## Contents

<table>
<thead>
<tr>
<th>Section</th>
<th>Page</th>
</tr>
</thead>
<tbody>
<tr>
<td>About the AC21 International Forum 2014</td>
<td>1</td>
</tr>
<tr>
<td>About the Academic Consortium for the 21st Century (AC21)</td>
<td>2</td>
</tr>
<tr>
<td>About Stellenbosch University</td>
<td>3</td>
</tr>
<tr>
<td>Programme of the AC21 International Forum 2014</td>
<td>4</td>
</tr>
<tr>
<td>Speaker Profiles</td>
<td></td>
</tr>
<tr>
<td>Opening Remarks and Welcoming</td>
<td>7</td>
</tr>
<tr>
<td>Keynote Addresses</td>
<td>8</td>
</tr>
<tr>
<td>AC21 International Forum 2014 in Photos</td>
<td>10</td>
</tr>
<tr>
<td>Forum Sessions: Abstracts</td>
<td></td>
</tr>
<tr>
<td>Joint Sessions, Panels and Parallel Sessions</td>
<td>12</td>
</tr>
<tr>
<td>Media from the AC21 International Forum 2014</td>
<td>18</td>
</tr>
<tr>
<td>Delegates attending the AC21 International Forum 2014</td>
<td>20</td>
</tr>
</tbody>
</table>
Science for Society: Higher Education as Builder of Hope
7th AC21 International Forum 2014

The 21st century is an opportune time for humanity to overcome its divisions by focusing less on the things that divide us and more on our commonalities. And this network of ours can play a key role in this with its stated goals of promoting “mutual understanding”, encouraging “shared values”, and generating the knowledge required to “improve quality of life” for everyone in society.

Prof Russel Botman, late Rector and Vice-Chancellor of Stellenbosch University at the opening of the 7th AC21 International Forum in Stellenbosch, South Africa.

The 4-day International Forum explored the successes and challenges facing higher education in the 21st century within the broader theme “Science for Society: Higher Education as Builder of Hope”. Considering “hope” as a substantial directive in Higher Education, the late Prof Botman presented the opening keynote address: Universities produce knowledge for the public good – through research addressing urgent needs, and by delivering graduates able to participate fully in the global knowledge economy. Hope in a Higher Education context becomes a radical concept, transforming the world through knowledge.

This notion of transforming the world through knowledge was carried through by the Forum’s five keynote speakers. Prof Dr Hans Schiewer, Rector of the University of Freiburg in Germany, shared the university’s approach to environmental sustainability; considering how postgraduate research projects, teaching and training models, faculty organisation and university management can promote sustainability within the institution but also in the world.

Mr Ghaleeb Jeppie, Chief Director: International Relations at the Department of Higher Education and Training, shared his insight and vision of an Internationalisation Strategy for South African Higher Education. Prof Pascale Quester from the University of Adelaide shared the concept of co-creation where university management and the student body work together to improve university structures, services and use of campus space. The closing keynote address was delivered by Prof Arnold Van Zyl, Rector of the host institution of the 2016 AC21 International Forum, Chemnitz University of Technology. According to Prof van Zyl, universities have an important role to play in the innovation chain and their continued relevance as innovation ecosystems requires balance between teaching, research and engagement.

The 2014 International Forum also provided platforms for joint and parallel sessions as well as panel discussions. The joint sessions focused on African scholarship: the role of foreign-trained PhDs in the developing world, the participation of African scholars in major global research labs, and the PANGeA network as an example of how Stellenbosch University in South Africa fosters excellence in African scholarship.

Speakers deliberated on a wide range of themes during parallel-presented sessions. On the 14th April, delegates were able to attend sessions that considered how Higher Education Institutions (HEIs) build curricula for community engagement, or how study-abroad and other international academic mobility programmes can build bridges between divergent communities. On the 15th April, the parallel sessions explored the role of higher education in competitive industries as well as the role of technological advances and simulations in disaster management and climate change.

The broad International Forum theme also allowed for exploration of several subthemes and added a unique African characteristic and relevance, in particular during the panel discussion in which four African HEIs participated. An interactive platform was created: panelists deliberated on the barriers that African universities in particular are facing today: different languages owing to the colonial legacy and multitude of indigenous groups, university infrastructure and policy as well as governmental challenges and the high cost of travelling in Africa.

Collaboration among HEIs, not just in Africa but around the world, is necessary in response to societal need. The idea of collective impact, according to Prof Botman, “recognises that social problems have multiple causes – and multiple solutions – and that these are interrelated and interdependent. They cannot be addressed by uncoordinated actions among isolated organisations.”
About the Academic Consortium for the 21st Century (AC21)

The Academic Consortium for the 21st Century (AC21) was established on June 24, 2002 at the International Forum 2002 hosted by Nagoya University, Japan, as an international network comprised of educational, research and industrial organizations throughout the world. The Forum brought together the presidents and high-ranking delegations from twenty-four of the world’s leading education and research institutions, and resulted in the founding of a new and vigorous global partnership in higher education, “Academic Consortium AC21”.

The principal theme of the inaugural forum, “The Role of Universities in the 21st Century”, continues to guide AC21’s activities to this day. In an era of continuous change, we believe that institutions of higher education must take the initiative in responding to the rapidly transforming needs of society, and that an international university network, with its common pool of knowledge, expertise and experience, comprises the optimum means to accomplish this. As demonstrated by the scale of our projects and activities, AC21 is firmly committed to contributing to the global knowledge sector.

The vision of AC21 is the promoting of cooperation in education and research between members, the bridging between different societies in the world and the delivering of wisdom to all people to mutually understand and share values, knowledge and cultures necessary to improve quality of life and to foster co-existence beyond national and regional boundaries in the 21st century.

AC21 Member Universities at the Time of International Forum 2014

- University of Adelaide (Australia)
- Huazhong University of Science and Technology (China)
- Jilin University (China)
- Northeastern University (China)
- Peking University (China)
- Shanghai Jiao Tong University (China)
- Tongji University (China)
- University of Strasbourg (France)
- Chemnitz University of Technology (Germany)
- University of Freiburg (Germany)
- Gadjah Mada University (Indonesia)
- Nagoya University (Japan)
- National University of Laos (Lao Peoples Democratic Republic)
- Stellenbosch University (South Africa)
- Chulalongkorn University (Thailand)
- Kasetsart University (Thailand)
- North Carolina State University (USA)
- University of Minnesota (USA)
Stellenbosch University – Sharing expertises and facilities to co-create Africa’s next generation of researchers

Stellenbosch University (SU) recognises the importance of research, development and innovation for Africa’s future and is an active partner in developing human capital on the continent. With a high concentration of South African Research Chairs who are all leaders in their field, its national Centres of Excellence and a highly productive research corps supported by state-of-the-art research facilities, SU provides an excellent platform for training the continent’s next generation of researchers.

As an African university, ranked amongst the best in the world, SU offers affordable high quality research skills training for prospective and enrolled PhD candidates. Stellenbosch University has increased the number of doctoral degrees awarded by 112% since 2002, with a total of 340 awarded in 2013. We also have one of the highest numbers of postdoctoral fellowship cohort in South Africa, with a total of approximately 198 active postdocs in 2014.

EDUCATING THE THINKERS OF THE FUTURE

In a continuous endeavour to promote postgraduate success and produce high quality doctors the African Doctoral Academy (ADA) at SU supports, strengthens and advances research in emerging and established scholarship. The ADA offers high quality research training and support to current and prospective doctoral students in all fields of study through bi-annual summer/winter schools. In the ADA’s programme, Stellenbosch University may enroll for these schools; in future the ADA will also co-present component of its programme with partner universities in Uganda and Ghana. Topics covered in these schools include key research competencies, research methodology and design, and training in doctoral supervision.

In support of deeper scientific engagement on the continent, SU has signed bilateral agreements in Africa with 14 higher education institutions (HEIs). For students and staff of these universities, these agreements enable exchange programmes, full-degree programmes and staff development opportunities. In managing its multi-layered networks, the university nurtures academic partnerships with universities in Ghana and MALAWI. Partnerships in the fields of Disaster Risk Management and reduction have little precedent in Africa’s development, disaster risk management and reduction has little precedent in terms of disaster risk education, namely pro-active approaches to advancing risk scholarship on the continent. Periperi U also have one of the highest numbers of pro-active approaches to advancing risk scholarship on the continent.

As a collaborative network of leading universities in Anglophone, Francophone and Lusophone Africa, regenerating the continent’s intellectual networks, these programmes help to enhance the diversity of Africa’s intellectual resources, stem the brain drain from Africa and aim to harness the continent’s massive capacity for social growth potential in coming decades.

AFRICAN EXPERTISE FOR AFRICAN CHALLENGES

The Partnership for Africa’s Next Generation of Academics (PANGeA), a collaborative network of leading African universities developing research capacity in the arts, humanities and social sciences. It also believes in bringing African expertise to Africa’s challenges through the development of collaborative doctoral programmes. The partnership includes the universities of Stellenbosch, Makerere, Botswana, Nsob, Dares Salaam, Ghana and Malawi and is expanding into Francophone Africa with the potential inclusion of the universities of Yaoundé I and Cheikh Anta Diop. PANGeA is supported by the SU Graduate Schools in Arts and Social Sciences, and Intra-ACP and Development and Management Sciences. The Graduate Schools offer partially structed PhD programmes in the arts, humanities, social sciences, economic and management sciences in multi-disciplinary research themes addressing problems relevant to Africa’s development and broader access to doctoral education.

Africa Academic Networks and Postgraduate Research Excellence at a glance

SU has been ranked amongst the top 350 universities by Times Higher Education World University Rankings and the top 400 universities by the QS rankings.

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<th>SU BILATERAL PARTNERS</th>
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<td>Malerere University, University of Dar es Salaam, University of Botswana, University of Namibia, Kwame Nkrumah University of Science and Technology (Ghana), University of Zimbabwe, University of Namibia, University of Malawi, University of Ghana, Konya University, Universidade Eduardo Mondlane, Universidade d’Antananarivo, Universidade de Yaoundé I, American University in Cairo.</td>
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PANGeA

Over 50 candidates nominated by PANGeA partner institutions have enrolled in the full-time doctoral scholarship programme since 2010. A total of 17 have since graduated and resumed their positions at their home institutions.

INTRA-ACP ACADEMIC MOBILITY SCHEMES

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<th>TRECAfrica I and II</th>
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<td>Transdisciplinary Training for Resource Efficiency and Climate Change Adaptation in Africa (coordinated by Stellenbosch University).</td>
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<td>Africa For Innovation, Mobility, Exchange, Globalization and Quality (coordinated by the University of Yaoundé I).</td>
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<td>Sharing Capacity to Build Capacity for Quality Graduate Training in Agriculture in African Universities (coordinated by Makerere University).</td>
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<td>Partnership inter-universitaire entre L’Afrique et l’Océan Indien (coordinated by the University of Antananarivo).</td>
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<td>Partnering for Health Professionals Training in African Universities (coordinated by the University of Ghana).</td>
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<td>Periperi U engages academic and administrative staff members across 11 countries and offers disaster risk-related education in seven languages. It is an effort to promote teaching and learning to disaster risk reduction field workers and practitioners, the consortium has also reached more than 2200 short-course participants through 86 short courses.</td>
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AFRICAN EXPERTISE FOR AFRICAN CHALLENGES

The Partnership for Africa’s Next Generation of Academics (PANGeA), a collaborative network of leading African universities developing research capacity in the arts, humanities and social sciences. It also believes in bringing African expertise to Africa’s challenges through the development of collaborative doctoral programmes. The partnership includes the universities of Stellenbosch, Makerere, Botswana, Nsob, Dares Salaam, Ghana and Malawi and is expanding into Francophone Africa with the potential inclusion of the universities of Yaoundé I and Cheikh Anta Diop. PANGeA is supported by the SU Graduate Schools in Arts and Social Sciences, and Intra-ACP and Development and Management Sciences. The Graduate Schools offer partially structured PhD programmes in the arts, humanities, social sciences, economic and management sciences in multi-disciplinary research themes addressing problems relevant to Africa’s development and broader access to doctoral education.

Partner with us to develop Africa’s most important resource - it’s people.

ABOUT STELLENBOSCH UNIVERSITY | 3
Sunday, 13 April 2014 - Spier Conference Centre

12:00-18:00  Registration - Foyer
13:00-17:00  AC21 Steering Committee Meeting - Simonsberg
18:00-19:30  Welcome Reception - Foyer

Monday, 14 April 2014 - Spier Conference Centre

09:00- 10:30  Opening Plenary - Auditorium

09:00-09:15  Welcome by Mr Robert KOTZÉ
Senior Director: Postgraduate & International Office, Stellenbosch University

Greetings by Dr Michinari HAMAGUCHI
President: Nagoya University

09:15-09:50  Keynote 1: Prof Russel BOTMAN, Rector and Vice-Chancellor, Stellenbosch University
“The long road to development: Walking together in higher education”

09:55-10:30  Keynote 2: Prof Dr Hans-Jochen SCHIEWER, Rector, University Freiburg
“Global Challenges need transnational answers: The University of Freiburg’s Approach Towards Sustainability”

10:30   Refreshments - Foyer

11:00-12:45  Joint Session - Auditorium
Session 1: Creating networks for training the next generation of academics

11:00 | Prof Moritz MÜLLER, University of Strasbourg
“The role of foreign-trained PhDs in academic upgrading in the developing world”

11:35 | Prof Jan GOVAERTS, Catholic University of Louvain
“The African School of Fundamental Physics and its Applications”

12:10 | Dr Cindy Lee STEENEKAMP, Stellenbosch University
“Fostering excellence in African scholarship: An overview of the PANGeA network”

13:00 - 13:45  Lunch - Foyer

14:00-14:45  Plenary - Auditorium

Keynote 3: Prof Pascale QUESTER, Deputy Vice-Chancellor and Vice-President (academic), University of Adelaide
“Co-Creation and the Adelaide Learning Hub”

14:45   Refreshments - Foyer
Cape Cultural Heritage

History of the Solms-Delta Museum van de Caab

Whether through our wine, our music, our cuisine, our environment, or simply through our museum, Solms-Delta’s heartfelt mission is to embrace and celebrate all that it means to be South African. In the second decade of our democracy, what “South African-ness” stands for has started to change. Hidden or ignored narratives have revealed themselves, and our appreciation of our heritage has become far more inclusive. We have discovered that our history, however difficult, painful and complex – as well as inspiring – is the shared basis for our future. In everything we do at Solms-Delta we try to honour what it means to be South African, to be Hiervandaan, in an honest and open way that unites all of our people, cultures, languages, musical styles, culinary traditions, flora and fauna, historic landscapes and buildings.
**Tuesday, 15 April 2014 - Spier Conference Centre**

09:00-10:15  Plenary: Perspectives from Africa – Auditorium

**Keynote 4: Mr Ghaleeb JEPIE**, Chief Director: International Relations Department of Higher Education and Training, Pretoria
“Towards an Internationalisation Strategy in South African Higher Education & Training”

**Panel discussion:** Internationalization at Higher Education institutions in Africa Perspectives from 3 universities in Africa

Facilitator: **Dr Christoff PAUW**, Manager: International Academic Networks Postgraduate & International Office, Stellenbosch University

- **Prof Agnes GATHUMBI**, Kenyatta University
  Director: Centre for International Programmes and Collaborations

- **Prof Roger RANDRIANJA**, University of Antananarivo
  Vice-President: Teaching and Research

- **Prof Richard TABULAWA**, University of Botswana
  Dean: Faculty of Education

- **Prof William OGARA**, University of Nairobi,
  Director: Centre for International Programmes and Links

10:15   Refreshments – Foyer

10:45-11:50  Parallel Sessions – Simonsberg and Stellenberg

**Session 3.1 - Simonsberg**
Competitive Industry: Higher Education, research and innovation

10:45 | Ms Anita NEL, Stellenbosch University
“The University as Builder of Knowledge Regions”

11:20 | Dr Tohru UZAWA, Nagoya University and Dr Aloysius HELMINCK, NC State University
“Mathematics and Industry: how to promote collaboration efforts in Japan and the US”

**Session 3.2 - Stellenberg**
Academic Track

10:45 | Dr Mehdi MEKNI, University of Minnesota
“Intelligent Computer Simulation for Disaster Management”

12:00-12:45  Closing Plenary – Auditorium

**Keynote 5: Prof Arnold VAN ZYL**, Rector TU Chemnitz
“The Role of Universities in the Innovation Chain”

13:00-14:00  Lunch – Foyer

14:30-18:00  AC21 General Assembly – Simonsberg

19:00   Conference Dinner – Auditorium

**Wednesday, 16 April 2014 - SU Worcester Campus**

08:30 - 15:00  Site visit: Hope Project: Ukwanda Rural Clinical School - Worcester, Western Cape

08:30 | Departure from Hotel Foyer
10:00-12:30 | Overview and Site Visit
12:30 | Depart from Ukwanda
13:30 | Lunch at Opstal Restaurant
15:00 | Return to Stellenbosch University
16:30 | SU Campus Walkabout
17:30 | Return to Hotel
Opening Remarks and Welcoming

Dr. Michinari Hamaguchi
President: Nagoya University

Biography
President Hamaguchi earned a PhD in medicine from Nagoya University after graduating from the Nagoya University School of Medicine and having served as a resident physician at Ogaki Municipal Hospital. He was appointed Research Associate at the Nagoya University School of Medicine in 1980, and since then, he has been working at Nagoya University, except for the time he pursued his research at Rockefeller University in the U.S. from 1985-1988.

During his service at Nagoya University, he has served as Dean of School of Medicine and Director of the Supporting Center for Medical Research and Education before becoming the President of Nagoya University in April 2009. His scholarly interest is Pathological Medical Chemistry.

His research group has focused on signaling pathways in cell growth, transformation, and tumor invasion and the analysis of the signaling critical for tumor invasion and metastasis, including the production and activation of matrix metalloproteinases (MMPs), in order to clarify the mechanisms that contribute to the invasion and metastasis of human cancer cells and to develop molecular tools that can inhibit tumor progression. He has published a number of reviewed original papers in the pathological medical chemistry area. He currently serves as a Board Member of ‘Cancer Biology & Therapy,’ and board members of leading academic societies including Japanese Cancer Association and Japanese Biochemical Society.

Mr. Robert Kotze
Senior Director: Postgraduate and International Office, Stellenbosch University

Biography
Mr. Robert Kotze is the Senior Director of the Postgraduate and International Office (PGIO) at Stellenbosch University (SU). The PGIO is responsible for developing and maintaining SU’s international academic networks and international student mobility programmes (incoming and outgoing), supports postgraduate studies and postgraduate student success through managing funding programmes for postgraduate students and coordinating a postgraduate skills development programme and manages all international degree enrolments. Robert is also the Co-Director of the Confucius Institute at Stellenbosch University.

Robert holds a Master’s degree in Semitic Languages and Cultures from SU and taught Biblical Hebrew at SU.

After studying at the University of Tübingen in Germany he started the Office for International Relations at SU in June 1993. In June 2006 he was appointed Interim Dean of Students and returned to the International Office in February 2008. In 2010 the International Office was transformed to include functions in support of postgraduate studies at SU.

In 2013 the PGIO celebrated 20 years of international networks and mobility at SU. Currently close to 4000 international students (13%) are enrolled at SU, including 1,200 non-degree seeking students on exchange and Study Abroad programmes.
Keynote Address 1

Prof Russel BOTMAN  
Rector and Vice-Chancellor: Stellenbosch University

Biography

Prof Hayman Russel Botman was in his second term as Rector and Vice-Chancellor of Stellenbosch University (SU). He also served as a Director of Higher Education South Africa, Vice-President of the Association for African Universities, and Chairperson of the Cape Town World Design Capital 2014 Board.

He was a proponent of the idea that universities should not be ivory towers but engaged institutions working to the benefit of society. He has been the prime mover behind SU’s HOPE Project, a science-for-society initiative through which the institution is working to eradicate poverty, promote human dignity and health, entrench democracy and human rights, strengthen peace and security, and balance a sustainable environment with a competitive industry. He held a PhD in Theology from the University of the Western Cape, and in 2013 received the Abraham Kuyper Prize for Excellence in Theology and Public Life from the Princeton Theological Seminary. He has also received honorary membership of the United Nations Association of South Africa in recognition of contributions to South African society and the advancement of the Millennium Development Goals.

Prof Botman believed that higher-education institutions should learn from each other, and was a supporter of international collaboration.

Keynote Address: The long road to development: Walking together in higher education

Keynote Address 2

Prof Dr Hans-Jochen SCHIEWER  
Rector: University of Freiburg

Biography

Prof Dr Schiewer’s professional career spans decades of involvement in higher education: from academic collaborator, FU Berlin, Department of German Studies (1985–1989), Assistant and later Senior Lecturer, FU Berlin, Department of German Studies (1990–1997 | 1998 - 2001), Professor (C 3) for Medieval German literature and language, Göttingen (2001–2003), Professor (C 4) for Medieval German literature and language, Albert Ludwig University of Freiburg (since 2003), Full-Time Vice Rector for Academic Affairs, Albert-Ludwigs-Universität Freiburg (01/04/08 – 30/09/08) to the current position he holds as Rector, Albert-Ludwigs-Universität Freiburg (since 10/2008).

Other highlights at the University of Freiburg include Academic Dean of the Faculty of Philology, Member of the Quality Commission for Basic Studies in Ethics and Philosophy and Director of the Freiburg International Graduate Academy (IGA). He enjoys membership of several German-based scientific societies and organisations and has held editorships of series and comparative studies publications.

Keynote Address: Global Challenges Need Transnational Answers: The University of Freiburg’s Approach Towards Sustainability
Keynote Address 3

Prof Pascale QUESTER
Deputy Vice-Chancellor and Vice-President (academic), University of Adelaide

Biography
Professor Pascale Quester was the Inaugural Professor of Marketing at the University of Adelaide, appointed in 2002. She then took on the role of Associate Dean of Research for the Faculty of the Professions. In 2007, she was appointed Executive Dean of the Faculty of the Professions, a role she held until her appointment as Deputy Vice-Chancellor and Vice President (Academic) at the University in 2011. A strong advocate of global education, Pascale has been actively involved in developing links with overseas institutions in Asia and Europe. She has over the years held several appointments as visiting professor in overseas institutions including La Sorbonne, ESSEC and the University of Nancy.

In 2007, she received the highest academic recognition by the French National Academic Committee to become Professor des Universities et Habilitée à Diriger la Recherche. She was also the director of the Franco-Australian Centre for International Research in Marketing (FACIREM). In 2009, she was awarded the prestigious title of Distinguished Fellow of the Australia and New Zealand Marketing Academy. In 2012, she was awarded the Ordre National du Mérite (National Order of Merit), one of France’s highest honours, in recognition of her contribution to higher education in both France and Australia.

Her qualifications include a Bachelor of Business Administration from her native France, a Master of Arts (Marketing) from Ohio State University and a PhD in Marketing from Massey University (New Zealand). She single-handedly established the marketing discipline as one stream of the commerce degree and proceeded to develop a whole series of courses in this area, from undergraduate to postgraduate coursework. She also developed a vibrant Honours program in marketing and is an active supervisor at PhD level. As an active researcher in the areas of consumer behaviour and marketing communications, she is the author of two leading textbooks, each in its sixth edition (as well as one in French) and over 150 international journal publications. Over the years, Pascale’s work has also been funded by a number of competitive funding bodies, including the GRWDC and the Australian Research Council.

Keynote Address: Co-Creation and the Adelaide Learning Hub

Keynote Address 4

Mr Ghaleeb JEPPE
Chief Director: International Relations, Department of Higher Education and Training, Pretoria

Biography
Ghaleeb Jeppie is the Chief Director International Relations at the Department of Higher Education and Training. He was educated at the universities of the Western Cape and London. A recipient of the Canon Collins Educational Trust Scholarship and was also a student on the Educational Policy Research and Social Change in South Africa (RESA) programme in London. He is a member of various national and international working committees including the South African National Commission for UNESCO and the Centre for Chinese Studies at the University of Stellenbosch.

Keynote Address: Towards an Internationalisation Strategy in South African Higher Education & Training

Keynote Address 5

Prof Arnold VAN ZYL
Rector: TU Chemnitz

Biography
Prof Arnold van Zyl was born 1959 in Swellendam (South Africa). His academic pursuits started at the University of Cape Town in South Africa where he commenced with a degree in Chemical Engineering (1977 - 1982). He continued his academic career: PhD in engineering at the University of Cape Town (1987), Post-doctoral Fellow at the Max Planck Institute for Solid State Research in Stuttgart (1987 - 1990) after which he held various leading positions in the R&D-sector of Daimler in Stuttgart, Ulm and Brussels (Belgium) (1990 - 2000).

His professional career include further highlights as representative of the European transport sector in San Diego (USA) and Brussels (Belgium) (2001 - 2007), serving as Vice-Rector for Research and Innovation at Stellenbosch University (2008 - 2012) and since 1 April 2012, serving as Rector of Chemnitz University of Technology.

Keynote Address: The Role of Universities in the Innovation Chain
STELLENBOSCH UNIVERSITY AND NAGOYA UNIVERSITY SIGN NEW INSTITUTIONAL AGREEMENT

WELCOMING FUNCTION
More than 100 participants from 19 different countries attended the AC21 International Forum 2014. In addition to member universities, delegates in attendance came from Brazil, Ghana, Madagascar, New-Zealand, Sweden, Zambia and Botswana.

The University of Canterbury, New-Zealand joined the AC21 Consortium after the International Forum.

DELEGATES ENGAGING IN THE AC21 IF2014
Creating networks for training the next generation of academics

Professor Moritz Müller
Assistant Professor: Faculty of Economics and Management, University of Strasbourg

Abstract: The role of foreign-trained PhDs in academic upgrading in the developing world (Helena Barnard, Robin Cowan and Moritz Mueller)

Today it is virtually axiomatic that higher levels of development are correlated with higher levels of education. In the case of lower and middle income countries, one of the fundamental challenges is that they lag more developed countries in terms of their capacity to deliver a quality education. Their science and technology base is often behind the frontier, and even when a country has the capacity to deliver undergraduate education and training, it may not be able to support advanced research. One commonly-used strategy to compensate for shortcomings in the local education system is to send students abroad for doctoral work. Our study examines if and how returning PhDs contribute to the academic rather than economic welfare of their country. We argue that the benefits occur not because training abroad represents a way to address bottlenecks in the education system, but because foreign-trained PhDs are gateways to global knowledge. We argue that in order for the local academic community to benefit meaningfully from the training of PhDs abroad, foreign-trained PhDs must conduct work that is of higher quality than that of locally trained PhDs, they need to be well connected to the global community of scholars, and foreign-trained PhDs need to open up their networks to local scholars. Using a unique dataset of scientists in South Africa, we ask whether those three conditions hold for returning PhDs.

Our preliminary results indicate indeed private returns to doing PhD abroad in terms of scientific quality. Returns stem, among others, from the opportunity to establish connections to foreign scientists early in the career and subsequent development of respective social capital. Foreign contacts actually diffuse within the local scientific community. We aim at quantifying how the diffusion of social capital shifts the social returns above the sum of private returns of doing PhD abroad.

Professor Jan Govaerts
Dean: Faculty of Science, Catholic University of Louvain | Professor of Physics

Abstract: The African School of Fundamental Physics and its Applications

We have established a biennial school in Africa, on fundamental nuclear and particle physics and their applications (ASP). Fundamental physics is a good field to educate students in general science. The aim of the school is to build capacity to harvest, interpret, and exploit the results of current and future physics experiments and to increase proficiency in related applications, such as nuclear medicine, Grid computing, and technologies. The school is based on a close interplay between theoretical, experimental, and applied physics. The participating students are selected from all over Africa. The duration of the school allows for networking — interactions among students and between students and lecturers. Support for the school comes from institutes in Africa, Europe, USA, and Asia. The first school took place in Stellenbosch, South Africa on 1–21 August 2010, the second edition in Kumasi, Ghana on 15 July – 8 August 2012. We propose the third edition of the biennial school in Senegal on 3 – 23 August 2014.

In this talk, we will discuss the school of 2010 (ASP2010) and 2012 (ASP2012) and the plans for the upcoming ASP2014 in Senegal. We will also discuss the feedback from the students and our efforts to help the students pursue higher education after their participation in ASP.

Dr Cindy Lee Steenkamp
Director: Graduate School of Arts and Social Sciences, Stellenbosch University

Abstract: Fostering excellence in African scholarship: An overview of the PANGeA network

With Africa’s contribution to world science on the decline and escalating numbers of students choosing to further their education and careers overseas, the time has come to strengthen the capacity of Africa to generate new knowledge. The Partnership for Africa’s Next Generation of Academics (PANGeA) was established in 2009 as a collaborative network of leading African universities developing research capacity and confidence in bringing Africa’s expertise to Africa’s challenges. Our vision is to promote Africa’s next generation of academics, leaders and professionals through partnership and collaboration on the continent. Our strategy to pursue this vision is to build and sustain world class doctoral programmes on and about the African continent, focusing on the arts, humanities and social sciences. This presentation will provide an overview of the PANGeA initiative and evaluate the network, its implementation and its achievements over the past five years.
Prof Dwikorita KARNAWATI
Professor: Engineering Geology at Universitas Gadjah Mada (UGM)

Abstract: Promoting the University Social Responsibility through Research-based Student Community Service Programme

A model of research-based education program, which is so called as a student community service, has been established at Universitas Gadjah Mada (UGM), Indonesia since the 1970s, as a part of the University Social Responsibility Program in response to various national problems related to the development issues. This community service is conducted by deploying groups of 20-30 undergraduate students with multi-disciplinary background to stay at the village for a period of 2 months during the semester break, in order to work together with the community under the community empowerment and learning program. Various problems related to socio-cultural, socio-economic or environmental issue could be selected as the thematic program in the community service.

Each group is guided/advised by a supervisor who is responsible to design the program as a part of his/her research activity, as well as to guide, monitor, and evaluate the implementation of the program. In combined with “action research” conducted by the supervisor, this community service is implemented as a compulsory subject (with 3 credits) in the curricula, especially obligated for the students who have collected 100 units of the total 144 academic credits.

The proposed paper will present one case of student community service program to support the community survivability and resiliency in the landslide prone area. The main challenge to be tackle is how to develop and implement an appropriate early warning system for landslide mitigation in the pilot village. It was learned that the social engineering approach must be intensively addressed to ensure the success of the program. It was apparent, this community service program is an ideal media for capacity development process to brush-up the students’ success skill, soft skill, and leadership, and also important to support the empowerment of local community and government in the disaster risk reduction program at the landslide prone area. Indeed, it is considered as the one best practice for University Social Responsibility Program, by putting the science into practice.

Ms Kaashiefa MOBARAK
Faculty of Economic and Management Sciences, University of the Western Cape

Abstract: Employer concerns with the quality of the skills and knowledge of recently employed graduates in South Africa: Description, Analysis and Implications for Tertiary Education Public Policy and Practice

There is a longstanding dissatisfaction amongst various employers in many countries with the skills and knowledge of their recently employed graduates from tertiary education institutions. Employers complain about what they see as a ‘mismatch’ between the skills and knowledge possessed by graduates of the formal tertiary education system and the demands of labour markets. The lack of graduate skills and knowledge raises concerns about the achieved learning outcomes and/or learning standards signalled by qualifications. Employers rely on the messages or signals received about qualifications from tertiary education institutions and the national qualifications framework when recruiting graduates and trust the reliability of this information in their expectations of what graduates can do when they are employed.

If employer concerns are well founded, then the processes of skills and knowledge acquisition, and the functioning of labour markets, will not be contributing to employment and economic growth to the extent that they are intended by national government skills development policy frameworks. In this context an even greater concern would be the implications for South Africa’s ability to compete internationally and to achieve the rate of growth consistent with a fair and prosperous society.

This thesis is essentially qualitative in nature and examines the nature and significance of current employer concerns with the skills and knowledge of their recently employed graduates. Two types of skills issues are contextualised within these employer concerns: Type 1 – the production of skills that are irrelevant or that has little demand within the labour market; and Type 2 – graduates that cannot do the tasks and/or jobs expected within the workplace. The thesis asks if employers and employer bodies, tertiary institutions, graduates and governments should address some or all of these concerns and, if so, what should be done by each relevant party. At the theoretical level, this research is informed by systems theory; signalling theory; certification theory; matching theory; moral hazard; agency theory; adverse selection; and the economics of trust, reputation and information. The study offers proposals for the reform of tertiary education public policy and practice.
Abstract: Ethical Challenges and Short Programmes for International Students: A Postgraduate & International Office Case Study

Since the advent of a new political dispensation in South Africa, all Higher Education Institutions were required to participate in addressing the damaging effects of the apartheid regime on society. To this end community interaction programmes with (and by) Higher Education Institutions became an important vehicle of transformation. By becoming important vehicles of transformation a heavy ethical weight has been placed on community interaction programmes, which cannot be ignored.

The core functions of Stellenbosch University include; research, teaching and learning and community interaction. These functions converge to make Stellenbosch University an effective role-player and participant in South Africa’s strategic priorities to eradicate poverty; improve social services; build sustainable communities; improve the country’s health profile, and grow an increasingly inclusive economy for the benefit of South Africa and Africa’s citizens.

Over the past three years, the Postgraduate & International Office of Stellenbosch University developed a number of short international programmes which incorporates the institution’s three core-functions. This paper will focus specifically on exploring the potential ethical challenges that have emerged in response to moving from traditional short programmes to new ones which incorporate community interaction, and how to possibly understand and respond to these ethical challenges. The latter change from traditional short programmes to programmes which incorporates community interaction (organically and sustainably) was partly due to changes in the expectations and responsibilities of the stakeholders. These stakeholders include the respective universities involved, the community and the participants of the related programme.

When people from diverse backgrounds collaborate in a venture, differentials in power and status are a given. Within the context of international community interaction programmes, these differentials may include; social status, economic status, gender, world view, levels of formal literacy and being a local participant or not. These differentials necessitate the establishment of a sound conceptual framework and response. If these differentials are left unchecked the possibility of overcoming ethical challenges will waver. It must also be noted that one framework and response is not enough and appropriate to deal with the complexity of ethical dilemmas.

Enabling the development of individuals’ global citizenship through interaction with South African communities requires cognisance of the inherent contextual and ethical complexities. To this end, bio-ecological systems theory has been used effectively as one possible conceptual framework. It enables collaborators to learn about the dynamic interplay between various sub-systems, from multiple perspectives. However, in the process of doing so a range of ethical challenges arise, in response to the following:

- Who engages who and why and how?
- Who decides the development agenda, why and how?
- How do HEI stakeholders and non HEI stakeholders benefit mutually from the process?
- Is transformation “really” advanced via community interaction?
- How are cognitive and social justice advanced via community interaction?
- How does community engagement inform curricula and teaching?
- How does community engagement impact the research agenda of HEIs?

To conclude, our aims in this paper would firstly be to explore possible ethical challenges emerging in a changing environment; secondly, to try and understand these dilemmas through various theoretical frameworks and thirdly, to suggest possible ways of engaging with these ethical challenges. Although our understanding and response are limited, we are morally obliged to engage.
Indeed, according to the study by J. Cranshaw and A. Kitter (2011), there were only a handful of contributors in the final stage of the project. Moreover, it was difficult for newcomers to join the discussion at that stage because there were so many things (more precisely, comments in the blog) to follow.

It can be regarded as the epitome of the actual situation for newcomers in mathematics: students and young researchers are having difficulty learning up-to-date results, because it requires quite a lot of knowledge that has been established so far in the traditional face-to-face research. Though this is the nature of scholarship, we should make some effort to ease the burden. The aim of this presentation is to give several ideas to improve the situations for young researchers, by interpreting the case of online collaborations like the Polymath Project in connection with the traditional activities of mathematicians.

Dr Glen STAFFORD
Manager, Academic and Global Relations, University of Adelaide

Prof Kent ANDERSON
Pro Vice-Chancellor (International) and Professor of Law in the Adelaide Law School University of Adelaide

Abstract: ‘Build it and they will come’: meeting and making the most of student demand for study abroad

This paper examines the rationale behind and means of facilitating for-credit (non-degree) study abroad. The individual benefits of students spending part of their degree abroad are well established: students increase their intercultural competence, gain independence, broaden their horizons and increase their attractiveness to employers.

Governments also support study abroad for similar reasons, most notably to increase the stock of interculturally competent human capital, possession of which is perceived as being in the national interest in an increasingly globalised world. In this context, and drawing on the experience of the University of Adelaide, we argue that by directly addressing the broad academic, financial and social factors preventing students studying abroad it is possible to attain immediate and significant increases in participation. We also argue, however, that apparent success in the facilitation of study abroad needs to be assessed in relation to the social context in which it takes place, both locally and globally. Locally, participation in study abroad remains concentrated among students of higher socio-economic status. Globally, the possession of ‘intercultural capital’, as accumulated and reproduced through participation in study abroad, has significant value. Much contemporary practice relating to the provision of study abroad in universities can therefore be seen as concentrating opportunity among those who possess the most resources, even within university communities which already attract students of higher socio-economic status than the population generally.

In conclusion, we argue that it is not enough to only increase participation rates in study abroad; rather, universities and governments must ensure that the benefits of the opportunities provided by the internationalisation of higher education, and study abroad in particular, are distributed widely so as to promote social mobility rather than elite reproduction.
Abstract: High Impact Experiences: Global Learning and Student Success

In preparing students for success in today’s global marketplace, it is more important than ever to provide educational experiences that will increase their civic engagement, global knowledge and expose them to different perspectives through collaborative, experiential and service learning opportunities. High impact activities develop critical thinking skills, foster collaborative problem-solving, and often involve hands-on participation in the community, work in a research lab or in the field to advance professional and interpersonal development.

NC State’s efforts to increase student achievement align with two University Strategic Goals (Goal 1: Enhance the success of our students through educational innovation & Goal 5: Enhance local and global engagement through focused strategic partnerships), which form the foundation to engage in high impact activities in North Carolina and around the world. These include service learning experiences, internships, study abroad and overseas research as well as local experiences.

Building partnerships with the community (locally and globally), industry, academic institutions and stakeholders are critical to solve complex challenges. How can we leverage community connections to make these high impact experiences more accessible to all students who are eager to participate and be engaged? In examining some of the strategies and initiatives at NC State to expand high impact experiences, we will explore how these can influence students as well as promote institutional goals for academic success, innovative research and economic development.
Tuesday 15 April 2014 | Parallel Session 3.1
Competitive Industry: Higher Education, research and innovation

Ms Anita NEL
CEO of Innovus and Senior Director: Innovation and Business Development at Stellenbosch University

Abstract: The University as Builder of Knowledge Regions

One of Anita’s first positions was at Thawte, a successful South African IT company which was sold to VeriSign in 2000. Upon leaving Thawte, Anita was one of the founder members of HBD Venture Capital where she worked as Investment Manager. At HBD Anita gained valuable experience in investing in technology start-ups and serving on the boards of these companies post investment. With vast experience in human resources, marketing, negotiations, strategy and general management, Anita is well equipped to understand entrepreneurship and the many challenges facing start-up companies. She heads up Innovus, the wholly-owned innovation company of Stellenbosch University. Innovus is responsible for the management of the intellectual property portfolio of Stellenbosch University, the university’s group of companies, and the LaunchLab business incubator and its support and programmes for entrepreneurs. In addition to this, Innovus also manages SU’s short courses, copyright, aspects of SU’s trademark portfolio and Maties Soccer. She holds a BSc (Physics) degree and MSc (Psychology) degree, as well as an HED.

Dr Tohu UZAWA
Advisor to the President: Nagoya University

Dr Aloysius HELMICK
Head: NC State University

Abstract: Mathematics and Industry: how to promote collaboration efforts in Japan and the US

Mathematics and mathematicians have proven to be a key component in healthy industrial growth. In this article/presentation, we first give several examples of prominent mathematician’s inventions such as the involute gear (Euler), electric telegraph (Gauss) and confocal microscope (Minsky), Akaike Information Criterion (Akaike), to convince the audience that the training of mathematicians who are able to employ their mathematical talent imaginatively. We then go on to describe the Japanese Mathematical Concours, which started in 1990 and has played a prominent role in discovering young imaginative mathematically talented students in middle and secondary schools. We then go on to describe very successful efforts at North Carolina State University, at the undergraduate level (NCSU Mathematics Research Experience for Undergraduates in Mathematics: Modeling and Industrial Applied Mathematics), at the graduate student level (Institute for Mathematics and its Applications), and at the postdoc/faculty level (National Alliance for Building Faculty Diversity in the Mathematical Sciences). We would like to reemphasize the importance of cultivating mathematical talents by ending this abstract with a quote from Steve Jobs, the founder of Apple: “Once, he told me if he’d grown up differently, he might have become a mathematician.” (Mona Simpsons, “A Sister’s Eulogy for Steve Jobs,” The New York Times, Oct. 30, 2011)

Tuesday 15 April 2014 | Parallel Session 3.2
Academic Track

Dr Mehdi MEKNI
Assistant Professor of Software Engineering, University of Minnesota

Abstract: Intelligent Computer Simulation for Disaster Management

Computer simulations have become a key tool for scientists and decision makers to gain insight into the understanding of complex and dynamic systems such as natural hazards. Computer simulations are used to study various phenomena (e.g., natural hazards, environment monitoring, homeland security, etc.) involving a large number of simulated people evolving in, and interacting within a virtual environment. Virtual environments are used in virtual reality which is a computer generated, interactive, three-dimensional environment in which a person is immersed. For immersion to appear realistic the virtual environment must both plausibly represent the actual physical world and efficiently enable the user to interact with the virtual environment and with the objects and actors it may contain. Existing simulations do not allow users, either experts or decision makers, to interact at run time with the simulated environment and the actors and objects it contains while the program running. Indeed, most current simulations consider the environment as a monolithic structure and fail to capture the characteristics of the objects and actors it contains. Computer simulation must take advantage of advances in virtual immersion and 3D-visualization techniques in order to allow users to experience real time interactive simulations. By combining advances in artificial intelligence, virtual reality and three-dimensional visualization techniques, we propose to build a computer-generated interactive, 3D-simulation platform. The proposed project aims to enable virtual interactive 3D-simulation with realism never achieved before. In this paper, we focus on building a virtual immersion 3D-interactive simulation which involves the implementation of software prototypes, algorithms and tools as well as carrying on experimentations using actual virtual reality equipment for the organization and management of resources and responsibilities for dealing with preparedness, response and recovery in order to lessen the impact of disasters and natural hazards.
Internationalisation at Higher Education Institutions in Africa: Perspectives from three Universities in Africa

Africa’s HE internationalisation to date has been shaped largely by north-south relationships with Europe and North America. Universities typically connected with institutions in the former colonising countries, with relationships usually cast in that of benefactor and beneficiary of capacity building initiatives. The result is that Africa does not have a long history of intra-African exchange and cooperation. But how is the internationalisation landscape changing at Higher Education Institutions in Africa? We invited four panellists to share their unique experiences of internationalisation at their institutions. To elicit an open discussion on the successes and the challenges that African HEIs face in terms of internationalisation, they were each asked to respond to a specific theme:

1. Prof Agnes GATHUMBI, Kenyatta University, Director: Centre for International Programmes and Collaborations: are there any meaningful developments in HE internationalisation in Africa?

2. Prof Roger RANDRIANJA, University of Antananarivo, Vice-President: Teaching and Research: What is the view on internationalisation from the perspective of Madagascar and the University of Antananarivo – being an Island nation, and a Francophone country?

3. Prof Richard TABULAWA, University of Botswana, Dean: Faculty of Education: Do African students consider semester study abroad as an option and what can we do to encourage it?

4. Prof William OGARA, University of Nairobi, Director: Centre for International Programmes and Links: Please give us an overview of how your institution and the CIPL are planning to advance internationalisation.

The discussions that ensued reveal that student exchange has been a one-way movement of study abroad students from the north to Africa, while scientific cooperation often meant that African partners merely collected data or samples while their collaborators in the north performed the analysis and produced the new knowledge.

This, coupled with the fact that institutions have had limited human resource capacity to support internationalisation initiatives and limited funds have meant that many African institutions rarely initiated their own international relationship strategies. They had little connection with institutions in other African countries and international relations mainly served to raise income.

Increasingly, students are beginning to move across African borders to study at neighbouring institutions. Over the past decade there have also been more concerted efforts by academics, by institutions and by some funding agencies to encourage intra-African collaboration. This is opening up opportunities for two-way mobility of students and for multi-partner academic cooperation in south-south and south-south-north consortia. African institutions find themselves at the starting phase of a rapid expansion of internationalisation. Many are responding to this by establishing international offices and formulating internationalisation policies with an emphasis on contributing to knowledge generation and creating opportunities for their students to spend periods abroad.

Panellists discussed the barriers that their universities are facing in their processes of internationalisation. Owing to the colonial legacy and the array of indigenous groups, African institutions are often separated due to language, and what is often found is somewhat of a divide between Lusophone, Francophone and Anglophone Africa.

Structural challenges, in the context of university infrastructure and bureaucratic delays, as well as governmental challenges and the high cost of travelling in Africa can further impede the progress of internationalisation in Higher Education.
“Education is the most powerful weapon which you can use to change the world.” The oft-quoted late Pres. Nelson Mandela’s words ring as true today, as they did in the 1960s and after South Africa’s first democratic elections in 1994. Quoting the late former President and recalling his unmistakable role in the country’s development, Prof Russel Botman, SU Rector and Vice-Chancellor welcomed representatives from 17 AC21 partner-universities as well as 10 observer institutions at the opening of the 7th AC21 International Forum.

The consortium’s function and activities take their cue from the view that universities have a vital role to play in human development. Since its inception in 2002, at the first meeting at Nagoya University in Japan, the AC21 consortium believes: “In an era of continuous change, we believe that institutions of higher education must take the initiative in responding to the rapidly transforming needs of society […] The optimum means to accomplish this would be an international university network” owing to its shared “knowledge, expertise and experience”. It is these shared resources and knowledge that will allow universities today to respond to important societal questions.

The broad Forum theme allowed for exploration of several subthemes and added a unique African characteristic to the Forum: panel discussions on African Partnerships created a platform for questions and answers on the barriers that African universities in particular are facing today: different languages, university infrastructure and policy as well as governmental challenges.

That international collaboration is necessary in response to societal need cannot be overstated. The idea of collective impact, according to Prof Botman, “recognises that social problems have multiple causes – and multiple solutions – and that these are interrelated and interdependent. They cannot be addressed by uncoordinated actions among isolated organisations. Each stakeholder’s efforts must fit into an overarching plan if their combined efforts are to succeed.” It is with this in mind that Prof Botman handed over the AC21 Presidency to TU Chemnitz, Germany where the 2016 International Forum will be hosted.

Pictured above is Prof Russel Botman symbolically handing over the AC21 Presidency to Prof Arnold van Zyl, Rector of TU Chemnitz in Germany.
MEMBER UNIVERSITIES IN ATTENDANCE

- The University of Adelaide           Australia
- Jilin University                    China
- Nanjing University                  China
- Shanghai Jiao Tong University       China
- Tongji University                   China
- University de Strasbourg            France
- Albert-Ludwigs-Universität Freiburg Germany
- Technische Universität Chemnitz     Germany
- University Gadjah Mada              Indonesia
- Nagoya University                   Japan
- Kasetsart University                Thailand
- Stellenbosch University              South Africa
- Chulalongkorn University             Thailand
- North Carolina State University      USA
- University of Minnesota              USA

NON-MEMBER INSTITUTIONS IN ATTENDANCE

- Catholic University of Louvain      Belgium
- University of Botswana                Botswana
- Universidade de São Paulo           Brazil
- University of Ghana                  Ghana
- Kenyatta University                  Kenya
- University of Nairobi                Kenya
- Université D’Antananarivo            Madagascar
- University of Canterbury             New Zealand
- South African Department of Higher Education and Training South Africa
- GIBS, University of Pretoria         South Africa
- University of the Western Cape       South Africa
- University of Gothenburg             Sweden
- Copperbelt University                 Zambia
Computer simulations have become a key tool for scientists and decision makers to gain insight into the understanding of complex and dynamic systems such as natural hazards. Computer simulations are used to study various phenomena (e.g., natural hazards, environment monitoring, homeland security, etc.) involving a large number of simulated people evolving in, and interacting within a virtual environment. Virtual environments are also used in virtual reality which is a computer generated, interactive, three-dimensional environment in which a person is immersed. For immersion to appear realistic the virtual environment must both plausibly represent the actual physical world and efficiently enable the user to interact with the virtual environment and with the objects and actors it may contain. Existing simulations do not allow users, either experts or decision makers, to interact at run time with the simulated environment and the actors and objects it contains while the program is running. Indeed, most current simulations consider the environment as a monolithic structure and fail to capture the characteristics of the objects and actors it contains. Computer simulation must take advantage of advances in virtual immersion and 3D-visualization techniques in order to allow users to experience real time interactive simulations. By combining advances in artificial intelligence, virtual reality and three-dimensional visualization techniques, we propose to build a computer-generated interactive, 3D-simulation platform. The proposed project aims to enable virtual interactive 3D-simulation with realism never achieved before. In this paper, we focus on building a virtual immersion 3D-interactive simulation which involves the implementation of software prototypes, algorithms and tools as well as carrying on experimentations using actual virtual reality equipment for the organization and management of resources and responsibilities for dealing with preparedness, response and recovery in order to lessen the impact of disasters and natural hazards.