for Sustainable Technologies, Indian Institute of Science) the ISRS 2010 Best Paper Award in the field of geospatial technology for his paper on mining land cover information using multilayer perception and decision tree from MODIS data.

The paper is co-authored by Norman Kerle (ITC Department of Earth Systems Analysis), Milap Punia (Centre for the Study of Regional Development, Jawaharlal Nehru University), and T.V. Ramachandra (Centre for Ecological Sciences and Centre for Sustainable Technologies, Indian Institute of Science) and has been published in the *Journal of Indian Society of Remote Sensing* (Vol. 38, Issue 4, December 2010). The award, which carries a cash prize of 5,000 rupees and a certificate of appreciation, was presented during the ISRS Annual Convention and National Symposium 2011 held from 9 to 11 November 2011 in Bhopal, India.

EO2HEAVEN: Earth Observation and Environmental Modelling for the Mitigation of Health Risk

Rob Lemmens lemmens@itc.nl

From 22 to 24 November 2011, ITC hosted an advisory board meeting and several project work meetings concerning the EO2HEAVEN project. This followed two stakeholder training workshops in South Africa conducted from 7 to 10 November.

EO2HEAVEN is a research project co-funded by the European Commission as part of the environmental (including climate change) theme of the 7th Framework Programme. It started on 1 February 2010, and project duration is three years, with funding of more than Euro 6 million.

EO2HEAVEN contributes to a better understanding of the complex relationships between environmental changes and their impact on human health. The project monitors changes induced by human activities, with emphasis on atmospheric and water pollution. The main result of the project will be the design and development of a GIS based on an open and standards-based spatial information infrastructure (SII), envisaged as a helpful tool for research into human exposure to, and early detection of, potential health hazards. For this reason, the project develops models to relate environmental data to exposure and health data. The SII will include bridging capabilities at syntactic and semantic levels to, and between, environmental and health systems.

Health data collections are being studied and new structures for their integration into an SII are being described. Ongoing and recently completed research projects in the ICT, environmental and health domains are used in an integrative approach. In addition, EO2HEAVEN examines the different earth observation products, especially those resources available to the research community at low cost (e.g. GEONETCast).

To study the impact of human activity on health, the project takes advantage of the availability of long time-series data, combined with its great potential for detecting and mapping environmental variables. For this purpose, EO2HEAVEN also strengthens the integration of remotely sensed and *in situ* environmental measurements. The SII therefore facilitates the setting up of observation and decision support systems that rely on the correlation and fusion of earth observation, *in situ* and human health data.

EO2HEAVEN is active in the following three case studies:

- Environmental effects on allergies and cardiovascular diseases in Dresden and the Free State of Saxony, Germany
- Environmental challenges to health in South Durban, South Africa, due to air pollution
- Investigating the impact of environmental and climatic variables on the cholera outbreaks in Sub-Saharan Africa.

Project meeting at ITC

Workshops South Africa

The first stakeholder workshops of the project were held in South Africa from 7 to 10 November 2011. They were directed towards training on the project's intermediate results related to data integration and software use. A combination of presentations, demonstrations and hands-on exercises led by project partners dealt with project experiences in data gathering, modelling and data presentation. The workshops also invited local experts to provide even better insight into problems related to local case studies. By organizing these workshops halfway through the project, feedback from the stakeholders could be taken into account and used to improve further project activities. The training activities will culminate in e-learning materials for online use.

The first of the workshops was held at CSIR in Pretoria and the second at UKZN in Durban. Participants in the Pretoria workshop had been invited from a wide variety of stakeholders concerned with environmental health monitoring, with a particular focus on cholera and air pollution. Among these participants were both decision makers and scientists. The Pretoria workshop was intended to cover the case studies from the conceptual and technical perspectives and consequently was of two-day duration. Participants in the one-day Durban workshop had been selected from municipal decision makers, as this was the relevant target group for the Durban case study. This workshop was geared more towards data policies and processes and impacts on health monitoring, with less focus on technical/scientific issues.

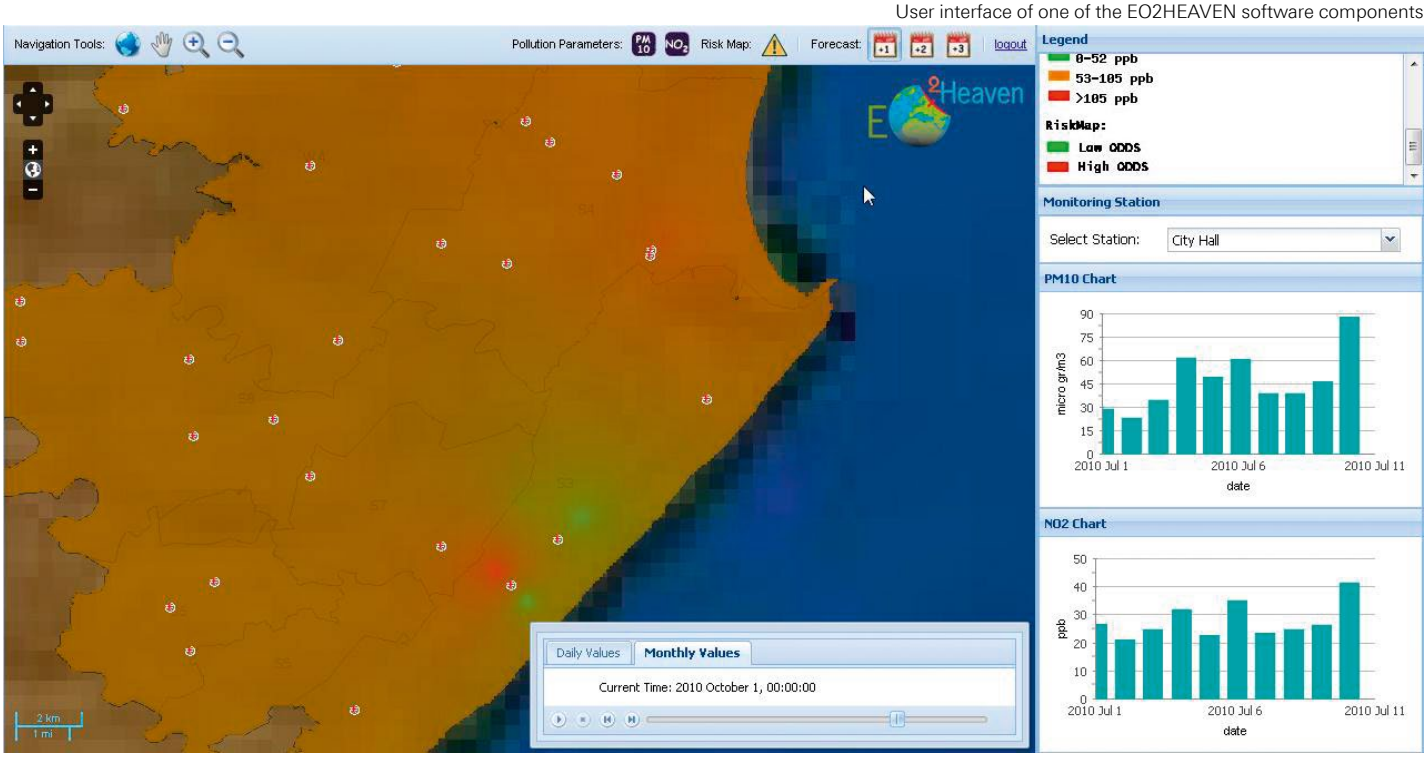
During the workshops, it became clear that the project addresses the need of many practitioners to analyse health phenomena in a user-friendly way and arrive at simple indicators that can be reported to superiors and governmental organizations. Those who need to process the data available require more hands-on practice with the project software. Because of the sensitivity of health information, data availability is in itself a challenge. Providing comprehensive metadata centrally is one of the ways to make the search for data more efficient.

The last year of the project will concentrate on consolidating the use cases, improving the software, disseminating the results, and training stakeholders through multiple workshops and e-learning. ■

FOR MORE INFORMATION, visit the project website (www.eo2heaven.org) or contact Rob Lemmens at lemmens@itc.nl

Stakeholder training workshop in Pretoria

User interface of one of the EO2HEAVEN software components



EDUCATION NEWS

Sustainable Production of Biofuels in Zambia

Iris van Duren vduren@itc.nl

Raymond Nijmeijer nijmeijer@itc.nl

The course on sustainable biofuel production was an eye-opener for several ITC alumni. It offered both old and new concepts. While updating their knowledge and skills in spatial information handling, the participants were exposed to sustainability criteria for biofuel production within an African context. Reviewing developments strictly according to these criteria was new to most of them, but the end presentations clearly conveyed the message that biofuels are not "green" by default. Well-trained spatial information specialists are needed to assess land cover changes and the consequences of these changes.

It all had started about a year earlier, when there was a call for proposals with ideas for a refresher course. Nuffic approved the idea of looking into land cover changes related to sustainable biomass production for bio-energy generation. And thanks to Lemmy Namayanga (ITC alumnus, 2002), who contacted the Department of Geography of the University of Zambia (UNZA) with regard to becoming our local partner, we landed up in Zambia. On 30 September we arrived in Lusaka, where the UNZA staff gave us a warm welcome. And it was a happy reunion of staff and alumni!

The course was officially opened by the vice-chancellor, Professor Simukanga, who gave an impressive and interesting speech on the importance and challenges of biofuel production. After the opening, we made an inventory of the expertise present within the group of 20 participants (11 alumni from Zambia and nine from outside, with very different types of background).

A SWOT analysis of biofuels, and a lecture followed by discussions on sustainability criteria indicators completed the first day. The participants enjoyed the opportunity to work with ILWIS again. And they were guided through coordinate systems and spatial referencing by means of lectures and practicals. Day 3 was one of the high-

At the Jatropha farm of Professor Sinkala; Jatropha nuts are pressed to oil

lights of the course. We looked critically at the low energy efficiency of producing biofuel from biomass, as well as the frequently unjustified "green image" of biofuels. After gaining insight into the biofuel production process, we visited the Jatropha farm of Professor Sinkala. This appeared to be a very fine example of an organic farming system: economically beneficial locally without substantially compromising the environment. Later that week, Professor Sinkala gave an inspiring guest lecture on his views regarding organic farming and biofuel production.

Biofuel cropping has many land-cover-related consequences. Land is converted to Jatropha plantation, or oil palm, corn or other biomass crops. This may lead to loss of habitat for wildlife, loss of land or access to land for local people, competition with food production, and more. To assess sustainability, we need expertise in land cover change detection. Some of the participants who had previously followed the GFM4 course when they were at ITC did not have any experience of land cover mapping. But with a bit of guidance from the teachers and some help from the other participants they grasped the idea. Stepwise we went through vegetation description, vegetation classification, and sampling designs to enable data to be collected during the fieldwork.

During the fieldwork, it became clear again to the participants that good preparation is everything. Although map reading and map making were not common practices for many participants, the point was made that spatial assessment is quite impossible without good-quality maps. We therefore practised GPS navigation and recording ground control points. We also demonstrated and practised vegetation sampling.

Back in the classroom, we had another look at the satellite image. We analysed the link between the band combinations for display, the colours in the image, and the vegetation types seen in reality. This allowed image classification and further analysis of land cover changes.

Finally, we focused on strategic environmental assessment and environmental impact assessment. The participants were split up into three teams. Each team reported on suggestions for preparing suitability maps for biofuel production. Wilma Nchito of UNZA guided the discussion on stakeholders in biofuel production and gender issues related to the production of biofuels. All the issues dealt with during the course were compiled into the final presentations given on the morning of 14 October. The number of guests from outside the course was limited owing to the inauguration of the new government at the same time. But who can compete with such an event? After presenting the certificates of attendance and CDs with all the course material, a group picture was taken. Then it was time to say goodbye, with the promise to "keep in touch". ■

The foreman explained growing Jatropha in the plantation

New Remote Sensing Techniques for Erosion and Fertility Studies during Nuffic Refresher Course

Menno Straatsma straatsma@itc.nl

Harald van der Werff vdwerff@itc.nl

Early in November 2011, ITC conducted the Nuffic two-week refresher course Remote Sensing of Soil Parameters for Erosion and Fertility Studies, which was hosted at the International Lifestock Research Institute (ILRI) in Nairobi, Kenya. Here a group of 21 participants from Africa worked on new remote sensing techniques in the inspiring surroundings of the research campus.

New developments in remote sensing covered during the course included hyperspectral remote sensing and airborne laser scanning (ALS). The first week of the course dealt with hyperspectral remote sensing (also known as imaging spectroscopy). Hyperspectral images have many narrow spectral bands, which allow specific materials and elements to be identified by studying spectral absorption features. In this course, the data were used in IDL ENVI software to map the spatial distribution of soil moisture and rainfall interception. The second week introduced ALS (also known as Light Detection and Ranging), which is a technique that has emerged since the late 1990s. A laser range finder is combined with positioning instruments on board an aircraft to determine the height of the terrain and the objects on the terrain. This results in a dense cloud of point data. ALS data are becoming increasingly available in Africa. The initial data processing that the participants learned was bare earth extraction and the classification of vegetation and buildings. After that, the focus was on vegetation analysis for soil erosion modelling. The last part of the course dealt with a spatio-temporal water balance model coupled to a soil erosion model, programmed in PCRaster software.

ILRI organized two excursions. The first was a day's visit to the World Agroforestry Centre, where Dr Keith Shepherd and his group demonstrated their advanced research and extensive facilities for mapping soil properties for the Africa Soil Information Service programme. The second was a visit to the Olkaria geothermal plant near Lake Naivasha, where ITC alumnus Wesley Koros demonstrated the use of GIS and remote sensing in the exploration of geothermal energy. This excursion concluded with a beautiful tour through Hell's Gate National Park.

The course participants were extremely dedicated to their work and many were interested in taking the material back home and implementing the acquired knowledge in their own research and training. During evaluation, it became clear that the course had provided insight into new remote sensing methodologies, (freeware) software, and multidisciplinary research for complex problems such as soil erosion and fertility studies. Perhaps more importantly, it had provided an excellent opportunity for networking. However, time was too limited to cover all the topics in detail – which even accentuates the dedication of the participants!

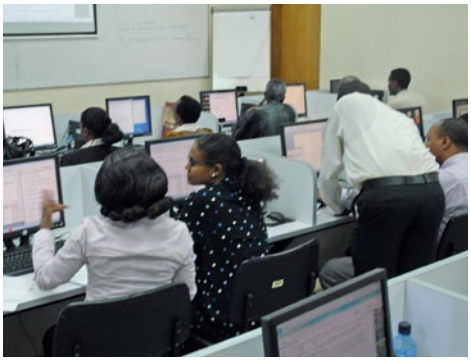
International Lifestock Research Institute (ILRI) in Nairobi, Kenya

Closing ceremony of the refresher course

The cocktail party on the last evening together was excellent for putting the theory on water balance modelling into practice. We all started at wilting point but were happy to reach field capacity quickly. However, a few continued to saturation point, and the saturated conductivity was tested to the full. Some even discovered an absorption feature.

This course could not have been given without the financial support of Nuffic, and a great sense of gratitude in this respect was expressed during the course. Furthermore, the logistical support and organization by ILRI in general and Dr Patrick Kariuki in particular was essential to the smooth running of our time together.

We considerably enjoyed the whole experience, and hope to see one another again sooner rather than later. ■



The course participants were extremely dedicated to their work

The participants worked on new remote sensing techniques in the inspiring surroundings of the research campus

Application of Synthetic Aperture Radar and Interferometric SAR in Geo-environmental Mapping and Modelling

Tsehaie Woldai woldai@itc.nl

Yazidhi Bamutaze yazidhibamutaze@gmail.com

The demand for new techniques in geospatial applications cannot be underestimated. Through long-term collaboration in training, the Department of Geography, Geo-informatics and Climatic Sciences of Makerere University, together with ITC, successfully organized the NUFFIC-sponsored refresher course Application of Synthetic Aperture Radar and Interferometric SAR in Geo-environmental Mapping and Modelling from 17 to 28 October 2011 in Uganda.

The refresher course, one of seven courses conducted by ITC in 2011, focused on applications of new and emerging geospatial technologies with a bias towards geology. Although the course was inclined towards geological applications, which rarely attract female candidates, more than 60 applicants registered for the training. Of these, 20 participants were selected, with 50% being female – signifying a thirst for SAR and InSAR technologies in both genders. The refresher course, which was also developed under the auspices of the University Network for Disaster Risk Reduction in Africa, was delivered by Dr Tsehaie Woldai and Dr Yousif Hussin, and was coordinated locally by Dr Yazidhi Bamutaze.

As expected, both practicals and theoretical aspects were embedded in the training, which was later enriched by a field excursion to Jinja, an historical town in Eastern Uganda at the source of the River Nile. Travelling to Jinja, the participants had three stopovers, and observed the changing patterns in land use, geological hazards and gradients of development from Kampala to Jinja. Of greater significance were two subjects that feature in the development discourse of Uganda, as well as in global change dynamics:

- Mabira forest, a natural forest with considerable potential for carbon sequestration but also significant for the hydrology of the Nile Basin. The government of Uganda has controversially

proposed to degazette the forest for the purpose of growing sugar cane, although this has been continuously resisted by the masses.

- The source of the Nile and the Bujagali Falls downstream, which have been popular for water rafting. This is likely to come to an end through the construction of a dam to enhance the supply of hydropower to a country in dire need of it. In light of the uncertainties concerning the two resources, the training was timely and the participants from eight African countries will always retain memories of these historical places.

On 28 October, a colourful ceremony at Makerere University officially brought the refresher course to a close. This was attended by the Minister for Lands, Housing and Urban Development of Uganda, the Honourable Daudi Migereko (MP Butembe), an alumnus of Makerere University and a former staff member of the Department of Geography. Other attendees included the fellowship officer of the Netherlands in Uganda, Ms Marieke Janssen; the principal of the College of Agricultural and Environmental Sciences, Professor Samuel Kyamanywa; the head of the Department of Geography, Dr Freidrick Tumwine; the coordinator of the Meteorology Unit, Professor Charles Basalirwa; and the national media.

The Minister observed that the Ugandan government was in dire need of geospatial technology, not only to help it to harness its resources for development, particularly in the oil sector, but also to address the rampant natural hazards and disasters. He paid tribute to the Dutch government for their continued support for education that is relevant to developing countries, particularly Uganda. Appreciating the close collaboration between Makerere University and ITC, he said that global challenges required institutions to work together to realize positive transformations. ■

The closing ceremony attended by the Minister for Lands, Housing and Urban Development of Uganda, the Honourable Daudi Migereko (MP Butembe)

Classroom of the Department of Geography, Geo-informatics and Climatic Sciences of Makerere University

Fieldwork in the surrounding of Jinja and the source of White Nile

Refresher Course on Biodiversity, Climate Change and Conservation in Windhoek, Namibia

Thomas Groen groen@itc.nl

In November 2011, ITC's Department of Natural Resources, together with the School of Natural Resources and Tourism (SNRT) of the Polytechnic in Windhoek, Namibia, organized the refresher course Climate Change, Biodiversity and Conservation. Participants came from various African countries, including Ghana, Kenya, Tanzania, Zambia and Zimbabwe.

The refresher course started with the concepts of species distribution modelling. Practical tips on data management and various modelling algorithms were discussed, and the participants were challenged to practise these skills with a database of species that occur in Namibia. Besides the theory and practice of modelling, the collection of relevant factors for estimating and modelling distribution patterns was addressed. Finally, the concepts of climate change, the simulation of future climate change scenarios, and the use of GIS and remote sensing software tools to link biodiversity to climate change scenarios were handled.

According to Lameck Mwewa, dean of SNRT, "The African Community's natural resource and environmental management practitioners have been refreshed and sharpened by this course on how to combine the development of biodiversity assessment and ecosystem modelling skills, as well as developing training materials in the area of climate change, biodiversity and conservation." He emphasized the importance of developing capacity in biodiversity conservation and species-richness modelling, and said, "Plans need to be put in place in order to develop necessary measures to protect and preserve different species, given human-induced land use changes and expected changes in climate. At the same time, studying and monitoring the behaviour of our biodiversity can provide useful and crucial indicators of what is happening with the climate."

One of the excursion trips: visiting the meteorological service

The course greatly benefited from the enthusiasm of the participants, who accepted the challenges of applying the instructed skills with great zeal. While working hard on the exercises, the participants also managed to create a great group atmosphere. This resulted in two memorable field excursions and generated a lively final certificate ceremony, which was rounded off with a festive dinner.


The participants during one of the two memorable field excursions

The refresher course was funded by the Dutch Fellowship Programme (NFP) through a grant application that was compiled jointly by the Polytechnic of Namibia and Faculty ITC. The course brought together professionals from a variety of operational organizations involved in natural resources management, biodiversity conservation, land management and applied spatial information for sustainable development. ■

Short Course: Biodiversity Modelling with GLOBIO 3

Rob Alkemade rob.alkemade@pbl.nl

Joan Looijen looijen@itc.nl

Wilbert van Rooij vanrooij@aidenvironment.org

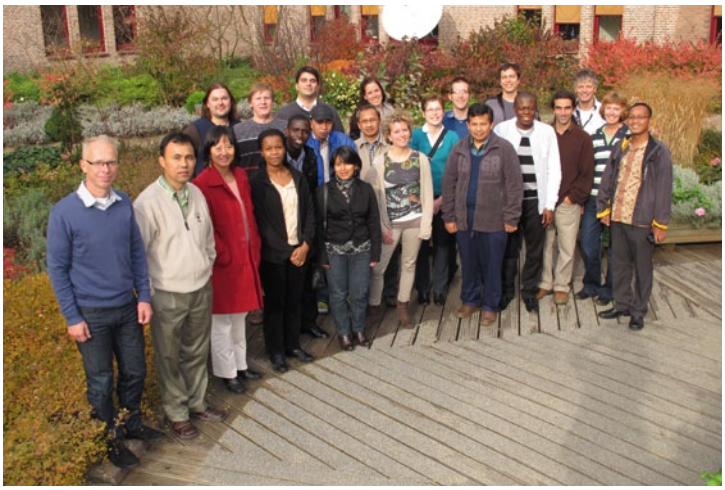
The Netherlands Environmental Assessment Agency, in collaboration with Aidenvironment and ITC, organized a short course on biodiversity modelling with GLOBIO 3. The course focused on a regional and national implementation of the GLOBIO 3 model to assess current and future biodiversity. For future assessments, the model was integrated with the CLUE land use model.

Human activities continue to have a large impact on the environment and on biodiversity. Agricultural, urban and infrastructural developments are often realized at the cost of biodiversity. Climate change and habitat fragmentation exacerbate biodiversity loss. As a result, ecosystem functions and services are affected, which may have serious consequences for people who rely on them. Policy makers are aware of the relations between land use change, biodiversity loss, and the consequences for ecosystem services and food security. Targets to reduce biodiversity loss have been adopted by the parties to the Convention of Biological Diversity. To achieve these targets, policy makers need tools that can help them to assess the impact of drivers that lead to biodiversity loss and ecosystem change.

Existing information on biodiversity is often fragmented, and species inventories are in general costly and time-intensive. Sustainability assessment practitioners need a simple tool to determine the general impact of socio-economic developments on biodiversity in a relatively short time. Biodiversity modelling can support policy makers, planners and assessment practitioners to do this. Key sustainability issues can be addressed, such as (i) What is changing and where? (ii) How is it changing? (iii) What can we do about it? and (iv) What are the impacts of different policy options?

The GLOBIO model was developed by the Netherlands Environmental Assessment Agency (PBL), UNEP/GRID-Arendal and UNEP-WCMC. GLOBIO 3 is a modelling framework for assessing the past, present and future impacts of human activities on terrestrial biodiversity at different scales. The model is built on simple cause-effect relationships between environmental drivers and biodiversity impacts, based on state-of-the-art knowledge. The mean abundance of original species relative to their abundance in undisturbed ecosystems (MSA) is used as the indicator for biodiversity. The MSA indicates a kind of naturalness of an ecosystem. No detailed species data are needed to use GLOBIO; the model uses empirical relations between environmental drivers and biodiversity impact linked with spatial information. The drivers considered are land cover change, land use intensity, fragmentation, climate change, atmospheric nitrogen deposition, and infrastructure development. GLOBIO 3 addresses (i) the impacts of environmental drivers on MSA and their relative importance; (ii) expected trends under various future scenarios; and (iii) the likely effects of various policy response options. GLOBIO 3 has been successfully used in several integrated global, regional, national and subnational assessments.

The GLOBIO 3 model is integrated with the CLUE-S land use model to assess future biodiversity loss owing to land use changes. CLUE-S (the conversion of land use and its effects at small regional extent) is specifically developed for the spatially explicit simulation of land use change, based on an empirical analysis of location suitability combined with the dynamic simulation of competition and interactions between the spatial and temporal dynamics of land use systems. The CLUE output is used as input into GLOBIO 3 in order to be able to assess the impact of different land use scenarios or policy alternatives on biodiversity. Policies can be adjusted if the results are not in line with biodiversity policy targets.



Group picture of participants and staff in the ITC garden

Participants at work

FOR MORE INFORMATION on GLOBIO 3 contact Joan Looijen at looijen@itc.nl

The GLOBIO 3 methodology is software-independent; any GIS software can be used as long as it can handle raster maps.

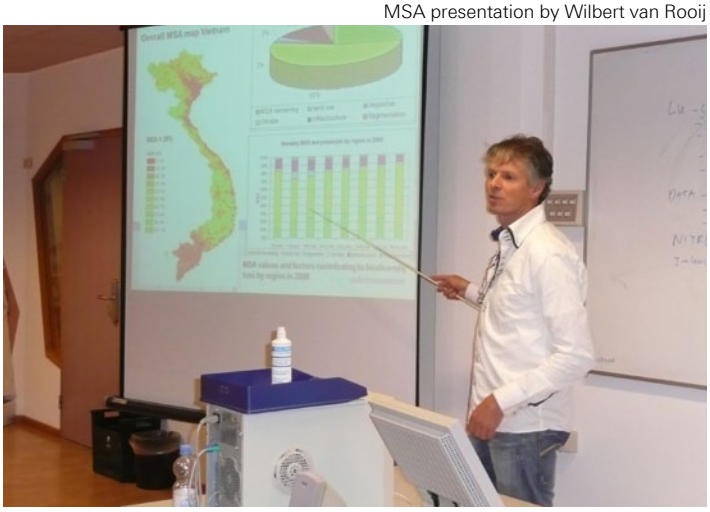
The Course

A workshop for international modellers working with GLOBIO and CLUE was given prior to the course. Each expert was asked to give a presentation on a particular GLOBIO implementation or project. New developments in GLOBIO 3 and their relation with ecosystem services were presented, followed by a discussion on the technical challenges. The workshop ended with the formulation of needs and constraints regarding the continuation of GLOBIO 3, and the opportunities for implementing GLOBIO 3 for third party donors.

The short course was attended by 19 participants, representing planning authorities, assessment practitioners, and researchers involved in impact assessments of socio-economic developments at regional or national scale. Each day, theoretical sessions alternated with practical working sessions, and the experiences of the international modellers were also shared. During the course, participants were challenged to discuss how the tools could be embedded in sustainability or integrated assessments. At the end of the course, a group picture was taken, and all participants received a certificate of attendance and a DVD with the complete biodiversity assessment tool as well as the presentations, manuals and sample data.

Both the organization and content of the course were highly appreciated by the participants. The cooperation between PBL, Aidenvironment and ITC was successful, and we hope to be able to set up similar courses and possible research in this field in the future – either at ITC or in a host country. ■

MSA presentation by Wilbert van Rooij



Course venue

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ANNOUNCEMENTS

Book Donation Programme of the ITC Faculty Library

Marga Koelen koelen@itc.nl

The ITC Faculty Library embarked on its book and journal donation programme in May 2010. Within the framework of ITC's mission statement, the Library has the task of improving access to scientific information, and that's why it is involved in institutional strengthening and capacity development projects in developing countries and emerging economies.

The Library has partnerships with scientific libraries all over the world, in most cases at partner institutes of ITC or at partner institutes where ITC's joint education programmes are conducted. Books and libraries are a crucial resource in all academic institutes throughout the world. They are vital to the quality of education and research: they raise literacy levels and they provide information and underpin development.

The Library participates in capacity building and institutional development projects in developing countries and emerging economies. Within these capacity building projects, it was noticed that many libraries lack important textbooks and other materials that could support research and education. The reasons for this are many and various, and not always financial. The ITC Faculty Library not only regularly receives material in duplicate but also removes printed publications from the collection if there is electronic access, and so the idea of a donation programme was born. To avoid the accusation that "donation programmes make libraries grow but not develop", we wanted to approach the notion of a donation programme from a different angle: offering literature for each participant to choose from rather than sending unsolicited boxes of literature.

So the principle is that the ITC Faculty Library offers books and journals via a website, the libraries of our partners choose which publications they are interested in and what fits into their collections, and the materials are sent only on request. We hope the available materials will be a welcome addition to their respective collections and will have a positive influence on the quality of education and research.

The website can be found at www.donationprogram.nl and we have a special e-mail address for the programme: librarydonationandexchange@itc.nl.

We invite you to visit the database of the donation programme and select materials that will be useful to your library and its users. You can also sign up to the RSS feed and receive updates when new items are added to the database. And we add materials to the programme on a regular basis!

Currently, we have 39 registered users and all are university-related institutes and faculties. To date, we have received 25 orders and have shipped 282 items to Ghana, India, Venezuela, Nigeria, Kenya and Rwanda (Figure 1).

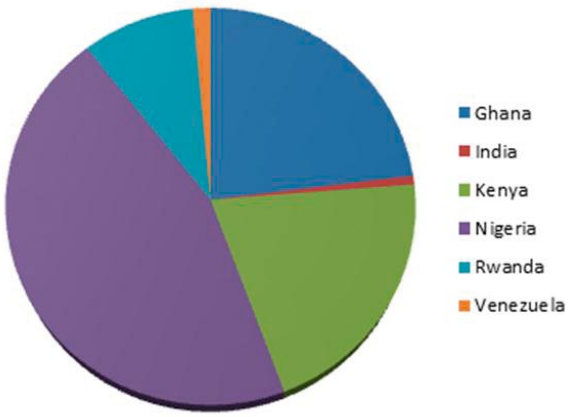


Figure 1

Experiences with the ITC Donation Programme

OIC Library, RCMRD, Nairobi, Kenya (Jimmy K. Warah)

The ITC Faculty Library Book Donation Programme has proven to be one of the most exciting experiences in my information management career. My name is Jimmy K. Warah and I happen to be the officer in charge of library services here at the Regional Centre for Mapping of Resources for Development (RCMRD), Nairobi, Kenya. The vision and mission of the organization is "to be a premier centre of excellence in the provision of geo-information and information technology applications in Africa and beyond" and "to provide quality geo-information and allied ICT products and services in environmental and resource management for sustainable development in our member countries and beyond".

In June 2011, I was perusing page 16 (second paragraph of the middle column) of *ITC News* 2010-4. We do occasionally receive this and other publications from ITC through the Director-General's Office. Your Book Donation Programme caught my eye immediately and I went to the website mentioned for more information. Through reading and following the simple instructions on the site, I registered and ordered some publications, which arrived last week. The 65 items – mainly books, congress literature, CDs, etc. – have already enhanced the collection of our fast-growing special/academic library here at RCMRD. This library was established in 1978 to help to acquire, process, organize and finally disseminate information concerning our institution, which was founded in 1975. Although the library originally focused purely on geo-information (e.g. geographical information systems, remote sensing, global positioning systems, photogrammetry, environmental issues, natural resources management), over the last ten years the mandate of the library has expanded to include information technology and other management-related fields.

OIC Library, Regional Centre for Mapping of Resources for Development (RCMRD), Nairobi, Kenya

The library here is quite important in assisting users to achieve their respective targets. The materials received through your donation programme will thus be of great use to our users, who comprise the staff and students often visiting the organization from various countries and institutions, including ITC, the Netherlands, who is one of our main partners. They will assist users in research, and thereby in the implementation of the various projects RCMRD is engaged in with member states and beyond (read more on our website www.rcmrd.org).

To me, the ITC Faculty Library donation initiative is of great importance in assisting upcoming libraries of similar scope to develop their collections. I would urge the programme to share not only print materials with its partners but also electronic resources where possible.

University of Port Harcourt, Nigeria (Dr Babatunde Olusegun Nuga)

Ag Head, Dr Nuga displaying books in the Departmental Library of the University of Port Harcourt, Nigeria

In 2006 and 2008, I was privileged to be part of the Certificate programmes in Principles of Spatial Data Handling: Databases, GIS and Remote Sensing and in Application of GIS and Remote Sensing to Natural Resource Management, respectively (both sponsored by the Netherlands Fellowship Programme). During my stay at ITC, one of my favourite places was the Library – to study and also to walk among the shelves to "feed my fatigued eyes". It was during my visit in 2006 that I noticed some piles of books near the Library exit points, with a sign indicating that they could be taken without charge. From then on, I began to compile collections of books relevant to my faculty back in Nigeria from these free books. By the end of my 2006 programme, I had already collected over 70 kg of books, which I shipped back home. Again in 2008, I was able to collect more from the Library, which again I shipped back home after my study, with the shipping charges being paid by my department.

Back in Nigeria, I was always quick to check out my alma mater, especially the Library page on the internet, where I discovered the Book Donation Programme. I immediately registered, enabling me to make selections on the library donation programme webpage, and it was with great pleasure that I took delivery of several cartons of books at different times between 2010 and 2011, freely shipped by ITC to my department in Nigeria. All these books acquired from ITC since 2006 have made up the bulk of the collection in the departmental library project. Hence the ITC Book Donation Programme has gone a long way not only in helping my university to save money but also in providing one of the essential resources needed for quality training and manpower development in Sub-Saharan Africa. ■

ITC Strategic Partner Geospatial World Forum 2012

As the premium global geospatial industry event, Geospatial World Forum (23-27 April 2012, RAI Convention Centre, Amsterdam, the Netherlands) will bring the stakeholders – solution providers, policy makers and users – to a single platform, providing unparalleled opportunities for discussion, debate and interaction.

Geospatial World Forum is a confluence of various activities in the form of symposia, seminars, workshops, panel discussions and exchange forums, covering a wide range of topics dealing with technology, application and policy, as well as use cases from the region and from across the world. The theme of the Forum is "Geospatial Industry and World Economy".

With its partners, the Forum will also host a number of additional events in parallel, such as board meetings, executive meetings, user meetings and partner/reseller meetings. ITC is involved in the Forum as strategic institutional partner. ■

Refresher courses 2012

Communication department info@itc.nl

In 2012 ITC together with her counterparts and financially supported by the Dutch government ITC organizes eight refresher courses in various countries around the world. These courses are open to alumni in these and neighbouring countries who completed any NFP-funded training or education programme at least two years before the scheduled starting date of the course concerned.

More details will follow on www.itc.nl/study. As soon as all the details about the courses are online we will inform you through the electronic newsletter ITC Update. Make sure you are signed up for a free subscription (visit www.itc.nl/alumni)! ■

Title / counterpart	Location
Putting health on the map: Addressing public health challenges using spatial data and geo-information tools with the Royal Tropical Institute (KIT), Department of Biomedical Research and the National University of Rwanda – Centre for GIS and Remote Sensing training and Research (CGIS) jointly with Kigali School of Public Health (KSPH)	Rwanda
Preparing information for REDD as climate change mitigation strategy in Sub-Saharan African countries with the Kwame Nkrumah University of Science and Technology	Ghana
Planning for cycling in Sub-Sahara African cities with the School of Planning and Architecture (SPA), Maseno University (MSU)	Kenya
Geostatistical methods for environmental monitoring and epidemiology with the International Livestock Research Institute	Kenya
Modern tools for evaluation of seismic induced ground shaking and associated secondary hazards for earthquake vulnerability reduction with the National Center of Excellence in Geology, University of Peshawar	Pakistan
Community based hazard and risk assessment for spatial planning in Eastern Indonesia with the Sam Ratulangi University, Menado, North Sulawesi	Indonesia
Monitoring floods and drought from space in African river basins with the University of Dar es Salaam - Department of Water Resources Engineering	Tanzania
Integrated planning with modern spatial analysis techniques for sustainable biofuel production with the Ministry for Coordination of Environmental Action - National Directorate for Land Planning	Mozambique

VISITS

Directorate Visit to Indonesia

Tom Loran loran@itc.nl

In October 2011, the rector and the managing director of ITC, Professor Veldkamp and Ms Leurink, visited Indonesia with the intention of becoming further acquainted with ITC's long-standing partners, as well as developing ideas for future strategies for ITC's activities in Indonesia.

During the visit, Professor Veldkamp gave a keynote address at the Asia Geospatial Forum, which took place in Jakarta from 17 to 19 October. The Forum illustrated the significant developments in the use of spatial information that have taken place in Indonesia. The Indonesian government has passed a law that defines and regulates the use of spatial information in the planning, management and monitoring of government processes.

During the Forum, the National Coordination Agency for Survey and Mapping of Indonesia (Bakosurtanal) was renamed the Geospatial Information Agency, likewise receiving the appropriate acronym BIG (Badan Informasi Geospatial, see box). Bakosurtanal (now BIG), which has been a partner of ITC for more than 40 years, is committed to further strengthening the use of geospatial information and related technology in Indonesia. During the gathering, the chairman of BIG, Dr Asep Karsidi (ITC alumni from 1991), also launched the Indonesia geo-portal.

During the directorate tour, visits were paid to other organizations in Indonesia, including the Agency for Assessment and Application of Technology (BPPT), the Indonesian Defence University, the National Institute of Aeronautics and Space (LAPAN), Gadjah Mada University and the Technical University (ITB) in Bandung.

In Yogyakarta, visits were paid to the double-degree programme at the Faculty of Geography, the Department of Geodetic Engineering, and the Centre for Transportation and Logistics Studies (PUSTRAL). In addition, Professor Veldkamp presented the certificates at the closing ceremony of the refresher course Mainstreaming Disaster Risk Reduction into Spatial Regional Planning.

READ MORE about this StuNed refresher course in the next issue of *ITC News*

In Yogyakarta, visits were paid to the double-degree programme at the Faculty of Geography

An alumni meeting in Yogyakarta brought together some 70 alumni from all over Indonesia

Participants of the StuNed refresher course: Mainstreaming Disaster Risk Reduction into Spatial Regional Planning

In Bandung, the Faculty of Earth Sciences and Technology and the Faculty of Mining and Petroleum Engineering were visited. ITC is working closely together with staff of the two faculties on preparing a capacity building programme for the development of geothermal energy in Indonesia.

Alumni gatherings were held on two occasions. During the refresher course in Yogyakarta, an alumni meeting was organized that brought together some 70 alumni from all over Indonesia, while in Jakarta an alumni dinner was hosted by Dr Siti Nurbaya. ■

THE NATIONAL AGENCY FOR SURVEYS AND MAPPING, commonly known as Bakosurtanal, has been renamed the Geo-Spatial Information Agency (Badan Informasi Geospatial; BIG). In line with the new law on geospatial information, BIG is tasked not only with the coordination and implementation of surveying and mapping activities but also with the entire spatial information process for the country.

ACCORDING TO DR KARSIDI, geospatial technology has an important role to play in the country in addressing regional inequalities, in the utilization of natural resources, and in climate change. The new law on geospatial information, which came into force last year, will help to facilitate the use of standard references and the proper coordination of the use in spatial information for national development planning: "Many organizations are still making their own maps without referring to a common topographic base, and because of this many maps are not compatible and are difficult to combine and overlay. This will now change; availability and easy access to accurate geospatial information will be much better. Some 90% of government activities include spatial elements, so this will greatly increase the effectiveness of development planning in Indonesia."

EVENTS

UNU School for Land Administration Studies: First Workshop on Base Registers

Johan de Meijere meijere@itc.nl

A three-day workshop on base registers as the backbone of public sector information provision was organized by the UNU School for Land Administration Studies (UNU LAS) in collaboration with the Polytechnic of Namibia. The objective of the workshop was to assess the state of different public registers and the possibility of linking these to form the core of the public sector information provision. The concepts of one-time capture and multiple use in different service delivery processes justify the establishment of a system of base registers, and examples of such systems can be found in western and eastern European countries. Some of these systems have developed slowly, with many institutional difficulties, as in the case of the Netherlands; others have developed rapidly, as in the case of Lithuania.

The UNU LAS organized and financed this first workshop to discuss concepts and methods in a broader environment, and to investigate how different institutional settings, cultures and state-of-the-art technology may facilitate growth towards a system of base registers. A group of 15 participants from Namibia and 10 from other southern African countries took part in the workshop. Participants were selected on the basis of an abstract for a presentation at the workshop. About 40% of the participants were ITC alumni. Participants came from statistical bureaus and different ministries, such as ministries of home affairs, transport, lands, agriculture and environment. Some participants came from local and regional government and the private sector.

The workshop was facilitated by staff from the Polytechnic of Namibia (Lameck Mwewa and Brian Mhango), the Dutch Kadaster (Kees de Zeeuw and Co Meijer), the consultant company ZENC (Ellen Boschker) and ITC (Johan de Meijere).

It was interesting to see how statistical agencies in several countries were the first to react to the announcement of the workshop. In 2010, many countries implemented a population and housing census. Statistical agencies in Namibia, Zambia, Uganda and Zimbabwe were represented in the workshop.

The census is the most important source of information for policy making, as it provides important data about the population and housing conditions. The census is organized and presented by spatial units – from the enumeration area to aggregates such as district, region or other administrative spatial units. Census and space are thus very closely related. Statistical agencies have developed GIS departments and procedures for the preparation, capture, processing and diffusion of census data per spatial unit and in map formats. In the case of Namibia, a complete geocoded inventory of buildings was made from aerial photos and imagery to identify the dwelling units of the households in the 2011 census. With up-to-date IT and GIS, statistical agencies are equipped for large data capture storage and processing procedures.

The new Act concerning the statistical agency in Namibia contains a section whereby the coordination of NSDI becomes part of the competence of the statistical bureau.
Statistical agencies are policy-neutral in the perception of the citizen. Taking part in a census, as long as anonymity is preserved, is not felt as a threat of becoming "formal", with obligations to pay taxes and other duties. The strong point of the census is that it covers the entire society – the formal and the informal

parts. The weak point is that it is held once every ten years. Information about dynamics in society is hardly captured and intra-census (population) data are not captured at all.

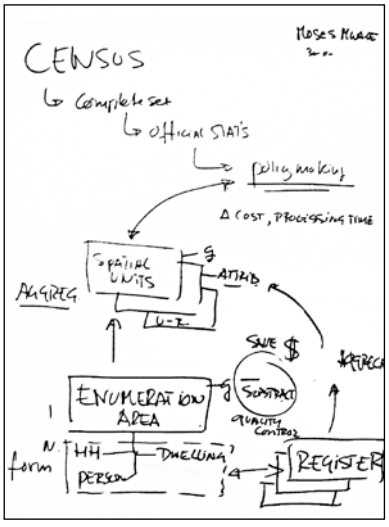
Though not a register in the legal sense, the census is still the most important source of information for policy making, from national to very decentralized (spatial) levels. Registers kept as a source of legal data (rights and responsibilities) can be found as part of the "formal" society. The land register, civil register and voter register are a few examples. Once in the register, (civil) rights are protected, while (civil) obligations are also implied. The register contains information about the individual person and an individual object (such as a parcel). The registers are thus "atomic" by nature.

In a society where every piece of land and every person are reflected in a public register, the statistical and policy information at a higher level of aggregation can be derived from the registers. The Netherlands and other European countries are examples of such societies. In a society where (large) parts of the society and the land are not registered at atomic level in legal public registers, only the census and the topographic "base" map give a complete representation of reality. The legal registers contain only a subset – the "formal" part – of reality. In other words:

- Census – civil register = informal society (household-dwelling)
- Base map – private / customary registered land = State land and /or informally held land.

This (simplified) conclusion demonstrates how important the links between statistical agencies and legal register agencies are. Some of these legal register agencies are slow, intransparent and expensive in their routines. The land register is a typical example, which explains why so much land is considered to be held "informally" by people. But the same is valid for business and economic activities, as extensively described in the literature. Whether the solution to this problem is massive "formalization" is yet to be seen. Most line agencies that keep registers of this type are not prepared for such operations, and for many citizens it may not have high importance or even be desirable.

In the meantime, it seems not only desirable but indeed necessary to establish links between statistical agencies and agencies with legal registers. The workshop showed how statistical agencies are already cooperating with line agencies to their mutual benefit. The line agencies can provide information on that part of society that is already registered and known, so that duplication of data collection in a census can be prevented and dynamics can be captured (as is the case in Zimbabwe). At the same time, the statistical agencies seem to be well equipped to play a major role in the management and linking of register databases and become a "centre of registers" (as can be found in other countries) as an effective and efficient way of growing towards a system of base registers. ■



This (simplified) conclusion demonstrates how important the links between statistical agencies and legal register agencies are

THE WORKSHOP implemented by the UNU School for Land Administration Studies was the first of its kind. The findings and evaluation show both the tremendous potential and the interest in developing these concepts further, whereby social and spatial data are combined in a set of base registers that serves the rights of citizens on the one hand (the emancipatory role of a register), and policy making, management and control by the public sector on the other.

The UNU School of Land Administration Studies is interested in receiving reactions to see how similar workshops might be implemented in other regions in the year ahead. Please contact: meijere@itc.nl

Participants came from statistical bureaus and different ministries

LIFE AFTER ITC

Lifetime Achievement Award: Asia Geospatial Forum 2011

Tom Loran loran@itc.nl

Professor Abdel Kadir Bin Taib from Malaysia was awarded the Lifetime Achievement Award at the opening ceremony of the Asia Geospatial Forum 2011 in Jakarta, Indonesia.

Professor Abdel Kadir Bin Taib, who started his professional career as a surveyor with the Department of Surveying and Mapping of Malaysia in 1978, studied photogrammetry at ITC in the period 1981 to 1985. Since June 2009, he has worked at the Survey and Mapping Department of Malaysia, where he is director-general.

Professor Abdel Kadir Bin Taib has been active in a wide range of national and international forums in the field of surveying, mapping and geo-informatics, and has significantly participated in the development of surveying and geo-informatics education. Currently, he is professor at the Faculty of Geo-Information and Real Estate of the Technical University of Malaysia (UTM) and at the Faculty of Architecture, Planning and Surveying of the Technical University Mara.

The Lifetime Achievement Award was presented to Professor Abdel Kadir Bin Taib by Dr Asep Karsidi. Dr Karsidi, an ITC alumnus, is chairman of the National Agency for Geospatial Information. ■

The Lifetime Achievement Award was presented to Prof Abdel Kadir Bin Taib by Dr Asep Karsidi

Netherlands Alumni Network China (NANC) Annual General Event

Selano Li nanc@nesochina.org

The traditional NANC Annual General Event (AGE) was initiated in 2007 as the biggest and most important event organized throughout the year in China. Its aim is to get Netherlands alumni of different nationalities together at the end of the year to recall happy and memorable times in the Netherlands. This event also provides alumni with a good opportunity to expand their social, academic and professional networks.

NANC AGE 2011 was successfully organized on 10 December in Beijing. More than 110 Netherlands alumni of different nationalities participated, and some attended with families and friends. Two highlights of the occasion were the farewell party for Mr Jacques van Vliet, the outgoing director of the Netherlands Education Support Office (Neso) China (2007-2011), and a welcome reception for Mr Marrik Bellen, the new director of Neso China as of 1 January 2012.

Mrs Selano Li, NANC alumni officer, started the ball rolling, followed by Mr Rudolf Bekink, the Netherlands ambassador to China, who welcomed all the participants and thanked Mr Jacques van Vliet for the efforts he had made with regard to Neso China activities over the past four years. He also gave a warm welcome to Mr Marrik Bellen, wishing him every success in his work in Beijing, China, in the future.

On behalf of the NANC Board, Mrs Selano Li also expressed sincere gratitude to Mr Jacques van Vliet for his enormous support and candid advice regarding the development of NANC, in his capacity as member of the NANC Executive Committee in the past years.

The event itself was full of fun and challenges. After the buffet dinner, alumni were asked to team up based on the different colours of the stickers on their name badges, and to take part in an energizer to stimulate networking opportunities. Each team was given a picture of a sculpture and was asked to physically represent it. All team members had to take part and a photographer took pictures of each team. Any team that couldn't be recognized (by all other participants) in the shape of the sculpture was considered a failure.

In total six companies sponsored AGE 2011, with prizes for quizzes on the Netherlands and lucky draws, including Heineken cabin luggage, KLM caps, Dutch wooden shoes, cheese plates, and a big liquid chocolate souvenir pack. Free-flowing bottled beer from Heineken and Italian wine from LUCE heightened the fun during the networking hour. The whole event lasted about four hours and all participants had a great evening. Each left with a special NesoChina laptop bag containing some small souvenirs.

Photos can be found on the NANC website under Photo Gallery http://nanc.nesochina.org/ ■

NANC AGE 2011 was successfully organized on 10 December in Beijing

UT/ITC Alumni Meet India

John Horn horn@itc.nl

During the first week of December 2011, the University of Twente and Faculty ITC were delighted to host alumni gatherings in Bangalore and Chennai, India, concurrently with educational fairs held in those cities. The UT delegation comprised, Drs. Sander Lotze, Head of Internationalization, Dr. Timo Hartman, of the UT VISICO Centre (Centre for Visualization and Simulation in Construction), and Mr. John Horn, Senior Project Officer from ITC.

The Bangalore gathering was held at the Jamavar restaurant, Leela Palace Hotel on the evening of 3rd December and we were pleased to be joined by several alumni, some of whom had graduated from the joint MSc programme that ITC runs with the Indian Institute of Remote Sensing in Dehra Dun. On the evening of 5th December a large group of alumni gathered at the Sheraton Park Hotel, Chennai for a delicious buffet dinner. Several of the ITC Alumni present were staff members of the Tamil Nadu Forest Department, with whom ITC has had a very long standing collaboration.

The ITC alumni ranged from those that had graduated only a few months before to one who had studied at ITC 30 years ago. In a particularly delightful reunion Air Commodore (retd.), Vajiral Govindraj renewed his acquaintance for the first time in 30 years with his former teacher, John Horn. Back in 1982 they had worked together on the ITC Aerial Photography course, and had the opportunity to reminisce on the pleasures of flying in the ITC aircraft on survey training exercises over Holland! After several senior appointments in the Indian Air Force, Govind is now the Deputy Director of the Orient Flight School, which is a part of the Hindustan Group of Educational Institutions, and based in Puducherry. During the mission short visits were also paid to the Geological Survey of India in Hyderabad and to the Remote Sensing Department of Anna University in Chennai. Increasing numbers of Indian students have been studying at various faculties of Twente University in recent years, and in particular ITC's long standing links with several Indian institutions have led to numerous participants on ITC MSc and PhD programmes. ■

Air Commodore (retd.), Vajiral Govindraj renewed his acquaintance for the first time in 30 years with his former teacher, John Horn

The UT delegation comprised, Drs. Sander Lotze, Head of Internationalization, Dr. Timo Hartman, of the UT VISICO Centre (Centre for Visualization and Simulation in Construction)

Nuffic Neso Desk

Participants of the alumni meet

Letter to the editor

Dear Editor,

Thank you for sending me ITC News 2011-2/3, which I received on Saturday, 17 December 2011. Before exploring all the pages, my eyes were drawn to the back cover of that magazine. The photo shows the ITC building, which is part of the University of Twente, and to be honest I didn't recognize that building at all. Of course I was never there. I was a student following the photogrammetry programme (P1) at ITC in the years 1987-1988. Almost 25 years ago! I lived in a "new" building in front of the hospital, near the Schermerhorn Dish Hotel. Back to the photo: the one thing I do recognize well is the yellow symbol of ITC. Every day I passed that symbol on the Boulevard. I don't know whether it is a new one or has just been relocated.

Well, reading that magazine, my mind flew back to the year when I was in Enschede, remembering the good times I'd had − even though I had had very tough lectures. Yes, mathematics rained down on me every day!

The photo accompanying the article on the Opening of the Academic Programme on page 3, where the new ITC students are dressed in traditional garments from their own countries, reminds me of the Student Night held at ITC, when we introduced the culture of our country through the arts of singing and dancing.

Recalling how we learned about Dutch technological developments and the local culture by joining the monthly excursions arranged by Nuffic really makes me miss the Netherlands. Still, I hope by reading this magazine, I can feel as though I am there and get new updates on the Netherlands and, of course, particularly on ITC.

Thank you and long live the ITC!
Your sincerely
Djoko Santoso
djotos@yahoo.co.id
Bogor, Indonesia, December 2011

The kronkel in front of the ITC building on the Boulevard

Almost 25 years ago Djoko Santoso lived in a "new" building in front of the hospital, near the Schermerhorn Dish Hotel the Stadsweide

UNIVERSITY OF TWENTE.

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