Centre for Spatial Data Infrastructures and Land Administration

2009 Report

Department of Geomatics
The University of Melbourne
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EXECUTIVE SUMMARY
This report covers the activities and achievements of the Centre for Spatial Data Infrastructures and Land Administration in 2009. The Centre has now entered into its 9th year of activities since it was established by the University of Melbourne in November 2001 and was launched by the Minister for Environment and Conservation, the Hon. Sherryl Garbutt at the opening of the International Symposium on Spatial Data Infrastructures, hosted by the University, on 19 November 2001.

The primary objective of the Centre is to undertake fundamental and applied research into the broad areas of spatial data infrastructures and land administration. The Centre undertakes research into issues at the local, state (or provincial), national, and multinational levels.

The funding over the first five years has facilitated the activities of the Centre and allowed for the award of further research funding from the Australian Research Council. The State Government of Victoria through the Department of Sustainability and Environment (DSE), the State Government of NSW through the Land and Property Management Authority, and the State Government of Western Australia through Landgate, are the key sponsors of the Centre for the years 2008-2012.

The research undertaken in the Centre uses the States of Victoria, NSW and WA as working laboratories to obtain research data, and to test solutions and outcomes. International linkages through European and North American universities and the UN supported Permanent Committee on GIS Infrastructure for Asia and the Pacific (PCGIAP) and Global SDI Association (GSDI) give the Centre a strong international foundation to build upon.

The Centre has been and remains at the forefront in the development of SDI and land administration systems that facilitate decision-making within the context of sustainable development objectives at local, state, national and multinational levels. An important role of the Centre is the ability to undertake research within a dynamic ICT and emerging technology environment and the development of SDIs that are now playing a much broader role in a modern society in support of the spatial enablement of society. The strong work undertaken within the Centre since its inception and the linkages created with both national and international organisations and universities has helped to position the Centre at the forefront of SDI and land administration research internationally.

2009 was a successful year for the Centre as summarised below:

- Over 36 publications in 2009 (books, book chapters, journal and conference papers and technical reports),
- Publication of a book on Land Administration
- Successful completion of one PhD thesis
- Winning oneARC linkage research grant
- Submission of one ARC Linkage application
- Presidency of the Global SDI Association by Associate Professor Rajabifard
- Contribution to professional and scientific associations and societies
- Successful organisation and running of one international seminar and a training course
- New accommodation for the centre with the capacity of accommodating 14 research students
- Centre’s website was visits from 99 countries located in America, Europe, Africa, Asia and Australia.

There were 19 personnel directly involved with the research in the Centre in 2009. The Centre also draws on the expertise and joint supervision of other academic staff in the Department of Geomatics.

The Visiting Program has been a successful component of the Centre. In 2009 through support of the University of Melbourne Fulbright Fund and support from the Department of Education, Science and Training (DEST), and the Centre itself, the Centre hosted 6 visits from international researchers and scholars of mutual benefit to the Centre and its research partners.

The success of the Centre is fully dependent on its personnel. Consequently I wish to acknowledge the contribution of the graduate students and researchers and in particular Professor Ian Williamson, Ms
Jude Wallace, Senior Research Fellow, Research Fellows Dr Mohsen Kalantari and Dr Rohan Bennet, and the Research Group’s assistants Ms Sadia Faisal and Ms Pauline Woolcock.

It must be remembered that without the support and commitment of the Victorian Government through DSE (SII and Land Victoria), DPI, the NSW Government, Land and Property Management Authority, the State Government of Western Australia through Landgate and private organisation partners Aussoft, CubeWerx and LogicalCMG, the Centre would not have been able to achieve what it has over the past two years. This support and assistance is gratefully acknowledged.

Associate Professor Abbas Rajabifard
Director
INTRODUCTION TO THE CENTRE
HISTORY AND BACKGROUND OF THE CENTRE

The Department of Geomatics has been undertaking research in Land Administration, and Spatial Data Infrastructures (SDIs), for over a decade. However the last couple of decades have seen an increase of interest in spatial data and land administration infrastructures at State and Federal levels in Australia and internationally. This resulted in the establishment of the Spatial Data Infrastructures and Land Administration Research Group in the Department of Geomatics in the mid 1990s.

As a result of the activities and outcomes of this Research Group and the increasing importance of spatial data in society, The University of Melbourne established a Centre for Spatial Data Infrastructures and Land Administration within its Department of Geomatics in November 2001. This Centre was built on an already successful research group involving 15 researchers and the strong linkages that the Group had established with the State governments of Victoria and New South Wales, the Federal Government, the United Nations, the World Bank and several universities and foreign governments.

The Centre provides a focus for research in Spatial Data Infrastructures and Land Administration by building on ongoing research relationships and creating new links through extended collaboration both nationally and internationally. After establishing the Centre, the University of Melbourne received $1.3 million in November 2001 in Victorian State Government funding to build upon its global vision by creating virtual information infrastructures that integrate and make accessible the spatial data necessary to solve many of the problems of modern society. Driving this vision is the evolving concept of SDI.

The activities of the Centre is based on a three-pillared approach through the development of a Research Program, focused Postgraduate Training Program, and facilitated knowledge transfer including a Visiting Program.

OBJECTIVES OF THE RESEARCH PROGRAM

- To establish a leading group of world class research scholars in Spatial Data Infrastructures, Land Administration and Spatially Enabled Societies
- To encourage collaborative research projects with State and Federal governments in Australia, the private sector and leading overseas universities, particularly the Universitas 21 institutions.
- To secure national competitive grants through the development of team-based research expertise.
- To secure State, Federal and international research grants building on existing well-established collaboration.
- To disseminate research findings through academic publications, seminars, conferences and scholarly interchange.
In furtherance of its research program, the Centre focuses on the following areas:

**RESEARCH FOCUS**
- Spatially enabling government and society
- Designing and developing SDIs
- Building land administration systems to support successful land management
- Building the next generation of land data systems
- Managing the integration of land (on-shore) and marine (off-shore) administration
- Advancing spatial metadata documentation
- Developing 3-D cadastral systems
- Managing coastal rights, restrictions and responsibilities

**OBJECTIVES OF THE TRAINING PROGRAM**
- To provide a focus for postgraduate students wishing to study and conduct research in the areas of Spatial Data Infrastructures, Land Administration and Spatially Enabled Societies (SES).
- To provide specialized supervisory expertise in Spatial Data Infrastructures and Land Administration and Spatially Enabled Societies.
- To develop and enhance the knowledge base and research capabilities in Spatial Data Infrastructures, Land Administration and Spatially Enabled Societies through research training and specific initiatives such as workshops, symposia and conferences.
• To conduct short training programs in the fields of Spatial Data Infrastructures, Land Administration and Spatially Enabled Societies for government agencies (both Australian and international), private sector bodies and other interested groups.

OBJECTIVES OF THE VISITING PROGRAM

• To facilitate research and teaching interchanges among Australian and international overseas scholars working in Spatial Data Infrastructures, Land Administration and Spatially Enabled Societies through Visitor exchange and Seminar programmes.

• To increase opportunities involving international visitors in specific initiatives such as workshops, seminars and conferences.

• To facilitate collaborative links between institutions and visitors regarding research and postgraduate training.
CENTRE MANAGEMENT

Research in the Centre is conducted by staff members of the University of Melbourne, research fellows and students associated with the Centre, and international academic visitors and collaborators.

Associate Professor Abbas Rajabifard directs the Centre. Professor Ian Williamson on a part-time basis contributes to research and professional activities in support of the Centre’s objectives.

**Associate Professor Abbas Rajabifard**

*Director*

**Research Area:**

Planning, Management and Implementation of SDIs, SDI and Spatially Enabled Government and Societies concept, SDI Enabling Platform and Concepts of Virtual Australia.

**Professor Ian Williamson AM, FTSE**

*Professor of Surveying and Land Information*

**Research Area:**

Cadastral, Land and Geographic Information Systems, Land Administration and SDI.
ADVISORY BOARD

The Centre Advisory Board comprises distinguished Australian and overseas leaders in spatial science and technologies from academia and industry. Meetings, reports and information dissemination ensure that the Advisory Board members are informed of the research achievements and directions. Advisory Board members also encourage the promotion of networking linkages and research opportunities between the Centre researchers and their own institutions and contact networks.

Mr Peter Holland (Chair) Former PCGIAP President, Former General Manager, Mapping Science Division, Geoscience Australia

Mr Bruce Thompson Director, Spatial Information Infrastructure, DSE

Mr Greg Scott Group Leader, National Mapping and Information Group, Geoscience Australia and PCGIAP President

Mr Ollie Hedberg Chair Victorian Spatial Council and Chair Public Sector Mapping Agency (PSMA), Australia

Mr Paul Harcombe Chief Surveyor, Land & Property Information Authority New South Wales

Mr John Tulloch Surveyor General Victoria, Land Victoria, DSE

Mr Jan Wandek Managing Director, AusSoft Solutions, Pty Ltd.

Professor Harlan Onsrud Department of Spatial Information Science and Engineering, University of Maine, Executive Director of GSDI Association

Professor Stig Enemark FIG President, Professor in Land Management- Aalborg University, Denmark

Professor David Coleman Dean, Faculty of Engineering, University of New Brunswick, Canada

Representative from the Centre

Associate Professor Abbas Rajabifard

Professor Ian Williamson

Ms Jude Wallace

Dr. Mohsen Kalantari (Secretary)

Dr. Rohan Bennet
## Research Team

The centre had 19 active members including research fellows, research associates, PhD and Master students, and administrative officers:

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<thead>
<tr>
<th>Name</th>
<th>Position</th>
<th>Research Area</th>
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</thead>
<tbody>
<tr>
<td><strong>Ms Jude Wallace</strong></td>
<td>Senior Research Fellow</td>
<td>Land Policy, Land Markets and Infrastructure for Land Management, Spatially Enabled Government concept</td>
</tr>
<tr>
<td><strong>Mr Peter Holland</strong></td>
<td>Senior Researcher</td>
<td>Spatially Enabling Government</td>
</tr>
<tr>
<td><strong>Mr. Brain Marwick</strong></td>
<td>Senior Researcher</td>
<td>Building A National Infrastructure To Manage Land Information In Australia</td>
</tr>
<tr>
<td><strong>Dr. Mohsen Kalantari</strong></td>
<td>Research Fellow</td>
<td>Metadata Automation, eLand Administration, Cadastral Data Modelling, and Survey Accurate DCDB</td>
</tr>
<tr>
<td><strong>Dr. Rohan Bennet</strong></td>
<td>Research Fellow</td>
<td>Property Rights, Restrictions and Responsibilities in Land Administration and Spatial Data Infrastructure</td>
</tr>
<tr>
<td><strong>Dr. Serryn Eagleson</strong></td>
<td>Research Associate</td>
<td>Spatially Enabling Health and Editor-GSDI Asia-Pacific Newsletter</td>
</tr>
</tbody>
</table>
Dr. Malcolm Park
Research Associate
Research Area:
Land Administration and Editor, GSDI Asia-Pacific Newsletter

Ms. Sheelan Vaez
PhD Candidate
Research Topic:
Seamless SDI Model to Facilitate Spatially Enabling Land-Sea Interface

Mr. Faisal Masood Qureshi
PhD Candidate
Research Topic:
Facilitating Urban Planning & Management through Local SDI Design & Development

Mr. Heri Suntata
PhD Candidate
Research Topic:
Spatial Planning Support System for Local Planning and Disaster Management

Mr. Paul Box
MSc student
Research Topic:
SDI Governance of multi-domain, and cross-jurisdictional SDIs built using Service Oriented Architecture (SOA) Approaches

Mr. Hamed Olfat
PhD Candidate
Research Topic:
Metadata Generation and Updating Program, GIS, SDI, Urban and Regional planning

Ms. Maryam Saydi
PhD Candidate
Research Topic:
Design and development of an integrated platform to facilitate virtual city concept.
Mr. Ali Aien  
PhD Candidate  
Research Topic:  
Integrating Cadastral Databases into the Spatial Data Infrastructure

Ms. Nilofer Tambuwala  
PhD Candidate  
Research Topic:  
Building A National Infrastructure To Manage Land Information In Australia

Ms. Katie Potts  
MSc Student  
Research Topic:  
Building A National Infrastructure To Manage Land Information In Australia

Mr. Agunbiade Muyiwa  
PhD Candidate  
Research Topic:  
Land Administration and the Incidence of Slum Formation in Lagos

Ms Pauline Woolcock  
Administrative Officer

Ms Sadia Faisal  
Web site and IT Administrator
Completed projects
- Integration of Built and Natural Environmental Datasets within National SDI Initiatives
- Developments and Impact assessments of National SDI
- Spatially Enabling Health

Projects in progress
- Spatially Enabling Government
- Seamless SDI Model to Include Land and Marine Environments
- Spatial Data Infrastructure to Facilitate Urban Planning at Local Level
- ARC Linkage on Automating and integrating spatial data and metadata process
- ARC Linkage on National infrastructure to manage land information

Submitted projects
- ARC Linkage on 3D Cadastre
SPATIALLY ENABLING GOVERNMENT

Staff: Abbas Rajabifard, Ian Williamson, Student: Peter Holland

Status: In progress

The popular use of spatial technologies involves showing images and tracking assets and inventory in an increasing array of instruments, the most common being the ubiquitous mobile phone. Remarkable as these applications are, spatial technologies can be used in even more dynamic ways. Transformational use of spatial technologies occurs when they are used to improve business processes of government, and assist delivery of policies for equitable taxation, conservation of natural resources and planning for rational growth. Use of this transformational capacity of spatial technologies in government creates a spatially enabled government (SEG).

SEG is achieved when location and spatial information are available to citizens and businesses to encourage creativity, and governments use place as a means of organising their activities in addition to information. The problem is that this transformational capacity is used little or not at all in government, limiting Australia’s international competitiveness. Transforming Australian governments to capitalise on spatial enablement is the basis of this project.

These transformational uses involve organization of social, economic or environmental data in relation to reliable and authoritative coordinate identification of significant places. Authoritative coordinate identification systems facilitate the integration, not merely the presentation, of information throughout government. These new uses apply the benefits of spatial technologies to business processes of traditional users of land information, including emergency management, resource and water management, land management, and marine management. More importantly, the use of a Spatially Enabled Cadastre supports identification of where non-spatial data sets apply and potentially allows seamless interrogation on information, even by agencies that do not traditionally use spatial or land information.

The aim of this project is to develop a whole of government path to use transformational spatial technologies, particularly land information, by Australian governments to manage their processes and activities, provide services and deliver information.

PUBLICATIONS


**SEAMLESS SDI MODEL TO INCLUDE LAND AND MARINE ENVIRONMENTS**

**Staff:** Abbas Rajabifard and Ian Williamson  
**Student:** Sheelan Vaez  
**Sponsor:** ARC-Linkage  
**Status:** In progress

Current Spatial Data Infrastructure (SDI) design is focused mainly on access to and use of land related datasets or marine related datasets, with most SDI initiatives stopping at the land-ward or marine-ward boundary of the coastline, institutionally and/or spatially. Consequently, there is a lack of harmonised and universal access to seamless datasets from marine, coastal and land-based spatial data providers. This leads to the creation of inconsistencies in spatial information policies, data creation, data access, and data integration across the coastal zone.

The extension of a National SDI covering the land and marine environments on a seamless platform would facilitate greater access to more interoperable spatial data and information across the land-marine interface enabling a more integrated and holistic approach to management of the coastal zone.

This project is investigating current land and marine SDI initiatives and concepts at both national and international levels in order to develop seamless information across the coastal zone. This will lead to the determination of characteristics and components for the design of a seamless SDI model. The ultimate aim of this research is to design, develop and test a seamless SDI model that covers land, marine and coastal based spatial information, using a case study approach.

**PUBLICATIONS**


SPATIAL DATA INFRASTRUCTURE (SDI) TO FACILITATE URBAN PLANNING AT LOCAL LEVEL

Staff: Abbas Rajabifard and Ian Williamson
Student: Faisal Masood Qureshi
Status: In progress

The twentieth century witnessed the rapid urbanization of the world’s population. The global proportion of urban population has almost quadrupled in last one century. Most cities have very limited resources to provide for the growing demand for services that comes with rapid urbanisation. To meet this challenge, cities have to be organised and managed as efficiently as possible. Public bodies at a local level are responsible for land use / urban planning and development control.

Urban planning process begins with the investigation of prevailing problems by analysing available information. Better information means better problem identification leading to informed decisions and improved urban environment. Urban planning being a multidisciplinary field relies heavily on information regarding land-use, demography, socio-economic and build environment etc. Most of the information needed by urban planner is available with other local departments, but either its contents are different or it is in such a format that it cannot be used easily. It means either decisions are made in dark or information is collected and analysed again. All local departments are facing same problem of information crisis. The question arises that why resources are wasted to collect same information again and again when some one has already collected it? It causes not only financial wastage but also time delay. Even certain information like weather can not be collected at later stages when it is required for analysing issues like global warming.

Cities especially in developing countries are faced by two opposite extremes, on one side they possess limited resources and on the other hand these resources are wasted for collecting same information again and again. Spatial Data Infrastructure (SDI) is such an enabling platform which aims to facilitate and coordinate exchange and sharing of spatial information between stakeholders. SDI is a new emerging field and much of research done in field is focused on the role of SDI at national level. This research aims to explore how SDI can facilitate data sharing between different stakeholders at local level especially from urban planning perspectives. It is expected that such a platform will not only reduce data duplication, but will also helpful in information sharing and greater public participation and ultimately informed decision making.

PUBLICATIONS


AUTOMATING AND INTEGRATING SPATIAL DATA AND METADATA PROCESS

Staff: Abbas Rajabifard, Ian Williamson, Mohsen Kalantari
Student: Hamed Olfat
Sponsor: ARC, DPI, DSE, LPMA, Aussoft, Cubwerx, Logica
Status: In progress

The ability to find and access the appropriate information relies on having up-to-date metadata. However, current metadata models and standards are complex and very difficult to handle, often with missing or incomplete metadata. It is also viewed as an overhead and extra cost by organisations. The ability to automatically generate metadata relating to spatial information, and make it available through the Australian SDI will have important benefits not only at an organisational level (with each organisation saving time and money in generating their metadata), but at a national level because it will assist delivery of high quality spatial information and services to vast areas of Australia. This project investigates the importance of having an integrated system for both spatial data and metadata information in which that metadata and spatial data can be integrated within the one spatial dataset, so that when spatial data is updated, metadata related to that data is also automatically updated.

PUBLICATIONS


This project aims to develop a three dimensional (3D) cadastre: an infrastructure for managing and modelling complex property rights, restrictions and responsibilities. This new land and property inventory will address the problem facing two dimensional (2D) cadastres: managing the thousands of layered property interests embedded within modern cities and sensitive natural environments by developing a 3D visualization and registration platform.

Cadastral systems based on two dimensions (2D) have served land administration well for hundreds of years. However, Australia and most of the developed and much of the developing world now give ownership titles in buildings in three dimensions (3D) using the same theoretical plans developed for traditional broad acre development on vacant land (Williamson 2002). It is the technical, legal and administrative problems surrounding 3D rights, restrictions and responsibilities that are the focus of this project. This project aims to deliver:

- An improved understanding of the problems and issues associated with incorporating the third dimension into the cadastre;
- A specification of the policy, legal, institutional, and technical aspects of a 3D cadastre;
- A 3D cadastral data model and database management system;
- A 3D cadastral representation and registration model; and
- A prototype 3D cadastral system.
Seminar, workshops and training programs

- 3rd UN Sponsored Land Administration Forum for the Asia and Pacific Region (Re-Engineering the Cadastre to Support E-Government) 2009 in Iran, Tehran

- Intensive course on "Modern Cadastre and Land Administration" 2009 for Indonesia
3RD UN SPONSORED LAND ADMINISTRATION FORUM FOR THE ASIA AND PACIFIC REGION (RE-ENGINEERING THE CADASTRE TO SUPPORT E-GOVERNMENT)

24-26 May 2009 – Tehran, Iran

The UN sponsored Permanent Committee on GIS Infrastructure (PCGIAP) together with Islamic Republic of Iran's Deeds and Properties Registration Organization, the International Federation of Surveyors (FIG), the Global Spatial Data Infrastructure Association (GSDI) and the Centre for Spatial Data Infrastructures and Land Administration, University of Melbourne, are organizing a three days Forum as part of the PCGIAP-Working Group 3 activities in Tehran to discuss land administration issues and the role of cadastre to support e-government in the Asia and Pacific region. The Seminar was Chaired by Prof Ian Williamson and co-chaired by Associate Professor Abbas Rajabifard. Over 410 people from 15 countries and 4 international organisations attended the forum. The objectives of the forum in Tehran were:

• To discuss the role of cadastre to support e-Government strategies

• To share land administration experiences in the Asia and Pacific region with a focus on re-engineering cadastre to support e-government

• To discuss wide ranging land administration issues including access to land and security of tenure, the role of land administration in supporting sustainable development, the promotion of effective land markets, poverty reduction, protection of vulnerable groups, e-land administration, land registration, cadastral surveying and mapping etc.

• To continue discussion on the need for an ongoing land administration forum in the Asia and the Pacific region that was commenced at the Mongolian and Malaysian forums with a view to preparing a proposal and resolution to be put before the UN Cartographic Conference for Asia and the Pacific in Bangkok 26-29 October, 2009.

This initiative was the result of a Resolution passed by the 14th PCGIAP meeting in Malaysia in 2008 and a desire by many countries in the Asia and the Pacific region to have a forum to discuss and share land administration issues, best practice and experiences, in a similar manner to the Working Party on Land Administration (WPLA) for European countries, organized by the UN Economic Commission for Europe (UNECE).
The Centre for SDIs and Land Administration has designed and conducted an intensive course on land administration- Modern Cadastre and Land Administration, from 13-17 July 2009 in Melbourne for participants from Indonesian government agencies and leading universities.

The course was about the Modern Cadastre and Land Administration that gave a new understanding on how land administration is evolving and on how its good practices and guidelines can be suited to Indonesian context including the need to develop a sharing platform to manage data and information through a Spatial Data Infrastructure Initiative. The focus was that the mechanism and application of institutional development and good governance as essential keys to enable effective and efficient land administration infrastructure. Infrastructure here refers to policy and institutional development, land regulation and management, technology and communication and data management. Land administration infrastructure hence should facilitate shelter, security of tenure and access to land including the land for the urban and rural poor areas.

As a result of the course, participants gain a new understanding regarding land management and land policy development and experiencing in comparative assessments when looking at land administration applications and practices in Australia.
VISITING PROGRAM
## Visiting Program

The Visiting Program was a successful component of the Centre for the last year. Through the support from the University of Melbourne, the Centre hosted the visits of the following researchers and scholars in which these visits were mutually beneficial to the research of the Centre and to research partners.

### Visiting Fellows

<table>
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<tr>
<th>Name</th>
<th>Position and Affiliation</th>
<th>Visit Dates</th>
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<tbody>
<tr>
<td>Prof. Bas Kok</td>
<td>President of GSDI, 30 Jan-9 Feb</td>
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<tr>
<td>Prof. Harlan Onsrud</td>
<td>Executive Director of GSDI, 1 Feb - 21 March 2009</td>
<td></td>
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<tr>
<td>Prof. David J. Coleman</td>
<td>Dean of Engineering, University of New Brunswick, Canada, 3rd-23rd March 2009</td>
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<tr>
<td>Mr. Nasrollah Jahangard</td>
<td>Member of Iran Telecommunication Research Center (ITRC) and Especial Advisor in ICT affairs, Iran's Juridical Power and Deeds and Land, Registration Organization, Tehran, Iran, 2nd-20 April 2009</td>
<td></td>
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<tr>
<td>Mr. Mark Reichardt</td>
<td>President and CEO, Open Geospatial Consortium, Inc., USA, 27 Aug 2009</td>
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<tr>
<td>2009 Associate Prof. Joep Crompvoets</td>
<td>The Public Management Institute of Katholieke Universiteit Leuven (Belgium) and lecturer at the Centre for Geo-Information of Wageningen University (The Netherlands), 4-17 Oct 2009</td>
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CONTRIBUTION TO SEMINARS, CONFERENCES AND MEETINGS

As part of visiting program, members of the Centre have also contributed to seminars and conferences by participating and presenting centre’s research program achievements.

<table>
<thead>
<tr>
<th>Event</th>
<th>Date</th>
<th>Place</th>
<th>Contribution</th>
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<tbody>
<tr>
<td>SSSI Seminar on 3D Cadastre</td>
<td>7 DEC, 2009</td>
<td>Melbourne, Australia</td>
<td>Presentor</td>
</tr>
<tr>
<td>Victorian Spatial Council Forum</td>
<td>3 Dec, 2009</td>
<td>Melbourne, Australia</td>
<td>Keynote Speaker</td>
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<tr>
<td>Spatial Summit '09</td>
<td></td>
<td>Sydney, Australia</td>
<td>Presentation</td>
</tr>
<tr>
<td>18th United Nations Regional Cartographic Conference for Asia and Pacific (UNRCC-AP)</td>
<td>26-29 October 2009</td>
<td>Bangkok, Thailand</td>
<td>Keynote Speaker</td>
</tr>
<tr>
<td>GSDI 11 World Conference</td>
<td>15-19 June, 2009</td>
<td>Rotterdam, The Netherlands</td>
<td>Presentations</td>
</tr>
<tr>
<td>3rd PCGIAP UN sponsored Land Administration Forum (Re-Engineering the Cadastre To Support E-Government)</td>
<td>24-26 May 2009</td>
<td>Tehran, Iran</td>
<td>Presentations</td>
</tr>
<tr>
<td>Map Middle East Conference</td>
<td>26-28 April, 2009</td>
<td>Abu Dhabi</td>
<td>Presentation</td>
</tr>
<tr>
<td>Seminar on Lower Hume PCPs</td>
<td>30th April, 2009</td>
<td>Melbourne, Australia</td>
<td>Presentation</td>
</tr>
<tr>
<td>National forum on Cadastre and Land Administration for E-government</td>
<td>28 Feb - 1 March, 2009</td>
<td>Tehran, Iran.</td>
<td>Keynote Speaker</td>
</tr>
</tbody>
</table>
CONTRIBUTION TO PROFESSIONAL AND SCIENTIFIC ASSOCIATIONS AND SOCIETIES
CONTRIBUTION TO PROFESSIONAL AND SCIENTIFIC ASSOCIATIONS AND SOCIETIES

In the last year the centre has extensively contributed to professional and scientific association both national and internationally.

Presidency of GSDI by Associate Professor Rajabifard
Honorary Fellow - Surveying and Spatial Science Institute (SSSI)
Member - Spatial Data Standards Commission-International Cartography Association
Member - Victorian Spatial Council
Member - Marin SDI Technical Committee- International Hydrography organisation
Member Editorial Board, Spatial Science Journal
Editor - GSDI- Asia-Pacific Newsletter
Scientific Member, GSDI Conferences
Advisory Member Coordinates Professional magazine
Member, Standard Australia, ISO Metadata
PUBLICATIONS 2008-2009

The centre has published 36 publications as follows:

<table>
<thead>
<tr>
<th>Year</th>
<th>Book</th>
<th>Book Chapter</th>
<th>Journal Paper</th>
<th>Conference Paper</th>
<th>Professional Magazine</th>
<th>Total</th>
<th>PhD</th>
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<tbody>
<tr>
<td>2009</td>
<td>1</td>
<td>4</td>
<td>7</td>
<td>21</td>
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<td>36</td>
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(Most Publications are Available Online)


BOOK


This latest book on Land Administration for Sustainable Development examines global land administration systems at different levels of maturity. This examination elucidates how countries can establish basic infrastructure for the implementation of land-related policies and land management strategies that will help ensure social equality, economic growth, and environmental protection. Through its presentation of a holistic view of land management for sustainable development, this book outlines basic principles of land administration applicable to all countries and their divergent needs. Land Administration for Sustainable Development is a resource for professors and students of land planning, land administrators, land planning managers, and government officials.

BOOK CHAPTERS


JOURNAL ARTICLES


**CONFERENCE PAPERS**


PROFESSIONAL MAGAZINES


THESIS

CENTRE WEBSITE AND BROCHURE
WEBSITE

The centre is inline with University of Melbourne policies and search engine for publications. The website presents information about people, skill development program, publications, research project, news and events. The website can be accessed through [http://www.csdila.unimelb.edu.au/](http://www.csdila.unimelb.edu.au/).

WEB Statistics:

According to Google analytics 3,891 visits are made from 99 countries located in America, Europe, Africa, Asia and Australia.
**Brochure**

For publishing the centre and promoting new directions within the centre, a new brochure has published. The brochure includes an introduction to centre, its core policy and research, training and visiting programs.