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

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# ITC NEWS

SPECIAL FEATURE  
DEVELOPMENT  
COOPERATION

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## OWN COFFEE LABEL



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## IAMG SEMINAR



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## PHD RESEARCH



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## GREETINGS FROM THE NETHERLANDS



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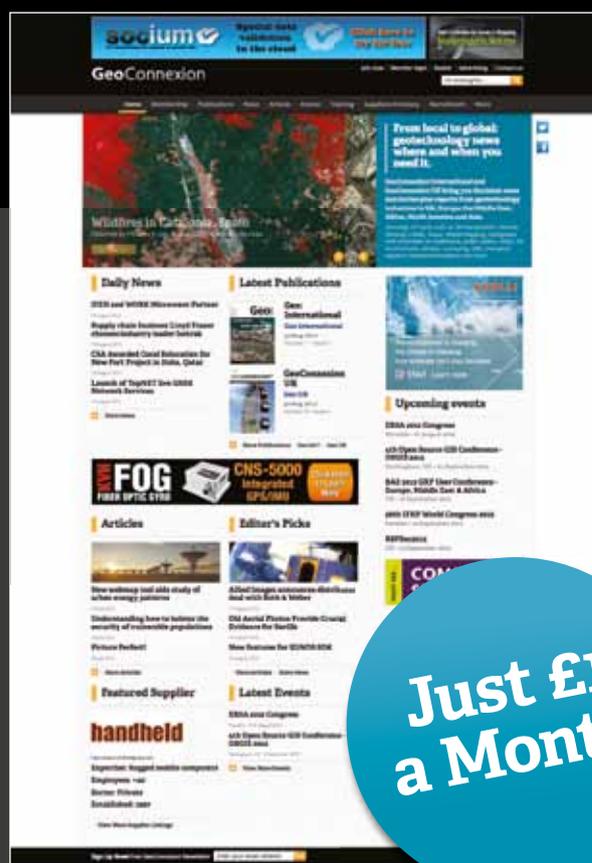


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# INTRODUCTION

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The views expressed by the contributors do not necessarily reflect those of ITC.

A new issue of *ITC News* from a new office on the campus of the University of Twente (see page 21). Yes, there have been some changes here in Enschede – but then change in its various guises is the very lifeblood of this newsletter.

In a special feature on development cooperation, spanning three articles, you can read how satellite communications and modern technology are playing a significant role in changing attitudes and in promoting the proper use and management of natural resources. This is leading to considerable societal benefits in more ways than one ... in terms of agriculture for a start, and coffee cultivation in particular. Page 10 takes a glimpse behind the scenes at the Sakaza Muhinzi project, and we're sure you'll agree there's a great deal more to that morning cup of coffee than meets the eye!

Research is a good signpost to likely paths in the future and this issue contains no less than three reports concerning successful PhD studies. Two relate to the question of sustainable transport (pages 3 and 12) in two very different parts of the world, so a definitely a subject that is high on the international agenda. The third examines GeolCT coordination (defining four characteristics of change in the process) and makes a number of recommendations regarding the handling of geolCT and the sharing of data across and between organizations.

Sadly we have to report the passing of ITC's Honorary Fellow Frederick J. Doyle, an active leader in all facets of the photogrammetric, remote sensing and mapping community. The obituary on page 17 paints a picture of a remarkable man, whose illustrious career and challenging exploits have served and will continue to serve as an inspiration to many.

In April the ITC student chapter of the International Association of Mathematical Geosciences organized the seminar Geostatistics in Practice and was very happy to welcome Dr Pierre Goovaerts as guest speaker on this occasion. A report can be found on page 16, together with an announcement regarding student research grants that you may find of personal interest.

So the wheels within wheels that produce *ITC News* now have a new home base. Nevertheless we are still a mere click away when it comes to future contributions, perhaps concerning change, development and progress in your own particular sphere. And it's a click to connect that we hope you will make!

Virtually yours,  
**Jorien Terlouw**  
*Editor*

# MAIN FEATURES

## Sustainable Transport in Dar-es-Salaam: The Potential for BRT and Cycling from a User Perspective

Alphonse Nkurunziza

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**M**obility in the cities of the developing world is characterized by travel demand that far exceeds travel supply. In this respect African cities such as Dar-es-Salaam are no exception. Demand for urban transport in Dar-es-Salaam has grown steadily over the past decades owing to population increase, whereas supply has been declining, thus creating severe mobility problems. Moreover, the rapidly growing motorized transport combined with population growth triggered by both migration and natural growth has led to severe congestion in the city in recent years, and is threatening its prospects for economic growth.

A large portion of the city population either depends on poor public transit services or has to walk, with no other choices open to them. This has compelled the city residents – in particular those from informal unplanned settlements – to walk long distances to and from their places of work every day and pay higher transport costs. The situation therefore calls for alternative policies, offering affordable and sustainable transport such as bus rapid transit (BRT) and cycling, to improve mobility of the city inhabitants.

Sustainable transport policy can serve as a lever to alleviate poverty, while stimulating economic growth and climate change mitigation, by providing the people with socially equitable and environmentally sound transport alternatives. For such policy development to be effective, efficient and equitable, it is impor-

tant to understand the key factors and motivators that induce people to choose their modes of transport. Such an understanding can enable policies to target specific groups of users more successfully (thus targeting equity), facilitating a more efficient and effective deployment of (scarce) transport resources. Behavioural factors are of particular importance when looking at modal choice, given the multitude and complexity of factors that determine people's preferences for one mode rather than another. These factors are known, for example, to depend strongly on aspects such as location (spatial factors) and traveller characteristics (socio-demographic and travel-pattern-related factors, attitudinal factors and perceptions).



**DR ALPHONSE NKURUNZIZA** successfully defended his thesis on Thursday, 11 April 2013, at the University of Twente. The full text of the thesis can be found at: [www.itc.nl/library/papers\\_2013/phd/nkurunziza.pdf](http://www.itc.nl/library/papers_2013/phd/nkurunziza.pdf)

This PhD research therefore attempted to identify the key spatial factors, attitudinal factors and perceptions that can explain people's preferences for sustainable transport modes such as Bus Rapid Transit (BRT) and cycling. The research also investigated how such factors may vary over space and depend on identifiable groups of individuals, and how changes in behaviour coincide with life events. Finally it was empirically demonstrated how these factors can be used to derive sustainable urban transport policy within the context of an African developing city such as Dar-es-Salaam.

The research has provided a framework for analysing urban public transit systems and their potential for providing and improving service quality as desired by the urban population. The study attempted to spatially analyse the effectiveness of the proposed BRT service by integrating behavioural models into GIS. Using a scenario-based approach, behavioural models from stated choice analysis were integrated into the GIS multimodal network model for spatial analysis of the proposed BRT service quality. To our knowledge this is a novel approach, in particular within the context of integrating random utility models into geospatial models. Linking the derived random utility functions from stated choice modelling to GIS made it possible to spatially analyse the potential user preferences and to identify the preference variation between residential zones.

The research has also demonstrated the utility of the stages-of-change model in providing a way of extracting naturally occurring and relatively homogeneous travel market segments. The model can help to indicate the potential for modal change and to identify how interventions can effectively target individuals who are at

different stages of behavioural readiness. More interesting is the fact that the research tried to integrate the stages-of-change model with the socio-ecological approach which can facilitate a process analysis and guide the modification and improvement of an intervention. For instance, an analysis of the patterns of transition from one stage-of-behaviour change to another can determine if the intervention would be more successful with individuals in one stage than with individuals in another stage. The integrated approach helped to identify key influencing factors which can be considered in preparation for more targeted measures to encourage modal change, while providing an understanding of how progression through the transitional stages of change of travel behaviour would occur among individual commuters. The research provided evidence that different groups of commuters exist and that the modal choice decisions of individual commuters and the potential for modal change within these groups depends on different factors. The research supports the need to develop interventions differently for individuals with different characteristics.

In short the research investigated whether the proposed BRT system will deliver the quality service expected by its potential users. The research also tried to identify those who are likely to take up cycling, and to explain how and why individual commuters vary in their decision to commute by bicycle or not. This knowledge can enable policies to be formulated that improve and promote the use of sustainable travel modes, thus creating a more sustainable, equitable and healthy society in the city of Dar-es-Salaam ■

This research was conducted within the framework of the research theme: *People, Land and Urban Systems (PLUS)*. People, whether as government planners, decision makers, policy makers or citizens, are the primary users and participants in PLUS research. PLUS is concerned with providing government and citizens with appropriate information, participatory tools, and land & urban information systems to manage and develop urban regions and natural resources sustainably. Spatial, environmental, economic, and social *sustainability* and *participation* are central concepts in the PLUS research theme.

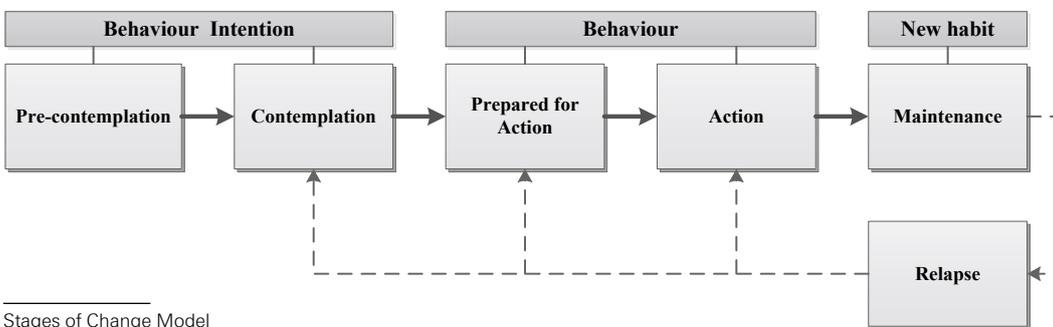
For more information: [www.itc.nl/PLUS](http://www.itc.nl/PLUS)



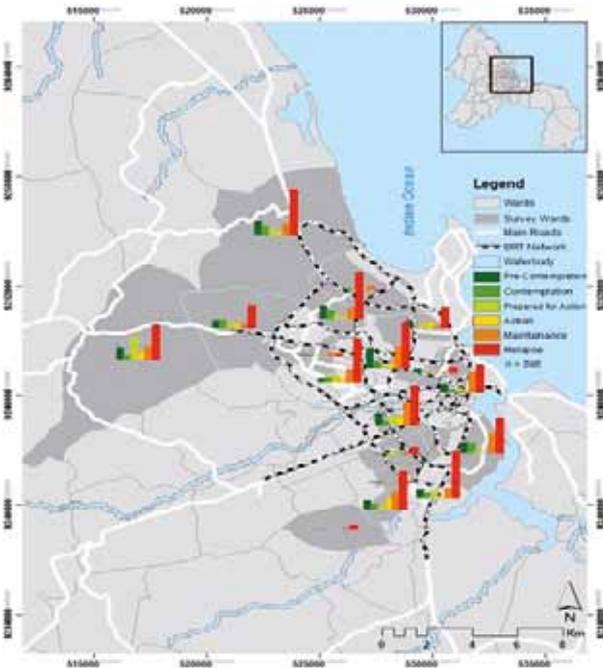
Dr Alphonse Nkurunziza (left) receiving his degree from Prof Martin van Maarseveen



Dr Alphonse Nkuruniza successfully defended his thesis on Thursday, 11 April 2013, at the University of Twente

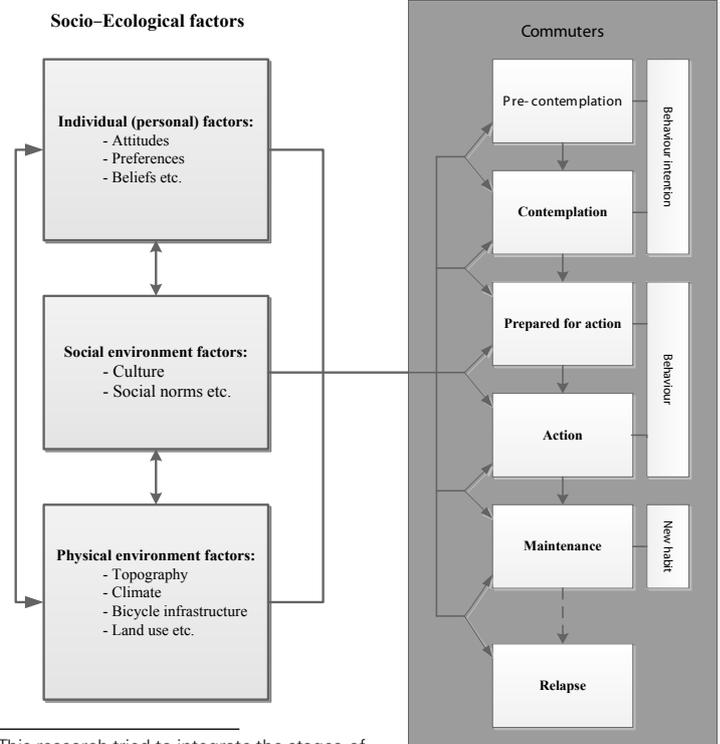


Stages of Change Model



Geographic location of the survey zones in the city of Dar-es-Salaam and the sample distribution in the different zones

Stages of Change Model



This research tried to integrate the stages-of-change model with the socio-ecological approach which can facilitate a process analysis and guide the modification and improvement of an intervention

# GeolCT Uniformity and Flexibility

Walter T. de Vries

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**T**he daily problems in handling geolCT across organizations and in sharing geodata between organizations are often labelled as either institutional or capacity bottlenecks. They are perceived as having no direct relation with the daily work or views of geolCT practitioners. From practice in geolCT projects, however, I had noticed that practitioners often bypass externally defined geolCT requirements, despite the existence of institutional arrangements, mutually agreed geolCT standards, or rules on operational procedures to be shared. Consequently I posited in my research that success or failure in collaborating with geodata is often highly dependent on actions and decisions of particular people.

In other words the discretionary behaviour of geolCT practitioners is what matters, not the institutional or organizational structures. Such behaviour ultimately determines how stable or unstable the collaboration with geolCT is. With that in mind, in my research I zoomed in on the practice of collaborative geolCT projects in the Netherlands and questioned why, when and how the plans of practitioners to collaborate and share geodata (through so-called geolCT coordination requirements) result in their actual collaborating and sharing actions (visible in their discretionary behaviour and in the degree of stability of the collaboration).

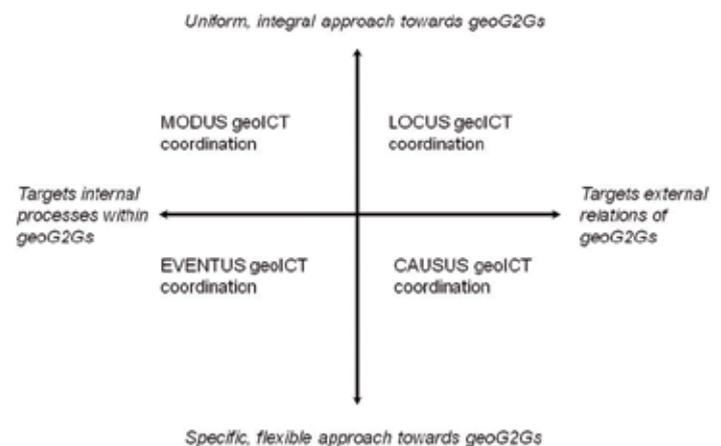
## GeolCT Coordination

“GeolCT coordination” is a comprehensive goal-setting and goal-implementation action to align geolCT choices in work processes across different organizations. Collaborative arrangements with geolCT (labelled as “geoG2Gs”) in the Netherlands exhibit four major forms of inter-agency geolCT coordination (see figure 1), depending on the degree to which standards are detailed and prescribed (hence the variation between uniformity and flexibility) and the degree to which the actions target primarily the back office or the front office of the collaborative organization (internal versus external focus).

LOCUS geolCT coordination aims at uniformity and aligning geolCT across multiple administrative levels, EVENTUS coordinates based on output requirements, MODUS on the use of particular instruments and tools, and CAUSUS based on specific contextual outcomes. This is illustrated below by examples in the Netherlands.

## Discretions

“Discretions” are personal judgments by individual staff members, based on a personal appraisal of what is appropriate given the socio-organizational circumstances and preferences of that particular staff member. Discretions result in a change of organizational behaviour and/or structure, and may thus change the stability of geoG2Gs. Discretions may arise to simplify one’s own tasks and/or to handle ambiguous tasks (“autonomous” discre-

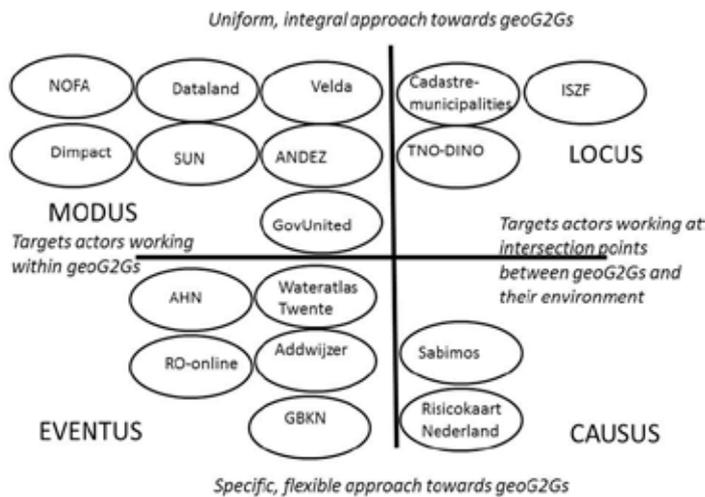


Relation of geolCT coordination types with activities and actors within geoG2Gs

tions), or to cater for the needs of clients and/or other actors external to their organization (“joint” discretions). Both types may occur at strategic, alignment and operational staff levels (hence “strategic”, “alignment” and “operational” discretions). The combination of these two categories leads to six types of discretions that may emerge as a result of the four geolCT coordination types.

## Stability

While public sector cooperative agreements with geolCT are geoG2Gs, the characteristics of such geoG2Gs can be described by “stability elements”: power stability, economic rules stability, conformity stability and collectivity stability. The stability elements power, economic rules, conformity and collectivity are explained by respectively inter-organizational dependencies, anticipated effects on transaction costs, agency of external network relations, and collective interests and collective action. Stability depends on respectively their long-term mutual expectations and associated staff allocations, low transaction cost and effective hierarchies,



Categorization of cases per geoICT coordination type

**WALTER DE VRIES** successfully defended his dissertation *GeoICT Uniformity in Flexibility. Analysis of the Influence of GeoICT Coordination on the Cooperation between Public Organisations with GeoICT at Erasmus University Rotterdam* on 17 May 2013. The full text of the thesis can be found at: [www.itc.nl/library/papers\\_2013/phd/devries.pdf](http://www.itc.nl/library/papers_2013/phd/devries.pdf)

**GeoICT Uniformity in Flexibility**



Analysis of the influence of geoICT coordination on the cooperation between public organisations with geoICT

Walter Timo de Vries

Cover PhD Research

dominance of network agency over personal interests, and a combination of collective interest with collective sanctions and incentives. Furthermore there are four characteristics of change: "change" concerns a fundamental discontinuation of a previously given process and/or organizational structures; "change" has clear artefacts; "change" occurs in a punctuated period; and one can identify a moment at which "fundamental change" occurs. On the basis of these characteristics of change, it is possible to identify how change in each stability element is visible.

### The role of people

From investigating geoICT coordination, discretions and stability, it appeared that the majority of geoICT cases in the Netherlands emphasize uniform geoICT coordination types (e.g. LOCUS). This is indeed effective for technical geoICT integration in the example of prescribing standards for basic registers, but such cases also exhibit the highest degree of discretions. Especially within municipalities such discretions are justified by the argument that they simplify the multitude of tasks they have to execute. Simi-

larly, in certain autonomous public organizations discretions occur in order to decrease their resource dependency. This discretionary behaviour results, however, in conflicts of interests within collaborative arrangements and, as a result, increased (transaction) costs and decreased cohesion. In contrast, in the cases with more flexible forms of geoICT coordination (e.g. CAUSUS) there is less technical integration but lower discretionary behaviour. As a result, the basis for the cooperation is less often contested.

The research derives a number of recommendations for public sector (geo)ICT coordinators. Rigid prescriptions tend to have an adverse effect in the form of discretionary behaviour. Part of this behaviour can be linked to contested values within the professional networks in which the practitioners operate. As a result of these contested values, inter-agency cooperation with geoICT is often more complicated and more costly than foreseen. It is therefore more effective to rely on more flexible forms of coordination, even if this implies more modest ambitions ■

# Development Cooperation

The African continent is facing desertification, flooding and rapid urbanization. In its capacity as education and research institute, ITC is helping Africa to meet these challenges. "And we are using our own expertise," points out Tom Veldkamp, dean of the Faculty of Geo-Information Science and Earth Observation (ITC) of the University of Twente.



## Development Cooperation 2.0

Berend Meijering

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**Satellite** images meticulously register the current ground conditions. As Tom Veldkamp explains, "Such geo-information is vital, especially for countries with substandard infrastructure, which Africa has in abundance.



Tom Veldkamp

Take the risk of flooding: areas 100 times greater than the Netherlands are habitually under water – this is a flood disaster squared! Satellites can show us where the roads are still passable. The rapid collection and dissemination of environmental data is crucial."

### Seedlings

Geographical information systems (GIS) have become indispensable to agriculture. They do more than just monitor the amount of rainfall and the condition of the crops. If a crop has suffered from drought, the insurance agent no longer has to investigate the claim in the field. He can assess, from behind a desk, which farmers will be compensated for their insured seedlings. Governments also benefit from these systems. GIS modelling demonstrates whether foreseeable shortages in one region can be compensated by surpluses elsewhere. Then the domestic redistribution of the food supply is adequate. "It was a big step forward com-

pared with classical development aid," notes Veldkamp. "Then corn, or maize, came from overseas and it lay there rotting, either at the port or in a freight truck."

### Water Consumption

Now to trade and industry. Lake Naivasha in Kenya has a highly variable water level. This is difficult for both fisheries and the wild game, which, after all, also needs to drink. This lake is also a nature reserve. Add to that the export industry, which is expanding operations along the banks: greenhouses are full of roses or green beans heading for the Dutch market – €1 billion in sales, a fantastic amount in Kenya. This creates jobs but it comes at a price: large-scale consumption of a scarce water supply, which is still being contaminated. Veldkamp, "At play here is first and foremost the question of good governance: how can so many different interests be reconciled? Monitoring alone does not help. Institutions need to be created that

inform the population of their plans and scenarios for the future."

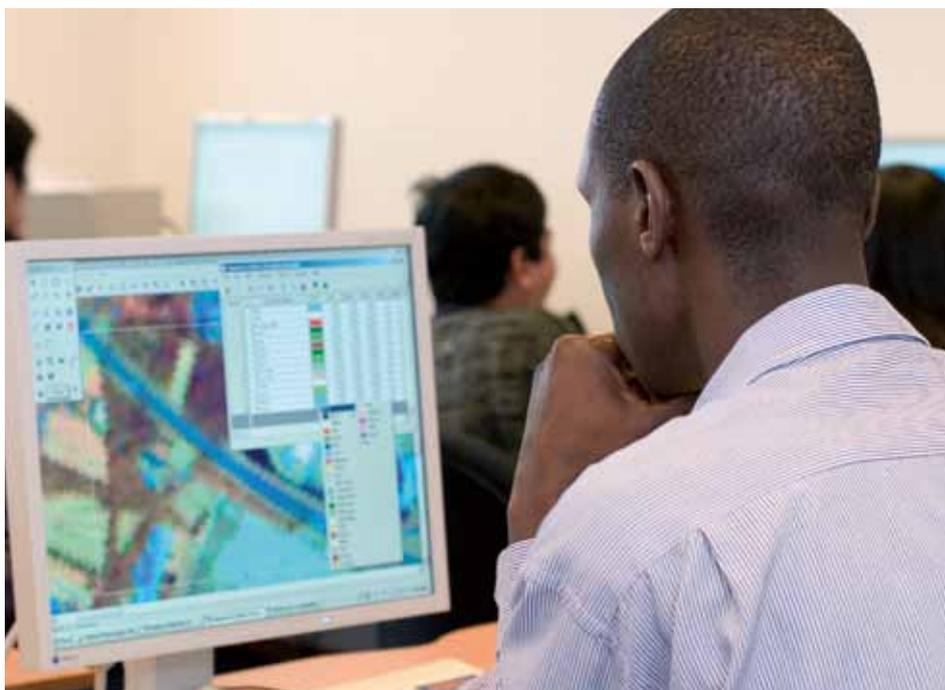
### Slum Formation

Management of natural resources and sustainable land use – these require vision and policy. Africa relies on its middle and senior management to set policy, but the talent pool is insufficient. Which is why, in addition to promoting science and education, ITC has a third mission: training people to become GIS and earth observation experts and users at graduate and postgraduate levels. This capacity building is all the more necessary now that the population is growing as never before. Slums threaten to spring up in the strangest of places, which results in persistent poverty and environmental degradation. Veldkamp: "If we can contribute to structural solutions, we will gladly deploy our expertise. And at no additional charge:



Greenhouses are full of roses or green beans heading for the Dutch market

our information is freely available. What do we get in return? A relevant learning and experimentation space. Sometimes things develop in an African context (mobile payments, for example), and their importance only becomes apparent later in Europe. Knowledge and technology transfer – only in a direction that no one expected!” ■



Training people to become GIS and earth observation experts and users at graduate and postgraduate levels

# Dreaming of Your Own Coffee Label

Berend Meijering

itcnews@itc.nl

**Knowledge** sharing is important to coffee cultivation. The project Sakaza Muhinzi is underway in Rwanda, in the district of Maraba. As ITC researchers Clarisse Kagoyire and Rolf de By explain, “We are working there with dozens of women coffee farmers. Our working hypothesis: as their information position improves, the women farmers can make better estimates and choices about their business activities.”

“Africa and Maraba are experiencing exciting times now that – thanks to satellite communications – a mobile revolution is taking place. The cooperative is better off with a range of services. As regards market prices, they hope for a fairer, thus higher, price for their products. As regards transactions, unlike in Europe, this is done by telephone. And as regards logistics, the supply and transport of agricultural products also proceeds more smoothly. This is how a world is opening up for these women farmers – a world brought within reach through their business phones (soon smartphones), and through the community telecentre, their internet café.”

### Small Plots

“The goal of the cooperative is not to produce more coffee but rather better coffee. They dream of their own label, their “coffee appellation”. We help by unlocking geo-information. Satellite images are becoming better by the day in terms of

spatial resolution, signal resolution and revisit frequency (the time in which images succeed each other). This allows us to make accurate predictions on soil, rainfall, crop growth and disease down to the square kilometre. We provide these data to our women farmers and they report back the particulars of their plots. This feedback loop should refine our models.”

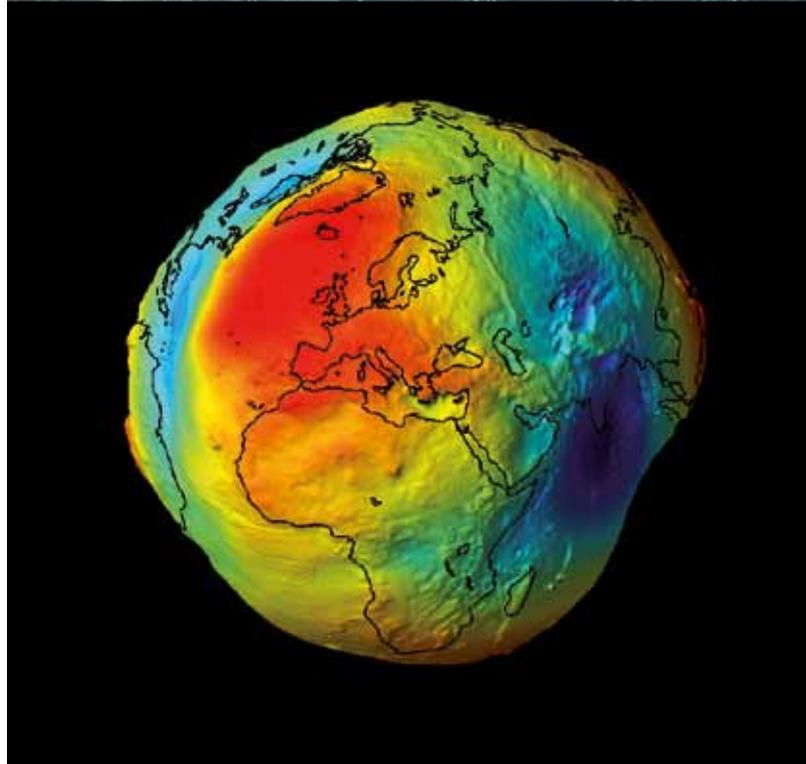
“Sakaza Muhinzi – read *Boer(in), doe aan kennisdeling!* – is a knowledge sharing project for farmers that we hope to expand to larger communities. And let’s not forget the extension workers: they are agricultural knowledge traders who provide information on the long-term plans of the government. If only that group could benefit from our geo-information technology! It would help to advance their knowledge and skills. And when they came to inspect, they would be prepared down to the finest detail for our women coffee farmers” ■



# AGRICAB 10 Times

ITC (UT) is participating in a major project to stimulate satellite use for societal purposes (societal benefits). The project is part of a global initiative of more than 85 countries (Group on Earth Observations).

1. **Project name:** AGRICAB (Agriculture Capacity Building).
2. **Aim (general):** to use earth observation for food supply and food security in Africa. The observation is performed with satellites that either orbit the earth or remain in a geostationary position, such as weather satellites.
3. **Aim (specific):** scientific knowledge development and exchange between Europe and Africa in the field of geo-information for enhanced agriculture and forestry management.
4. **Cost:** €4.1 million, financed under the EU's Seventh Framework Programme.
5. **Partners:** 17 in total, from 12 different countries (10 African, 6 European, 1 South American). In addition to governments, these include agriculture and water research organizations.
6. **Research theme:** accurate spatial information (remote sensing signal processing, analysis and interpretation). This promotes the proper use and management of natural resources (land, water, vegetation). By monitoring changes to the land and water surface over time, it is possible to make predictions about water availability, crop yield, drought risk and area traffic accessibility (test countries: Kenya, Mozambique, Senegal, Niger and Tunisia).
7. **Societal relevance:** the global food and water supply. Africa is an increasingly important player in the global economy and in agriculture.
8. **High Tech:** GEONETCast DVB-S (digital satellite reception) and GNC TOOLBOX (image analysis) have been co-developed by ITC. These technologies are able to monitor large areas in near real-time, that is, using current, continuously-updated satellite images.
9. **Human Touch:** capacity building in Africa, or building a framework for secondary and higher research (at undergraduate and postgraduate levels). The technologies and applications developed by ITC are available to everyone and for general use (free and open-source data access policy).
10. **Websites:** AGRICab-project: [www.Agricab.info](http://www.Agricab.info)  
GEONETCast Toolbox: [www.itc.nl/Pub/WRS/WRS-GEONETCast](http://www.itc.nl/Pub/WRS/WRS-GEONETCast)  
GEO Group on Earth Observations: [www.earthobservations.org](http://www.earthobservations.org)



# RESEARCH NEWS

## Built Form, Travel Behaviour and Low Carbon Development in Ahmedabad, India

Talat Munshi

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**In India there** is wide recognition at national policy level that pollution resulting from transport needs to be contained. One of the measures considered is to formulate built-form policies (concerning land use and other built-up elements in the city) that would encourage individuals to travel less and increase the use of non-motorized transport and public transit modes.

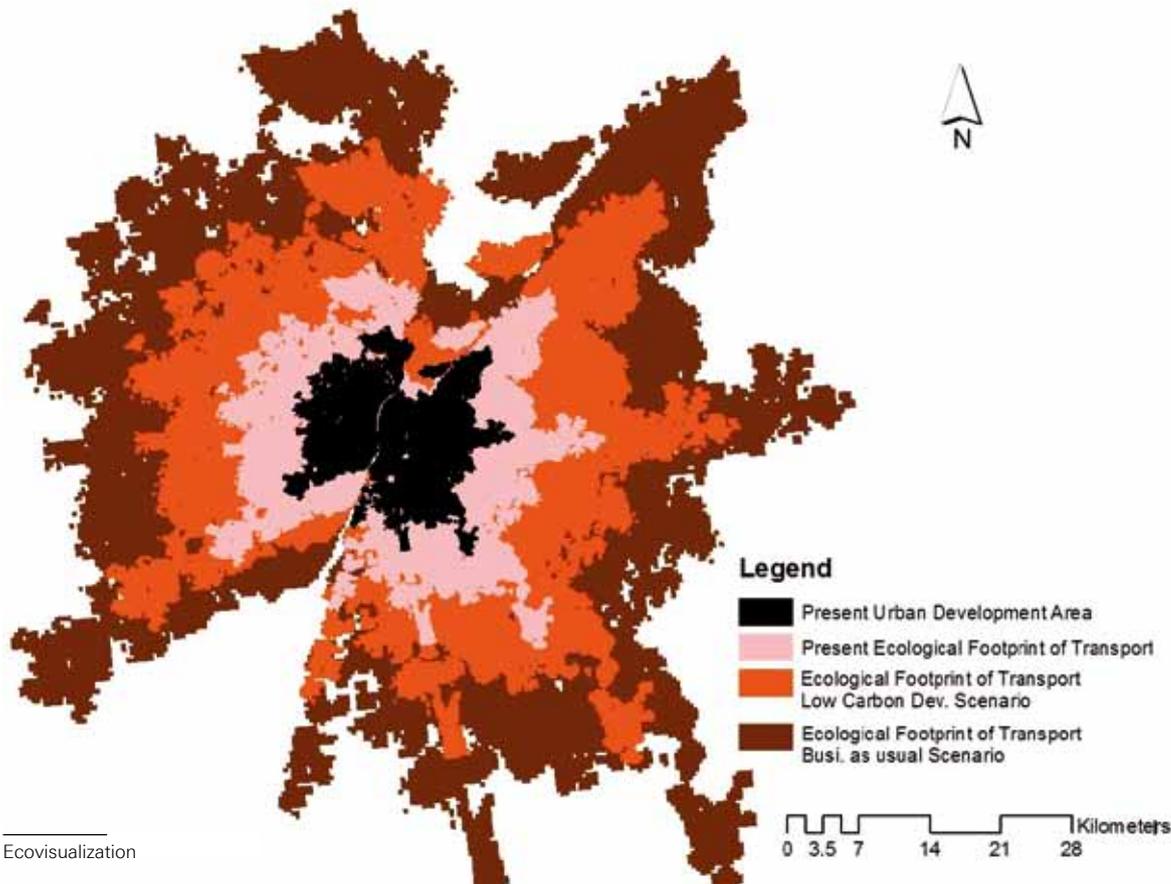
The first major hurdle is lack of empirical evidence on the relation between built form and travel behaviour in Indian cities. Thus there was a need to identify and represent the influence of built form on travel behaviour within the Indian context. From a strategic urban planning perspective, it was important to demonstrate how this relation could be translated into environmental, societal and economic benefits. Therefore the objective of this research was to quantify the relation between built form, transport, and the environmental externalities of transport for a fast-developing metropolitan city in India, and derive urban policy recommendations towards achieving low-carbon development. The initial hypothesis of this research was: *"In rapidly-growing metropolitan cities in India, such as Ahmedabad, future spatial developments in built form are crucial from the perspective of achieving low-carbon transport development."*

"Built form", as a broad concept, implies the spatial pattern or arrangement of individual urban elements such as buildings, streets and land use. Built form is conventionally represented by six groups of indicators, referred to as 6Ds. These are



Dr Talat Munshi.

TALAT MUNSHI successfully defended his thesis on Wednesday 19 June 2013, at the University of Twente. The full text of the thesis can be found at: [www.itc.nl/library/papers\\_2013/phd/munshi.pdf](http://www.itc.nl/library/papers_2013/phd/munshi.pdf)



Ecovisualization

density (representing how intensely the space is being used), diversity (representing the mix of land use), design (representing the design elements of the built form), destination accessibility (representing how far jobs are from a location), distance to transit (transit access), and demand management (representing transport demand management policies). In addition to these 6Ds, employment sub-centres that define macro-level built form can also influence travel patterns, and are therefore considered as an additional indicator representing the influence of the concentration of activities at the trip's final destination. "Transport" was represented as the travel behaviour of residents and is measured as the distances travelled by individuals in a day and the travel modes they prefer to use. Multiple regression models were used to analyse the impact of built form on travel behaviour (travel distance and mode choice). From the relations developed in this study, it was found that the built environment significantly affects travel behaviour of individuals. More mixed and balanced land use and higher densities (population and jobs) significantly reduce the distance that individuals travel and also increase the probability of their choosing

non-motorized travel options. Proximity to public transit stops, higher route density, higher population density and high density of poor residents increase the use of public transit. However, some results conflicted with what is conventionally found: for example, locations with good accessibility to jobs, a good land use balance, and higher density of intersections discouraged the use of the public transit modes.

Overall this study demonstrates the methods that can be used to develop built form and travel behaviour relations, and how to use these relations to prepare low-carbon transport development scenarios for future

urban development in metropolitan cities. In future it should be feasible to conduct similar case studies in additional Indian cities for a meta-analysis that can possibly shed light on policy debates that this study has not been able to cover – for example looking at the influence of good-quality pedestrian and bicycle infrastructure on mode choice, and the relative effectiveness of built-form policies in land use decision making in large urban areas versus small or metropolitan urban areas, comparing one region of India with another ■

This research was conducted within the framework of the research theme: *People, Land and Urban Systems (PLUS)*. People, either as government planners, decision makers, policy makers or citizens, are the primary users and participants in PLUS research. PLUS is concerned with providing government and citizens with appropriate information, participatory tools, and land and urban information systems to manage and develop urban regions and natural resources sustainably. Spatial, environmental, economic, and social *sustainability* and *participation* are central concepts in the PLUS research theme.

For more information: [www.itc.nl/PLUS](http://www.itc.nl/PLUS)

# P PROJECT NEWS

## Capacity Development for the Zambian Department of Water

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**ITC is the** lead member of the TIGER Capacity Building Facility Consortium ([www.itc.nl/tiger](http://www.itc.nl/tiger)), under the TIGER Initiative, which is an important contribution of the European Space Agency to GEOSS (<http://www.earthobservations.org/geoss.shtml>). The consortium organizes capacity building actions in many forms, including tailored short courses. Based on the good experiences we gained on the 5th TIGER training course in November 2012, the 7th training course was organized from 13 to 24 May 2013 in Lusaka, Zambia, in cooperation with the World Bank.

Dr Rogier van der Velde and Dr Zoltán Vekerdy from ITC, and Frank Annor and Dirk Eilander from the Delft University of Technology trained a total of 28 professionals from the Department of Water Affairs: 16 from 11 different regional offices and 12 from Lusaka. The programme was tailored for practitioners of water resources management, with a focus on small reservoir mapping. In the first days lectures presented the theoretical background to earth observation, especially microwave techniques with emphasis on SAR. The follow-

ing hands-on exercises covered (i) accessing both optical (Landsat) and SAR (Envisat) satellite data, (ii) fieldwork to obtain outline and bathymetry data from small water bodies, (iii) SAR and optical data processing, and (iv) small water body base map preparation using optical images and monitoring based on SAR data. But maybe the highlight of the course was the fieldwork, where the participants measured the perimeter and the water depth of two small reservoirs in detail, providing data for the mapping exercises.

The two-week course was very well received. There was a very pleasant atmosphere during the lectures and exercises, and the motivation of the participants was particularly encouraging to the lecturers, providing an efficient setting for the training session. The evaluation forms completed at the end proved that all (100%) of the course participants found the course valuable and expected to apply the learned techniques in their professional life.

As a follow-up, plans were formulated for making a base map of small water bodies at a provincial level and linking the base map to information about small water bodies that already exists at the water rights department.

Based on the evaluation and the feedback session, a list of requested topics was formulated for further training sessions planned within the cooperation between the World Bank and the TIGER CBF. The plans relate to another five training sessions as part of the World Bank-supported improvement of the Zambian water sector. This series is just being negotiated and we hope that it will be a landmark in the cooperation between the European Space Agency and the World Bank. ITC is looking forward to this opportunity ■



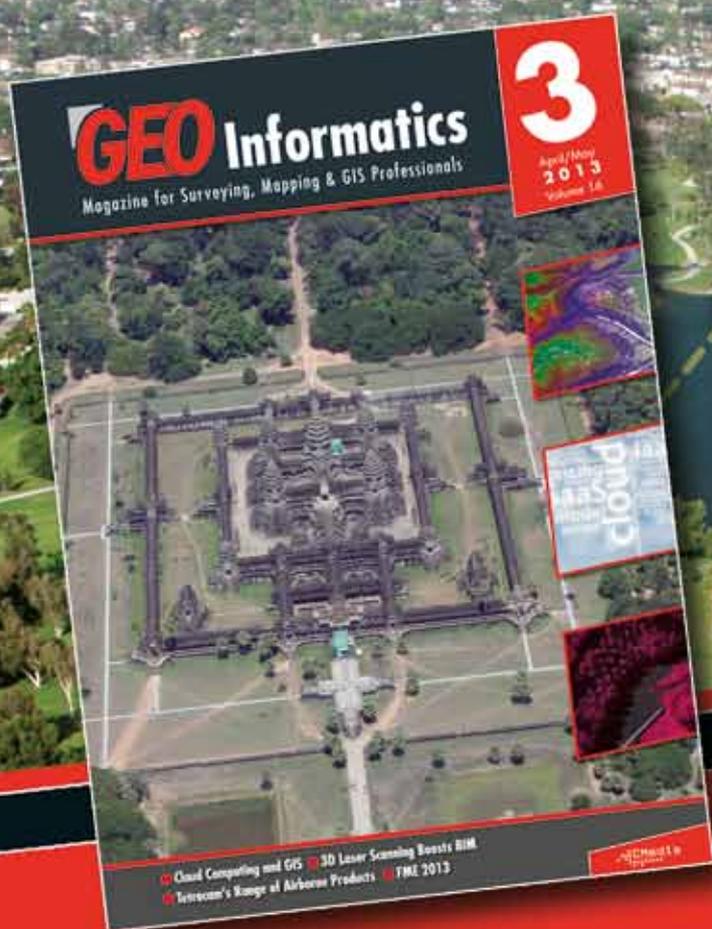
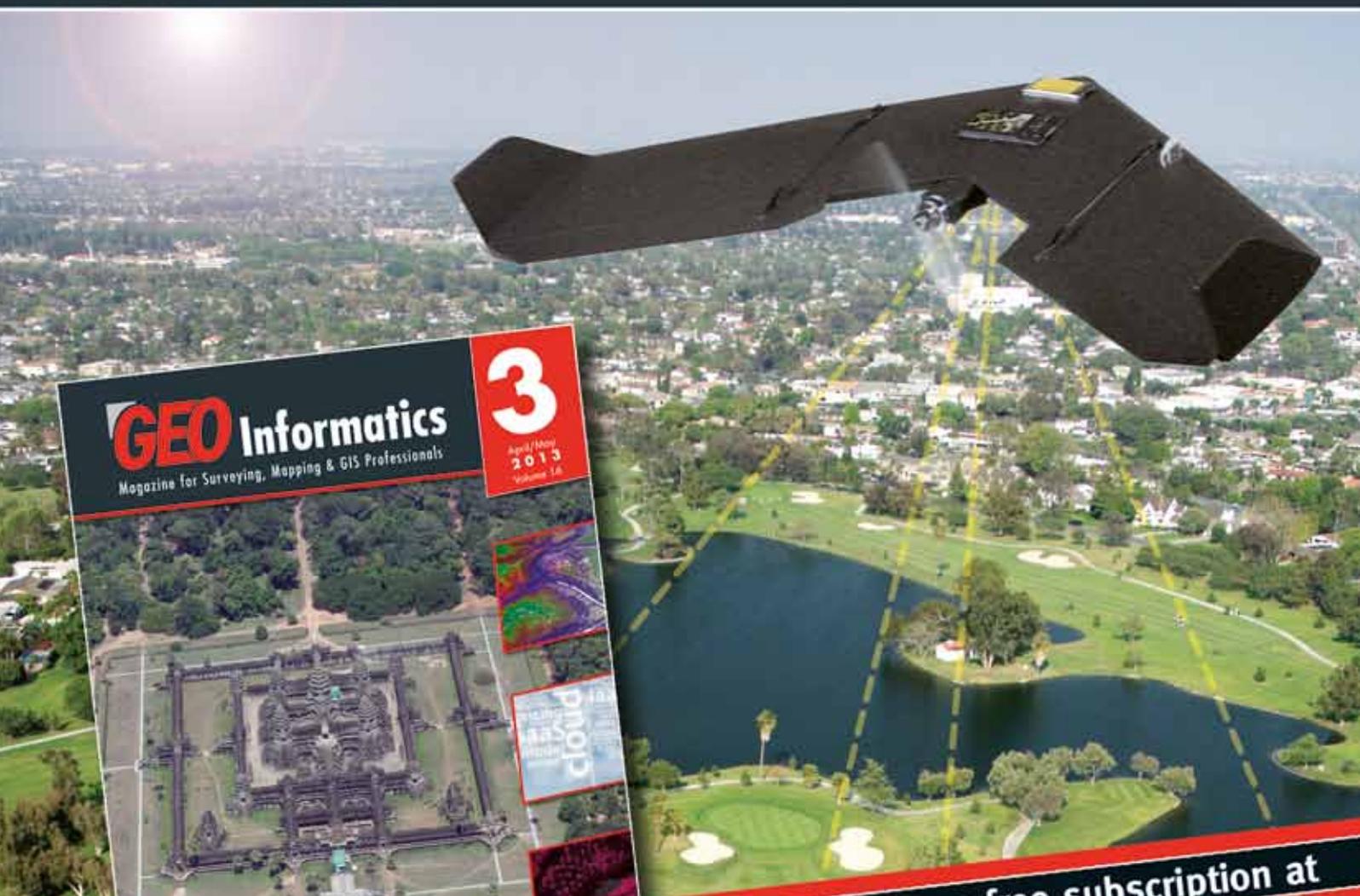
The completion of the second day in the field was celebrated with a group photo

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# ANNOUNCEMENT

## IAMG Student Chapter Organizes Seminar on Geostatistics in Practice

Sanaz Salati

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On 16 April 2013 the IAMG (International Association of Mathematical Geosciences) student chapter at ITC organized a seminar entitled "Geostatistics in Practice". The seminar was given by Dr Pierre Goovaerts, the IAMG Distinguished Lecturer for 2013.

Dr Goovaerts is the chief scientist at Biomedware in Ann Arbor, Michigan, and has 20 years' experience in the development and implementation of geostatistical algorithms. He has authored 130 papers in the field of geostatistics and is the author of the 1997 textbook *Geostatistics for Natural Resources Evaluation*. The chapter hosted about 30 staff members and graduate students. The purpose of the seminar was to gain better understanding of the implementation of geostatistical methods in the earth sciences.

The seminar was opened by Professor Alfred Stein, seminar chair, and Dr Goovaerts presented the development and implementation of geostatistical methods for the mapping of soil heavy metal concentrations, the prediction of groundwater arsenic concentrations, the computation of volumes of contaminated sediments, the mapping of prostate and breast cancer risks, and the modelling of the spatial density of wild animals in a national park. Those who are interested in the subject can find a PDF file of Dr Goovaerts' talk on the website of the ITC IAMG student chapter: <https://sites.google.com/site/isciatitc/home> ■



### ANNOUNCEMENT

The IAMG calls for applications for the IAMG student research grants. They are intended to support the research of PhD and master students in the mathematical geosciences that will be worthy of publication in one of the IAMG journals:

- *Computers & Geosciences Research Scholarships*
- *Mathematical Geosciences Student Awards*
- *Natural Resources Research Student Awards*

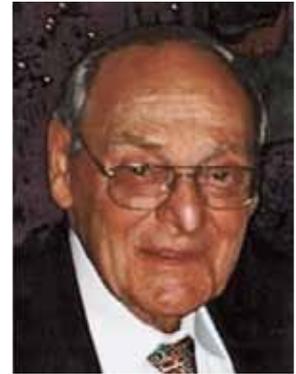
Official guidelines and the online application form can be found at: <http://iamg.org/index.php/publisher/articleview/frmArticleID/152/>

# ITC's Honorary Fellow Fred Doyle (1920-2013)

Martien Molenaar

m.molenaar@utwente.nl

**ITC's Honorary Fellow** Frederick J. Doyle passed away peacefully on 17 April 2013 from congestive heart failure at his home in McLean, Virginia. He was a member of the first group of five students studying at ITC in 1951 and remained a strong supporter and ambassador of ITC throughout his active life. For his great services to ITC and the Photogrammetric and Remote Sensing community he was made honorary fellow of ITC in December 1986.



ITC's Honorary Fellow Fred Doyle (1920-2013)

Fred Doyle was born on 3 April 1920 in Oak Park, Illinois, and graduated from high school there in 1937. He joined the US Army in 1943 and served until 1948. His career began during World War II with an Army Air Forces unit on Guam, where he prepared target approach and damage assessment charts for B-29 bombing raids. He then attended Engineer Officer Candidate School and was assigned as the first junior officer in the founding cadre for the Inter-American Geodetic Survey in Panama, tasked with extending the North American Datum through Central and South America. That assignment ended with a disastrous plane crash in 1946 in the Andes Mountains between Chile and Argentina. As one of two survivors of the crash, he waited for 12 hours on a mountaintop before a rescue party could reach him, and he was carried down the mountain, having suffered a broken femur and other injuries.

After being hospitalized for 18 months, he entered Syracuse University, where he graduated *summa cum laude* with a Civil Engineering BS degree in 1951. He then studied for a year on a Fulbright fellowship at the International Training Centre for Aerial Survey (ITC) in Delft, Netherlands, where he was the first student under Rector Willem Schermerhorn. During that year he had the opportunity to visit the national mapping organizations in Belgium, France, Germany, Switzerland, Italy and Austria, as well as the principal makers of photogrammetric instruments at SOM in France, Zeiss in Germany, OMI Nistri and Galileo in Italy, and Kern and Wild in Switzerland. At the Wild factory he developed the calibration procedure for the new Wild A-8 stereoplotting instrument. He then went on to the Mapping & Charting Research Laboratory at Ohio State, conducting research projects and classes for the Reconnaissance Laboratory at Wright Patterson Air Force Base. He was leader of US Air Force expeditions to observe solar eclipses in Labrador in 1954 and Vietnam in 1955. In 1954 he was appointed Associate Professor of Photogrammetry of the faculty at Ohio State University and later became the first chairman of a new department of Geodetic Sciences.

In 1960 he moved his family to the Washington, D.C. area and became chief scientist for Raytheon Autometric Company, performing research on classified satellite reconnaissance systems for government agencies. In 1967 Fred joined the US Geological

Survey (USGS), where he served as senior advisor for cartography at the National Mapping Division, planning, directing and performing research on aircraft and space sensors and ground processing systems for the US National Mapping Program. In 1969 he was asked to serve as chairperson of the Apollo Orbital Science Photographic Team, which developed, planned and directed all the orbital mapping cameras used to photograph and map the lunar surface for the Apollo missions 13 through 17. Fred was principal investigator on the Landsat satellites and Skylab. In 1971 he was recipient of a NASA Exceptional Scientific Achievement Medal for the development of the Apollo Orbital Photographic System. He also directed photographic projects on Mariner and Viking missions to Mars, Venus and Mercury. He was the primary advocate and lead scientist in promoting the development and fielding by NASA of the large format camera which was flown October 1984 in the space shuttle Challenger.

Fred Doyle was an active leader in all facets of the photogrammetric, remote sensing and mapping community. He had a very illustrious professional career in our sciences and technologies as a professor, research scientist and scientific advisor. In addition to his scientific prowess, he also exhibited great masterful leadership and diplomacy in the national and international scientific arena. He served as ASPRS president in 1969, as ISPRS Secretary General from 1976 to 1980, and as ISPRS president from 1980 to 1984. Because of his great services to the organization, he was awarded honorary membership of ISPRS in 1984.

He was most instrumental in leading the International Society for Photogrammetry to embrace Remote Sensing in its name. Similarly he artfully and tactfully led the ISPRS to become the first international society to resolve and welcome Ordinary Membership to both Beijing and Taipei, which became the model for the International Council for Scientific Unions (ICSU). His command of the English language was excellent and served him well in the complete rewrite of the society's Statutes & Bylaws as well as his representation of ISPRS to the United Nations and the international scientific community. ■

Source: [www.isprs.org](http://www.isprs.org)

# International Food Festival

**Appetizing dishes were** prepared by ITC students from all over the world. All country representatives had food stalls encircling the garden outside the restaurant where the event was held. It gave ITC students and staff the opportunity to explore international cuisine and experience foreign cultures under a single roof – no travelling required! ■





# MY TOUCH GIVING OMAN BETTER MAPS WITH GIS AND REMOTE SENSING



MOHAMMED AL FARSI,  
MASTER'S STUDENT GEO-INFORMATION SCIENCE AND EARTH OBSERVATION AT ITC

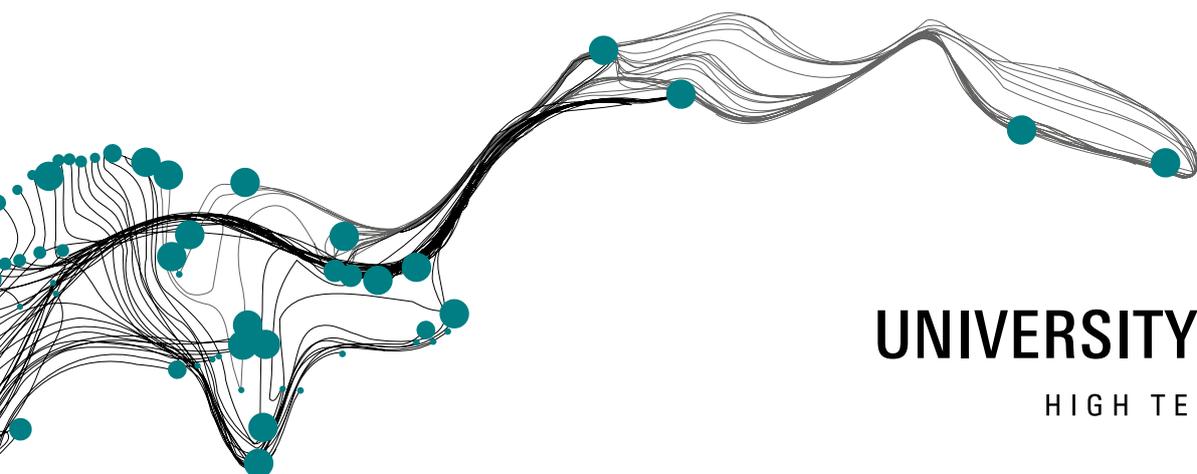
'I'm an officer with the Cartography Department of Oman's Royal Navy. I came to ITC in 2012 to learn about the latest techniques and developments in geo-information systems and map structures. My aim is to go back and produce better maps. I came here because of ITC's excellent global reputation. Also, studying here is a great way of building up an international network.'

As Mohammed Al Farsi has discovered, the faculty of Geo-Information Science and Earth Observation (ITC) of the University of Twente in Enschede, the Netherlands, is one of the world's foremost education and research establishments in the field of geo-information science and earth observation. We offer a wide range of the world's best degree courses in the following fields:

- APPLIED EARTH SCIENCES
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**UNIVERSITY OF TWENTE.**

HIGH TECH HUMAN TOUCH

# Greetings from...

NAME:

## Jorien Terlouw

JOB DESCRIPTION:

ITC Alumni Coordinator

ACTIVITIES:

Providing on-going services and benefits to support the alumni community in developing and strengthening their production, teaching and management capabilities.



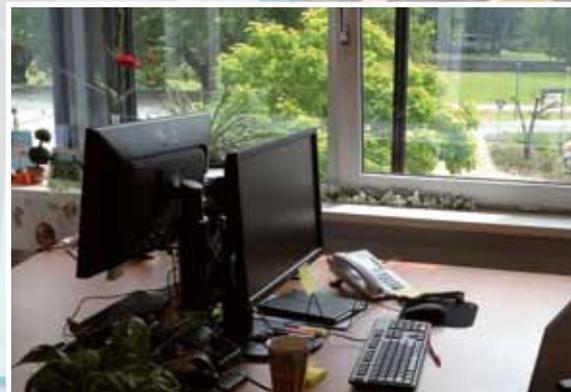
It may be one, ten or even 60 years since you left, but you as ITC's former student still have a strong bond with ITC and friends from your student days. ITC alumni belong to a worldwide community of over 20,000 individuals, who together form an extensive network of international contacts, a network that includes United Nations organizations, universities, research groups, resources survey and map production services, and various international professional associations.

At the moment the ITC Alumni Office offers a wide range of products and services to alumni worldwide. Reading this, you are aware of the *ITC News* magazine, which four times a year is a challenge to compose but a masterpiece to read. The *ITC Update* (digital newsletter) is available for those who need their monthly dose of ITC.



The younger generation (or those who are still young at heart) can follow us on Facebook, Twitter and LinkedIn. News, events, vacancies or social announcements are shared by staff, students and alumni. Different blogs are also available on our website, where you can follow, for example, Professor Victor Jetten, who will be blogging about openLISEM (<http://blogs.itc.nl/lisem/>), or the ITC Library (<http://blogs.itc.nl/itc-library/>). As alumni coordinator, it is my responsibility to make sure news of all the latest developments at ITC and in the alumni community reaches you.

A new challenge lies ahead of us. In view of the internal changes, the decreasing availability of scholarships, and the changing political climate in the Netherlands regarding development assistance, we as Faculty ITC need to take a good look to see what we can do in the future to build an even stronger international network. As from July I will be working from my new office on the campus of the University of Twente. For the ITC alumni community, this means that I will have an even larger international network as I will be working together with the UT alumni office. We will have more knowledge fields within our reach and we as a whole can profit from this development. Hopefully I can count on you to keep in touch with us and with your fellow ITC and/or UT alumni so we will grow and create an even stronger community of professionals! ■



# LIFE AFTER ITC

## Indonesian Students Prepared for the Netherlands

Neso Indonesia

info@nesoindonesia.or.id

**Around 300 Indonesian** students gathered at the Erasmus Huis in Jakarta for the annual pre-departure briefing organized by Nuffic Neso Indonesia. They will study in the Netherlands from September onwards. The Netherlands boasts a world-class higher education system, with 12 of its universities represented in the top 200 of the Times World University Ranking. The Dutch excel in the academic fields of business, economics, science, engineering and law, and also offer more specialized options in, for example, water management and food technology.

More students than in previous years were present, indicating a growing interest in the Netherlands as a study-abroad destination for Indonesians. Dutch Ambassador Tjeerd F. De Zwaan and Ahmad Firdaus Sukmono, director of Export of Agricultural and Forestry Products of the Ministry of Trade, were the keynote speakers. In an informal and relaxed way – including an interactive quiz and a play performed by alumni – the future students were informed about Dutch culture and received practical information in preparation for their stay in the Netherlands. Staff from the Erasmus Taal Centrum gave a crash course in “Dutch for beginners”. Indonesian alumni of Dutch higher education institutes shared their experiences and practical information with their successors.

In his speech Ambassador De Zwaan said to the students: “It is important to establish friendships with students at your university and exchange views with them. Explain to them your language, culture, and the Indonesian cuisine, and at the same time find out how they live. That will broaden their outlook and also assist you in understanding more about our way of life. And when you go home you will be able to share these experiences with your family and friends. When in the Netherlands you will be ambassadors for your country, and when you return home you can be ambassadors for the Netherlands.”

In his welcome address Mervin Bakker, director of Nuffic Neso Indonesia, laid emphasis on the high-quality education the Indonesian students would receive in the Netherlands. He also paid

attention to the unique characteristics of the Dutch academic experience, saying: “At your higher education institution in the Netherlands you will also get in touch with the creative and



Around 300 Indonesian students gathered at the Erasmus Huis in Jakarta for the annual pre-departure briefing organized by Nuffic Neso Indonesia

pioneering Dutch spirit. Universities in the Netherlands are focused on innovation and professors are determined to train the problem-solving attitude of students. This means that there is a lot of room for ideas and questions in the classroom that will help you in further developing as a person and as a professional” ■

# Successful Launch of Guangdong Alumni Chapter

NANC

nanc@nesochina.org

The previous alumni event in Guangzhou in March 2013 made it clear that there was an increasing demand for an alumni chapter in the Guangdong region. The Guangdong Alumni Chapter has now been set up and was officially launched on 29 June.

In cooperation with the Consulate General of the Kingdom of the Netherlands in Guangzhou, the Netherlands Alumni Network in China (NANC) held a special reception on 29 June in Guangzhou to launch the Guangdong Chapter. The event was held at the consulate premises and 38 participants attended, including Netherlands alumni, consulate officers and Neso China staff. Seven selected members of the NANC Guangdong Alumni Chapter Committee were introduced to the Dutch consulate, business contacts and alumni. The chapter committee members were selected based on their academic backgrounds, professional fields and their enthusiasm.

## Connections

The dual purpose of establishing this chapter is to reach out to Netherlands alumni in the Guangdong region so they can become reacquainted with one another, and to intensify connections with the consulate in Guangzhou and with local business sectors.

## Programme

The event was kicked off by Ms Maggie Tan, the NANC alumni officer at Neso China. She introduced the structure of NANC and its alumni chapters and shared some typically Dutch photos to refresh alumni memories of their time in the Netherlands. Mr Filip Lauwerysen, coordinator of the Economic & Commercial Department of the Consulate General, then gave a speech of welcome. After this Mr Marrik Bellen, director of Neso China, presented an update on the latest developments of the alumni network in China and officially opened the event.

## Alumni Ambassadors

The committee members were introduced during the award ceremony and each member received a certificate from the consulate officers and the Neso China director. The committee members will now be the link for alumni in the Guangdong region and play an important role as Sino-Dutch ambassadors. The committee also asked alumni for feedback on the possible services and activities of this chapter.

## Significant Role

The Guangdong alumni are very enthusiastic about the establishment of this chapter

and the committee has already started planning the next event. The chapter will certainly play a significant role as a chapter "for alumni by alumni". Neso China and the Consulate General in Guangzhou will combine forces to support the chapter's activities in the future.

## Word of Thanks

We would like to especially thank the Dutch Consulate General in Guangzhou for its hospitality and wholehearted support in coordinating this event ■



Guangdong Alumni Chapter Committee group photo



Mr. Marrik Bellen-Director of Neso China



Mr. Filip Lauwerysen-Coordinator of Economic department in Dutch Consulate General in Guangzhou

# Career Perspective for Thai Alumni in Thai-Dutch Companies

Neso Thailand

[pdahlan@nesothailand.org](mailto:pdahlan@nesothailand.org)

**On 20 June** 2013 Nuffic Neso Thailand and the Embassy of the Kingdom of the Netherlands, in collaboration with the Netherlands Thai Chamber of Commerce and the Netherlands Alumni Association Thailand, organized a networking event at the Netherlands Residence for young Netherlands alumni in Thailand who are seeking new challenges.

Various business contacts were invited to this event and representatives from companies such as Unilever, Mazars and Faber Flagg gave presentations. Over 60 participants attended this successful event, which provided a great platform for Netherlands alumni and business contacts to get to know one another and exchange some useful information.

The president of TSAN (Thai Students Association Netherlands) also attended the event, introducing TSAN to business contacts and others. Furthermore a young successful Netherlands alumnus shared his experiences on how to set up your own business and explained his key to success ■



A young successful Netherlands alumnus shared his experiences

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