Welcome

It gives me enormous pleasure to welcome you to our eighth National Cartographic Conference – GeoCart'2016. This time the Conference is organised jointly by our Society and the Mapping Sciences Institute, Australia, and for the fourth time doubles as the International Cartographic Association’s Regional Symposium on Cartography for Australasia and Oceania.

The Conference is hosted by the National Library of New Zealand in Wellington – not only the capital city of New Zealand, but also the capital of New Zealand cartography. It is here that our Society was born and where New Zealand’s most significant cartographic developments were conceived and proudly carried out. You are welcome to experience first-hand the fruits of these developments at the superbly organised ‘Unfolding the Map’ exhibition right here at the National Library.

GeoCart’2016 adopted the same theme for the Conference itself, bringing the excitement of ‘unfolding the map’ into all sessions. I sincerely hope all of us will experience this excitement multiple times over the next three days and be inspired by a most diverse and enlightening programme.

On behalf of the New Zealand Cartographic Society, I extend a warm welcome to all participants of GeoCart'2016.

Igor Drecki (President) – New Zealand Cartographic Society

GeoCart’2016 brings Australasian and international cartographers and geospatial scientists to Wellington in 2016. The Mapping Sciences Institute, Australia is most honoured to have been invited by the New Zealand Cartographic Society to be its partner organisation in this important event for the region.

The New Zealand Cartographic Society has championed the dissemination of knowledge about professional, practical and academic advances through its GeoCart conferences. In fact, I have attended each and every one of the conferences. I have found them to be informative, interesting and stimulating. The conference is certainly a ‘must attend’ event in the region.

On behalf of the Mapping Sciences Institute, Australia Council and members, I convey a warm welcome to participants at the GeoCart’2016. It provides a wonderful opportunity to hear about new practices and approaches to mapping and the outcomes of research. As well, it provides the opportunity to meet and network with Antipodean and international colleagues.

Enjoy GeoCart’2016.

Bill Cartwright (President) – Mapping Sciences Institute, Australia
### Conference Programme

**Wednesday, 31 August 2016**

The programme of the 8th National Cartographic Conference, GeoCart’2016, and the 4th ICA Regional Symposium on Cartography for Australasia and Oceania, 31 August–2 September 2016, convening at the National Library of New Zealand, Wellington.

GeoCart’2016 is jointly organised by the New Zealand Cartographic Society and the Mapping Sciences Institute, Australia. The Conference is endorsed by the International Cartographic Association (ICA).

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<th>Time</th>
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<td>09:15 - 09:30</td>
<td>Conference Opening / Introduction</td>
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<td>09:30 - 10:30</td>
<td><strong>Plenary Session I</strong></td>
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<td></td>
<td>Revealing History Through Maps: Darwin, Australia, as a Case-Study</td>
<td>Trevor Menzies, Mapping Sciences Institute, Australia (Australia)</td>
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<td>10:30 - 11:15</td>
<td>Morning Break</td>
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<td>11:15 - 12:35</td>
<td><strong>Paper Session 1</strong> Historical</td>
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<td>Augustus Koch: A Forgotten New Zealand Mapmaker</td>
<td>Rolf W. Brednich, Victoria University of Wellington (NZ)</td>
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<td>Measured Works: Surveyors’ Views of Early European Settlement in Wellington</td>
<td>Mark Bagnall, Alexander Turnbull Library (NZ)</td>
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<td>Unlocked the Potential: Cartographic Artefacts of Family History and Community</td>
<td>Tony Batistich, (NZ)</td>
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<td>Maori Place Names on New Zealand’s Maps and Charts</td>
<td>Wendy Shaw, Land Information New Zealand (NZ)</td>
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<td>12:35 - 1400</td>
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<td>Volunteered Geographic Information (VGI) for Disaster Management (DMI): A Case Study for Floods in Jakarta</td>
<td>Emir Hartato, Ioannis Delikostidis, Mairead de Roiste, University of Canterbury (NZ), Victoria University of Wellington (NZ)</td>
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<td>Human Habitat Modelling: Identifying the Preferred Urban Setting in NZ</td>
<td>Lars Brabyn, Natalie Jackson, University of Waikato (NZ)</td>
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<td>Routes to Dunedin Secondary Schools and High School Students’ Perceptions of Safety: Is Perception Biased by Gender?</td>
<td>Judith Rodda, Antoni Moore, Sandra Mandic, University of Otago (NZ)</td>
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<td>Examining the Spatial Relationship Between Equine Population and Food Source Vegetation of Flying-foxes in South East Queensland</td>
<td>Jahnavi Burnham, Albert Chong, University of Southern Queensland (Australia)</td>
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Thursday, 1 September 2016

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<td>09:30 - 10:30</td>
<td>Plenary Session III</td>
<td>The User is the Centre of the Universe: Designing Interactive Maps for End Users</td>
<td>Amy Griffin</td>
<td>University of New South Wales, Canberra (Australia)</td>
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<td>10:30 - 11:00</td>
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<tr>
<td>11:00 - 12:40</td>
<td>Paper Session 5</td>
<td>Map Design &amp; Neocartography</td>
<td>Fashionable Maps are Coming to Town.</td>
<td>Beep Beep, Kenneth Field</td>
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<td>Paper Session 6</td>
<td>Surveying &amp; Photogrammetry</td>
<td>3D Visualisation Modelling Based on Terrestrial Laser Scanning Data</td>
<td>Xingchang Lu, Ashraf Dewan</td>
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<td>12:40 - 14:00</td>
<td>Lunch</td>
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<td>14:00 - 15:00</td>
<td>Plenary Session IV</td>
<td>From Months to Minutes: The Evolution of New Zealand’s National Mapping Series</td>
<td>Chris Kinzett</td>
<td>Land Information New Zealand (NZ)</td>
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<td>15:00 - 15:30</td>
<td>Afternoon Break</td>
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<td>15:30 - 16:30</td>
<td>Panel Discussion with Keynote Speakers</td>
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<td>NZCS Biennial General Meeting</td>
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<td>18:00 - 22:30</td>
<td>Gala Dinner</td>
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Wednesday, 31 August 2016 (cont’d)
### Friday, 2 September 2016

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<tr>
<td>09:15 - 09:30</td>
<td>Introduction</td>
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| 09:30 - 10:30 | **Plenary Session V**  
A Review of International Standards for Local Authorities Contributing Data and Services to a Spatial Data Infrastructure  
*Serena Coetzee*  
University of Pretoria (South Africa) |
| 10:30 - 11:15 | Morning Break                                                           |
| 11:15 - 12:35 | **Paper Session 7**  
Education, Professional & Usability  
**Paper Session 8**  
3D, Web, and Multimedia  
**Paper Session 9**  
Mapping in Organisations  
**Paper Session 10**  
Community and Data |
|               | Growing New Zealand’s Geospatial Capability: Where Do Maps Fit In?  
*Geoff O’Malley*  
Land Information New Zealand (NZ)  
**New Zealand in Virtual, Dynamic 3**  
*Roger Smith*  
Geographx (NZ)  
**The New and Curious: How is New Zealand Supporting the Development of Young Geospatial Professionals?**  
*Mairead de Roiste*  
Victoria University of Wellington (NZ)  
**Tabular Asset Management and the Visualisation of Detail**  
*Tony Amar*  
Transpower NZ (NZ)  
**Preliminary Usability Study of an Augmented Reality Sand-based 3D Terrain Interface**  
*Antoni Moore, Ben Daniel, Greg Leonard, Holger Regenbrecht, Judy Rodda, Lewis Baker, Raki Ryan, Steven Mills*  
University of Otago (NZ)  
**Web Mapping of Demographic Diversity**  
*Tristan McHardie, Lars Brabyn, Natalie Jackson*  
University of Waikato (NZ)  
**Gaining Insights into Public Transport Passenger Satisfaction Using Crowdsourced Information**  
*Andrew Douglas-Cfford, Mairead de Roiste, Angela Curl*  
University of Canterbury (NZ), Victoria University of Wellington (NZ)  
**Specifications of Cartographic Symbols on the Indonesian Tactual Map**  
*Noorhadi Rahardjo, Wirastuti Widyatmanti, Ika Noor Muslimah*  
Universitas Gadjah Mada (Indonesia) |
| 12:35 - 14:00 | Lunch                                                                   |
| 14:00 - 15:00 | **Plenary Session VI**  
The Future of Maps  
*Aaron Jordan*  
Land Information New Zealand (NZ) |
| 15:00 - 15:30 | Afternoon Break                                                         |

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<th>Time</th>
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| 15:30 - 16:50 | **Paper Session 9**  
Mapping in Organisations  
**Paper Session 10**  
Community and Data |
|               | Web Mapping and Scientific Data: The Experiences of Landcare Research  
*David Medyczkyj-Scott, Andrew Cowie*  
Landcare Research Ltd (NZ)  
**Safety in Numbers: How Crowd Sourcing and Open Data Keeps You Safe at Sea**  
*Gareth Hodkinson*  
Land Information New Zealand (NZ)  
**GEOINT New Zealand's 1:50,000 Military Topographic Map Production: The Development of the MGCP Topographic Map (MTM) and Its Cartographic Refinement Incorporating Symbology, Portrayal, and Finishing**  
*William Mortimer*  
New Zealand Defence Force (NZ)  
**Aerial Charting: The Past, Present, and Future**  
*Michele Knight*  
GroupEAD Asia Pacific Ltd (NZ)  
**Real-time Notification of Lightning Strike**  
*Sardar Faisal Abbas*  
Interpret Geospatial Solutions (NZ) |
| 16:50 - 17:00 | Conference Conclusion                                                   |
International Cartographic Association (ICA). The ICA exists to promote the disciplines and professions of cartography and GIScience in an international context.

Cartography is the discipline dealing with the art, science and technology of making and using maps.

Key Note Speakers

Serena Coetzee – Associate Professor, Department of Geography, Geoinformatics and Meteorology and Director of the Centre for Geoinformation Science (CGIS), University of Pretoria, South Africa

Serena’s research focuses on spatial data infrastructures, addressing, geographic information standards and open source for geospatial software. She chairs the Commission on SDIs and Standards of the International Cartographic Association (ICA). Under her leadership, CGIS joined the ICA-OSGeo-ISPRS Lab Network and the Geo for All initiative.

Serena actively participates in geographic information standardization at ISO/TC 211, Geographic Information/Geomatics: as project lead of ISO 19160, Addressing, and as chair of the Programme Maintenance Group.

Serena started her career as a software engineer on the development teams of desktop GIS products. Subsequently, at AtyGIS, she led GIS projects on spatial data, spatial analysis and Internet GIS until she joined the university in 2006.

Prof Menno-Jan Kraak – President, International Cartographic Association and Department of Geoinformation Processing, Faculty of Geoinformation Science and Earth Observation, University of Twente Enschede, The Netherlands

Working with maps is Menno-Jan’s passion. As Professor at the University of Twente, he teaches students about maps and conducts research to find new cartographic representations to visualise time. Throughout his career, Menno-Jan has been active in professional organisations, first in the Netherlands, and later internationally.

The ICA has been part of his professional life for a long time, first attending the International Cartographic Conference in 1989 – playing a more formal role since 1995, first as Co-chair and later Chair of the Commission on Visualisation. Between 2007 and 2015 he has acted as Vice President of ICA. Menno-Jan considers it a privilege to serve as President of ICA for the next four years.

His motto is: “Let’s make the world a better place with maps.”
GeoCart’2016 Conference Programme

Chris Kinzett – Technical Leader Topographic, Land Information New Zealand

Chris began work in Photogrammetric Branch, Lands & Survey Department in January 1967. From this time until July 1996, he has worked on all aspects of photogrammetric mapping, including the NZMS 1 and 260 national mapping series, large scale engineering mapping and aerial triangulation.

In 1979 he received a study award allowing him to work for the Department of Energy, Mines and Resources in Ottawa Canada. During this period he worked on one of the initial photogrammetric digital mapping systems, the IIGDS from the USA (this become the Intergraph System). He was also introduced to one of the first analytical photogrammetric plotters and the Gestalt Photomapper used for the auto production of digital terrain models and orthophotos.

During the Department of Survey and Land Information era, Chris was the Large Scale Mapping Production Manager.

In July 1996 he moved to Land Information New Zealand as a topographic contract manager and continued in this role for 10 years until becoming a Technical Leader in the Topographic Group and becoming a member of the project team for the introduction of the Topo50 map series.

Trevor Menzies – Manager, Mapping Sciences Institute, Australia (MSIA)
Heritage Programme

Trevor graduated in Surveying from the Western Australian Institute of Technology in 1971 and was registered as a Licensed Surveyor in 1972. He completed a Post Graduate Diploma in Photogrammetric Engineering at the International Institute for Aerial Survey and Earth Sciences (ITC) in Enschede, The Netherlands, in 1974.

He was employed by government survey and mapping agencies in the Northern Territory of Australia for 32 years holding successive appointments as Land Surveyor; Manager of Photogrammetry and Aerial Survey; Assistant Director of Mapping and Land Information; and Surveyor-General.

Trevor served as National President of the Institution of Surveyors, Australia in 1990/91; and National President of the Mapping Sciences Institute, Australia, from 2007 to 2009. He is an Honorary Fellow of the Mapping Sciences Institute, Australia (MSIA), and a Fellow of the Surveying and Spatial Science Institute (SSSI). He is currently Manager of the MSIA Heritage Program with the task of promoting Australia’s cartographic heritage.

Amy Griffin – Senior Lecturer in Geography in the School of Physical, Environmental and Mathematical Sciences at UNSW Canberra in Australia.

Amy is currently the Co-Chair of the Commission on Cognitive Issues in Geographic Information Visualisation (CogViz) of the International Cartographic Association, President of the North American Cartographic Information Society (NACIS), and Co-Editor of the journal Cartographic Perspectives.

Her cartographic research interests lie in understanding cognitive, perceptual and affective processes involved in using maps, information visualisations, and other forms of geospatial information. Two particular research foci at present are communicating and reasoning with uncertainty in demographic estimates, a collaboration with researchers from Colorado University and Portland State University in the U.S., and conceptualising the role that affective responses to maps may play in map reading.

She has also been involved in a long term collaboration with other researchers at UNSW Canberra developing a map-based people’s history of Australia’s involvement in the Vietnam War. You can have a look at our interactive map here: http://vietnam.unsw.adfa.edu.au.

GeoCart is a regular event on her conferencing calendar, as she particularly enjoys the friendly, welcoming, and supportive atmosphere of fellow Antipodean carto-nerds that she finds in New Zealand.

Aaron Jordon – Group Manager Topography and Addressing Land Information New Zealand

Aaron trained as a Surveyor at Otago University with a focus on applications of Global Positioning Systems (GPS). He then joined Land Information New Zealand (LINZ) as a Geodetic Surveyor where he truly gained an appreciation of the power of location information, particularly when mashing datasets together.

Five years on, Aaron was off to Switzerland to build high-end Surveying and Engineering equipment for Leica Geosystems. He was soon overseeing on-board software and interface design and led that into the market.

Currently Aaron leads the LINZ Topographic and Addressing Teams. The team is responsible for mapping mainland New Zealand, Offshore Islands, selected Pacific Islands and the Ross Sea Region of Antarctica.

The team has a large focus on sourcing data from external sources. For the past two years, the team has been designing and building new processes and tools to enable LINZ to ingest many forms of location data, and redesigning the datasets LINZ manages and maintains so they are fit for reuse.

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The team has a large focus on sourcing data from external sources. For the past two years, the team has been designing and building new processes and tools to enable LINZ to ingest many forms of location data, and redesigning the datasets LINZ manages and maintains so they are fit for reuse.
Maps are an essential tool for developing a nation, from its initial discovery right through to the creation of its modern economic and social structure. Maps record what is known about a place, and at different points in time.”

Brian Marshall, 2005

Reviewers

Antoni Moore (Convenor) – University of Otago (New Zealand)
Geoff Aitken – New Topo (New Zealand)
William Cartwright – RMIT University (Australia)
Serena Coetzee – University of Pretoria (South Africa)
Albert Chong – University of Southern Queensland (Australia)
Mairead de Roiste – Victoria University of Wellington (New Zealand)
Igor Drecki – University of Auckland (New Zealand)
Kenneth Field – ESRI (United States)
Amy Griffin – University of New South Wales (Australia)
Hauiti Hakopa – University of Otago (New Zealand)
Aaron Jordan – Land Information New Zealand (New Zealand)
Michelle Knight – GroupEAD Asia Pacific Ltd (New Zealand)
Menno-Jan Kraak – President of ICA (The Netherlands)
Evangelos Livieratos – Aristotle University of Thessaloniki (Greece)
Trevor Menzies – Mapping Sciences Institute, Australia (Australia)
Geoff O’Malley - Land Information New Zealand (New Zealand)
Judy Rodda – University of Otago (New Zealand)
Roger Smith – Geographx Ltd (New Zealand)
Brendan Whyte – National Library of Australia (Australia)
Land Information New Zealand (Platinum Sponsor)

Land Information New Zealand is connecting geographic information into a national spatial data infrastructure for New Zealand. A spatial data infrastructure can be broadly defined as a network of components that allows people to find, share and use spatial data. This includes topographic maps and nautical charts, property information, and aerial imagery. Most of our information is available for free online in readily reusable formats through the LINZ Data Service. We champion sharing and exchange of public information through the New Zealand Open Government Information and Data Programme and our role in promoting a national infrastructure for geographic information.

- **Vision** – The power of where drives New Zealand’s success.
- **Goal** – Grow by tenfold over the next decade the value created for New Zealand through the use of geographic information.
- **Strategic objectives** – Increase the use of geographic information – We will drive the delivery of accessible and usable geographic information for industry and government to provoke better decisions and inspire innovation.
- **Unlock the value of property** – We will target New Zealand’s property services and information so that people making decisions on Crown land, Māori land, and urban intensive areas can realise its potential.
- **Improve resilience to natural events** – We will enable those who are making decisions on the impacts and risks of natural hazards to have the right information to help protect New Zealanders and their assets.

Eagle Technology Group Ltd (Gold Sponsor)

Founded in 1969, Eagle Technology Group Ltd is a privately-held, New Zealand-owned, systems integration and information management company. It has approximately 100 employees with offices in Auckland and Wellington.

Eagle Technology has a long-established and successful geospatial technology practice in Geographic Information Systems (GIS) and related technologies, as well as a unique understanding of premise ICT infrastructure, managed services expertise, and Cloud applications.

The company is the distributor for global software leader ESRI’s ArcGIS platform in New Zealand and the South Pacific. Its traditional client base is in government and enterprise class commercial organisations.

Maps for Life

**HERE Maps for Life (Silver Sponsor)**

HERE is a global leader in the mapping and location intelligence business. HERE inspires a new generation of location services and devices helping more people to navigate their lives with ease and confidence.

Built on more than 25 years experience in cartography and drawing on more than 80,000 sources of data, HERE offers “Maps for Life” for more than 190 countries, voice guided navigation in 95 countries in more than 50 languages, and live traffic information for 58 countries.

HERE’s Map Creator and Supplier Portal now help make it easier than ever for local citizens and mapping professionals to be involved in helping maintain the map in their community.
Situated at the southern end of the North Island, Wellington, New Zealand, was recently named “the coolest little capital in the world”

– Lonely Planet