

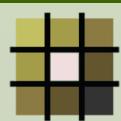
Conference Proceedings  
on Free and Open Source Software for Geospatial Analysis

# FOSS4G Asia 2018

Open Source for Sustainable Development

December 2nd - 5th 2018 | University of Moratuwa | Sri Lanka

Background: Chakra carving near Issurumumiya temple in Anuradhapura Sri Lanka





# FOSS4G Asia 2018

## Free and Open Source Software for Geospatial (FOSS4G)

Department of Town & Country Planning, University of Moratuwa and OSGeo Sri Lanka is glad to announce that FOSS4G - Asia organized on 02nd-05th December, 2018 at University of Moratuwa, Sri Lanka.

The FOSS4G conference series are designed to foster the development and promote the widespread use of open source geospatial technologies. FOSS4G-Asia extends this movement in Asia and welcomes all GIS communities and tribes.

The FOSS4G-ASIA - 2018 Conference on Free and Open Source Software for Geospatial (FOSS4G) will foster sustainable development and promote the widespread use of Open Source Geospatial Technologies including support for software development, publicly available Geo-data and applications. The proposed theme of the Conference is "Open Source for Sustainable Development". Papers and presentations are invited in areas covering, but not limited to, the followings:

- Development of Geospatial Applications using Free and Open Source Software
- FOSS4G in Business Innovation
- Geospatial information Services for Urban Management/Urban and Regional Planning / Urban Design and Good Governance
- Open and Proprietary Software: Building Bridges
- Open Data, Data Collection and Visualization for Societal GIS
- Open Hardware, Geo-IoT, Geo-BIM/CIM
- Geo-data Analytics and machine/deep learning
- FOSS4G in Education and Research
- FOSS4G Philosophy, Goals, Complexities and Challenges
- Other topics related to Free and Open Source Software, Data and Standards

Department of Town and Country Planning  
University of Moratuwa, Sri Lanka  
December 2nd - 5th 2018

## Organizers

### Conference Chair

#### **Dr. Rangajeewa Rathnayake**

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### Conference Secretariat

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## Organizing Committee

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Minpa Lee	Mango Systems	Korea
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Rama Chandra Pillutla	IIIT	India
S.W.M.P. Senevirathne	University of Moratuwa	Sri Lanka
Kokila Sooriyagoda	University of Moratuwa	Sri Lanka
B.H. Sudantha	University of Moratuwa	Sri Lanka
Suthakaran Sundaralingam	World Bank	Sri Lanka
Duminda R Welikanna	Sabaragamuwa University Of Sri Lanka	Sri Lanka
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Name	Organization	Country
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Daniel Kastl	Georepublic	Germany
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Nicolas Bozon	ESRI	France

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Kapugama Geeganage			
Dinusha Lakmali			

# Logo Design



The FOSS4G-Asia 2018 logo is inspired by water lily, the National flower of Sri Lanka and abstract form of the geographic shape of the country.

Lily bud resembles the royalty, purity, and the beauty of the youth which will enlighten the FOSS4G. Lily meant for the ambition that the young generation have along with the encouragement that they should be given to face all the difficult challenges coming in their way. The OSGeo / FOSS4G ribbon symbol at the tip of the lily bud manifests the impact to the young generation from FOSS4G-Asia 2018 which will provide them with a lifetime opportunity to show their talent on the open source in a global platform.

The colour combination of the logo is predominantly inspired from the Sri Lankan flag and it represents the unity among various ethnic groups in Sri Lanka. Blue colour in the band represents the Indian ocean that surrounds Sri Lanka and is associated with open spaces, freedom, imagination, inspiration, expansiveness, and sensitivity.

Description sent by Archt. Ujjwal

The winner of logo contest

## Conference Venue

### Department of Town & Country Planning, University of Moratuwa

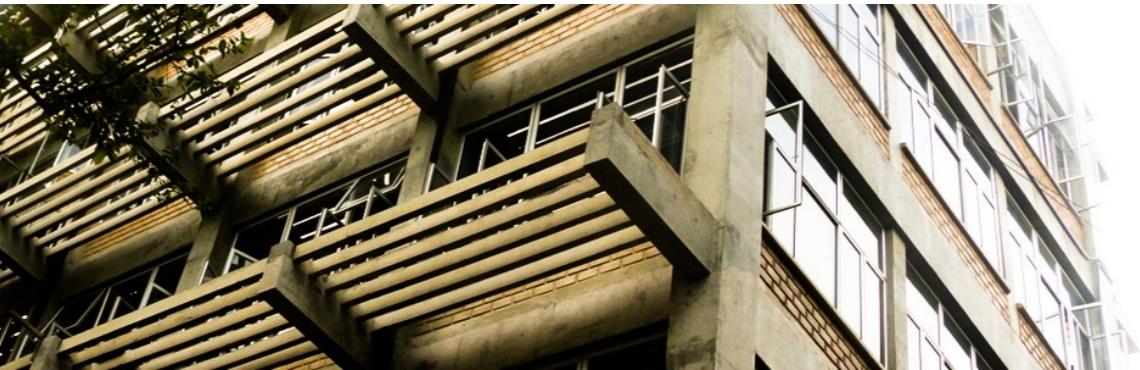
The Department of Town & Country Planning was established in October, 1973 as a fully-fledged Department of the Faculty of Engineering of the Katubedda Campus. With the establishment of University of Moratuwa in 1978, the Department was placed within the Faculty of Architecture. Since then, it has been one of the four Departments in the Faculty of Architecture in University of Moratuwa, Sri Lanka.

The Department of Town & Country Planning hails the privilege of being the only such Department in an academic institution in Sri Lanka that offers academic programs in Physical Planning and conduct research in planning related areas.

From the date of its commencement until 2014, the Department was conducting Post Graduate level studies in Town & Country Planning. The first course leading to Master of Science in Town & Country Planning was commenced in July 1975. In addition, the Department also offered Post Graduate Diploma in Urban Development since 1979, in collaboration with the Urban Development Authority of Sri Lanka, qualifying more than 150 persons. Two more courses leading to Master of Science Degree in Land use Planning & Resource Management and, Post Graduate Diploma in Housing Development were also offered once each. In 2012, the Department introduced a Master of Science Degree course in Spatial Planning Design and Management in collaboration with LaTrobe University Australia.

However, having felt the present need of Sri Lanka to have more numbers of fully-fledged planners, the Department had extended its scope to conduct Undergraduate level Degree program in the field of Town and Country Planning. As a result the pioneering four years, Honours Degree course in Bachelor of Science in Town & Country Planning was commenced in 2003.

All the courses and other academic matters within the Department are conducted in English medium. Motivating 'Integrated Spatial Planning', the Department always encourages the multidisciplinary approach in Planning and therefore, all of its courses comprise of subject modules from a wide range of fields, whilst the members of the academic staff come from different disciplinary back ground. In order to encourage and facilitate research interests among both academic members and the students, and also to provide opportunities for external researchers, the Department has established a Research Unit, where a number of research activities are being carried out. There are proposals for commencing new post graduate programs such as urban design.



### Contact information

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University of Moratuwa,  
Katubedda,  
Sri Lanka

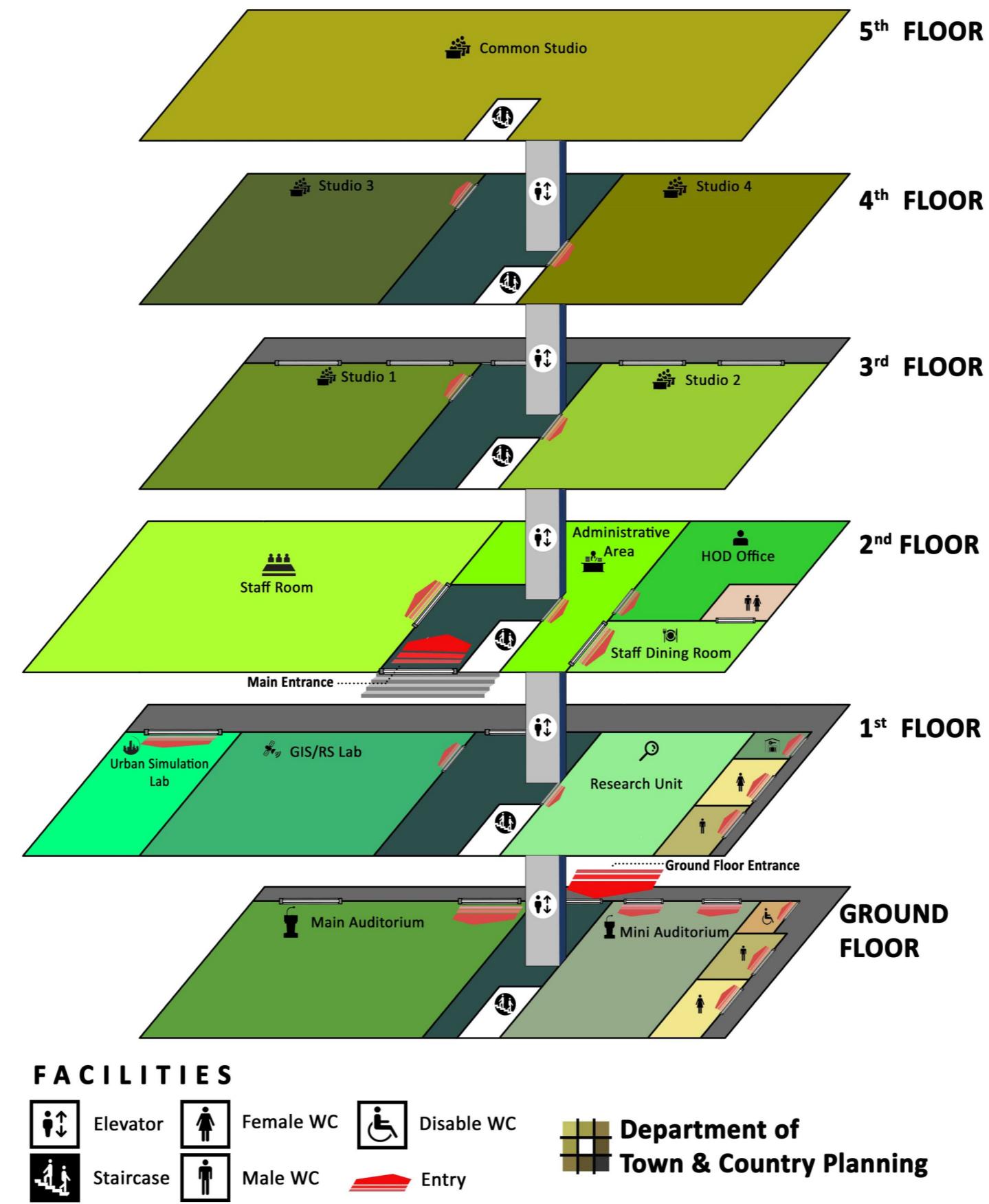
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# Location



# Floor Plan



# Programme Overview: Workshops

Date: Day 01 | 2<sup>nd</sup> December 2018 | Venue: Department of Town and Country Planning (TCP), University of Moratuwa

Time	Programme				
8.00 am	Registration @ Ground Floor				
8.30 am	Tea @ 5 <sup>th</sup> Floor				
9.30 am	Workshops (WS)	WS No	Title	Tutor/s	Company/Affiliation
		W01	Mobile open source GIS applications for societal needs (Full Day)	Natraj Vaddadi	Centre for Education & Research in Geosciences, India
		W02	Building a 4ONSE Weather Station (Full Day)	Rathnayake,R., Cannata, M. & Sudantha, B.H.	4ONSE Team
		W03	Web-GIS Using Geo Server and Open Layers (Full Day)	Shailesh Chaure	Govt. Holkar Science College, India
		W04	ZOO-Project Introduction Workshop	Gerald Fenoy	GeoLabs SARL, France
		W05	Workshop on SLEUTH a land use change model	Vani, M.	IIT Hyderabad, India
		W06	Introduction to GeoNetwork	Maria Arias de Reyna	GeoCat BV, Spain / OSGeo
		W07	The LAS tools LiDAR Processing toolbox in QGIS	Martin Isenburg	Rapidlasso GmbH, Germany
		W08	The DART model (Discrete Anisotropic Radiative Transfer)	Salghuna Nair	IIT Hyderabad, India
12.30 pm	Lunch @ 5 <sup>th</sup> Floor				
13.30 pm	Workshops (WS)	W09	Geopaparazzi: never out of data in the field	Andrea Antonello	HydroLoGIS S.R.I, Italy
		W10	Building Standards Compliant Geospatial Web Applications – the Quick and Easy	Gerald Fenoy	GeoLabs SARL, France
		W11	OSGeo.JP Workshop for UN Vector Tile Toolkit – Let's make sustainable web	Hidenori Fujimura	United Nations, USA
		W12	MapServer hand-on: learn the fastest online mapping engine in the world	Jeff McKenna	OSGeo, Canada
		W13	Tile-based batch Processing of Photogrammetry Points with the LAS tools LiDAR	Martin Isenburg	Rapidlasso GmbH, Germany
		W14	Geospatial Application Development using MongoDB Geospatial Query operators	Sasikala Ramasamy	VIT University, India
		W15	Land use change modelling using Cellular Automata based SLEUTH	M.C. Chandan	IIT Kharagpur, India
17.00 pm	Tea @ 5 <sup>th</sup> Floor				
17.30 pm	Social Event	Pre-conference Ice Breaker Event @ Lagaan, UoM			
20.00 pm					

# Programme Overview: Opening Ceremony

Date: Day 02 | 3<sup>rd</sup> December 2018 | Venue: Department of Town and Country Planning (TCP), University of Moratuwa

Time	Programme	
8.00 am	Registration @ Ground Floor	
9.00 am	Opening Ceremony @ Main Auditorium, Ground Floor	Welcome
9.05 am		Lighting the Oil Lamp
9.10 am		National Anthem of Sri Lanka
9.15 am		Opening Remarks by Dr. Rangajeewa Rathnayake (Co-Chair, FOSS4G Asia 2018)
9.20 am		Welcome Speech by Prof. Lalith De Silva (Dean, Faculty of Architecture, University of Moratuwa)
9.25 am		Opening Remarks by Prof. Venkatesh Raghavan (Co-Chair, FOSS4G Asia 2018)
9.30 am		Opening Remarks by the María Arias de Reyna, President OSGeo Foundation and Jeff McKenna, Vice-President, OSGeo Foundation
9.35 am		Pioneering Contribution - FOSS4G Sri Lanka Awards Giving
9.45 am		Address by the Chief Guest Prof. Kapila Perera (Vice Chancellor, University of Moratuwa)
9.55 am		<b>Keynote Speech by Hidenori Fujimura (Senior Geospatial Expert, United Nations, USA):</b> Collaboration of geospatial information communities through the UN open GIS initiative
10.25 am		End of the Opening Ceremony
10.30 am	Welcome Tea with Traditional Sri Lankan Confectioneries @ 5 <sup>th</sup> Floor	
11.00 am	Keynote Session – 1 @ Main Auditorium, Ground Floor	<b>Keynote Speech by Kiriwandeniya, M.S. (Chairperson, SANASA Development Bank PLC):</b> The principle behind open sourcing and how relevant it is for poverty alleviation
11.30 am		<b>Keynote Speech by Rajan, K.S. (Professor, IIIT, India):</b> Learning and building open source software – Sharing our experience
12.00 noon		<b>Keynote Speech by Sanjiva Weerawarana (Founder and Chairman, WSO2, Sri Lanka):</b> Opportunities and challenges in promoting open source technologies in Sri Lanka
12.30 pm	Lunch @ 5 <sup>th</sup> Floor	
13.30 pm		

# Programme Overview: Session 01

Date: Day 02 | 3<sup>rd</sup> December 2018 | Venue: Department of Town and Country Planning (TCP), University of Moratuwa

Time	Programme		
13.30 pm	Academic Track – 1 (@ Studio-1, 3 <sup>rd</sup> Floor) <b>Session Chairs:</b> Prof. Sirimewan Waidyasekara (KDU, Sri Lanka) & Prof. Massimiliano Cannata (University of Applied Sciences and Arts, Switzerland)	General Track - 1A (@ Main Auditorium, Ground Floor) <b>Session Chairs:</b> Nimalika Fernando (OSGeo Sri Lanka) & Dr. Xianfeng Song (OSGeo, China)	General Track - 1B (@ Mini Auditorium, Ground Floor) <b>Session Chairs:</b> Prof. Mendis M.W.J.G. (University of Moratuwa) & Dr. Shailesh Chaure (Govt. Holkar Science College, India)
13.35 pm	ID 31: Modelling wind patterns with irregularly distributed measurement data using- R by Welikanna, D.R. (Sabaragamuwa University of Sri Lanka, Sri Lanka)	ID 138: ZOO-Project: news about the Open WPS Platform by Gérald Fenoy, Venkatesh Raghavan & Bozon, N. (GeoLabs SARL, France)	ID 134: Urban growth modelling using SLEUTH: A case study of Vijayawada city, India by Vani, M., Kamakshi Moparthi & Prasad,P. R.C. (IIIT Hyderabad, India)
13.55 pm	ID 58: Database driven Spatial data auditing using QGIS against LDAP authentication and authorization by Santosh Gaikwad, Odedra, A., Kanani, R. & Bhatt, M. (Nascent Info. Technologies Pvt. Ltd, India)	ID 22: GeoNetwork State of the Art: what's New and Upcoming by María Arias de Reyna (GeoCat BV, Spain / OSGeo)	ID 108: GUI for SLEUTH model by Kamakshi Moparthi, Vani, M. & Prasad,P. R.C. (IIIT Hyderabad, India)
14.15 pm	Session – 1 ID 220: BIM and GIS enabled carriage cost analysis by Shobhith Kumar & Reddy, K.V. (NIT Warangal, Telangana, India)	ID 145: MapServer Project Status Report by Jeff McKenna (OSGeo, Canada)	ID 121: Geopaparazzi state of the art of the digital field mapping application by Andrea Antonello & Silvia Franceschi (HydroloGIS S.R.I, Italy)
14.35 pm	ID 32: Development of Gravity variation map for Sri Lanka using MRF based Super resolution approaches on GRACE Gravity data by Thunendran, P. & Welikanna, D.R. (Sabaragamuwa University of Sri Lanka, Sri Lanka)	ID 116: Facing "Local Extinction" Connect Public Facilities of Morioka Wide-Area in 2040 with Open Data by Toki Shih-Yi Ho (Harvard University, Japan)	ID 228: FOSS GIS Initiatives of Digital India by Murthy, B.K., Vinay, S., Prakash, L.R. & Mathur, M. (Government of India, India)
14.55 pm	ID 44: OpenBIM Adoption in Sri Lankan Construction Industry by Epasinghe, E.A.K., Jayasena, H.S., Kolugala, L.M.B.N. & Wijewickrama, M.K.C.S. (University of Moratuwa, Sri Lanka)	ID 66: Introduction to mago3D – A Web Based Open Source GeoBIM Platform by Sanghee Shin, Hakjoon Kim & Jeongdae Cheon (Gaia3D, Inc., Korea)	ID 110: Land Use Land Cover Change by Opencast Coal Mining and Its Impact on Environment: A Case Study of Pandabeswar Block, West Bengal, India by Santra, B., Pahari, D.P. & Mukherjee, S. (The University of Burdwan, India)
15.15 pm		ID 117: Development of visualization system of 3-dimensional multi-scale data by mago3D by Hirofumi Hayashi & Kyoung-Sook Kim (Applied Technology Co.,Ltd. Japan)	ID 208: Geospatial Application for Tracking Esala Perahera and Providing Convenient Guide to Facilities with a Notification system by Kulathunge, A. & Amarathunge, B. (University of Peradeniya, Sri Lanka)

## Programme Overview: Session 02

Date: Day 02 | 3<sup>rd</sup> December 2018 | Venue: Department of Town and Country Planning (TCP), University of Moratuwa

Time	Programme		
15.55 pm	<b>Academic Track – 2</b> (@ Studio-1, 3 <sup>rd</sup> Floor) <b>Session Chairs:</b> Dr. Jagath Munasinghe (University of Moratuwa, Sri Lanka) & Hidenori Fujimura (United Nations, USA)	<b>General Track - 2A</b> (@ Main Auditorium, Ground Floor) <b>Session Chairs:</b> Malika Gunawardana (OSGeo, Sri Lanka) & Prof. K.S. Rajan (IIIT, India)	<b>General Track - 2B</b> (@ Mini Auditorium, Ground Floor) <b>Session Chairs:</b> Dr. Welikanna, D.R. (Sabaragamuwa University of Sri Lanka, Sri Lanka) & Dr. Ho Dinh Duan (Institute of Resource Geography, Vietnam)
16.00 pm		ID 300: Mapping Land Use with Open Maps and Open Data by Fathima Vajeeha & Amila Jayasinghe (University of Moratuwa, Sri Lanka)	ID 65: Innovative mobile mapping system with GIS for tree inventory assessment using FOSS tools by Abhilash, K.G. & Reshma, C.S. (CCSIT MUTTIL, India)
16.20 pm		ID 38: An alternative way to estimate traffic speed using cellular network data by Zhu, K., Liu, J., Song, X. & Xu, J. (College of Resources and Environment, University of Chinese Academy of Sciences, China & Beijing Homcom Technology Co., Ltd, China)	ID 139: MapMint: The 100% service-oriented GIS platform by Gérald Fenoy, Venkatesh Raghavan & Bozon, N. (GeoLabs SARL, France)
16.40 pm		ID 3: Analyzing Urban Spatial Patterns and Trend of Future Urban Expansion Using SLEUTH by Chandan, M. C., Nimish, G. & Bharath, H. A. (IIT Kharagpur, India)	ID 120: Development of an open source tool to remove cloud from hyperspectral satellite imagery using machine learning approach by Rohith Gilla, Salghuna, N.N. & Prasad, R.C. (Mahindra ÉcoleCentrale, India)
16.50 pm		ID 226: Spatial Analysis Model for Population Distribution by Nima Yoezer Tenzin & Amila Jayasinghe (University of Moratuwa, Sri Lanka)	ID 57: Real-Time Monitoring and Climate Control in Small Scale Poultry Farms using FOSS4G by Sittichai Choosumrong, Witsarut Rotchanatheeratham, Thitisak Pothong & Venkatesh Raghavan (Naresuan University, Thailand)
17.10 pm		ID 8: CityLayers: Let's change the way we handle our cities by Maulik Bhagat, Gaurav Gandhi, Santosh Gaikwad, Rahul Kanani & Arjan Odedra (Nascent Info Technologies Pvt. Ltd., India)	ID 107: Interactive Web-based GIS Tutor by Deepali Shrivastava, Neeraj Gangwal & Shailesh Chaure (goMap Software Solutionz Pvt Ltd)
			ID 102: Open geospatial technology and data ecosystem in Bangladesh by Md. Ahasanul Hoque, Saimunnahar Ritu & Mohammad Esmat Enan (UNDP, Bangladesh)

## Programme Overview: Session 02 Cont.

Date: Day 02 | 3<sup>rd</sup> December 2018 | Venue: Department of Town and Country Planning (TCP), University of Moratuwa

Time	Programme		
Cont.	<b>Academic Track – 2</b> (@ Studio-1, 3 <sup>rd</sup> Floor) <b>Session Chairs:</b> Dr. Jagath Munasinghe (University of Moratuwa, Sri Lanka) & Hidenori Fujimura (United Nations,	<b>General Track - 2A</b> (@ Main Auditorium, Ground Floor) <b>Session Chairs:</b> Malika Gunawardana (OSGeo, Sri Lanka) & Prof. K.S. Rajan (IIIT, India)	<b>General Track - 2B</b> (@ Mini Auditorium, Ground Floor) <b>Session Chairs:</b> Dr. Welikanna, D.R. (Sabaragamuwa University of Sri Lanka, Sri Lanka) & Dr. Ho Dinh Duan
17.30 pm	ID 13: An R based automated model to perform the transportation route assignment by Senevirathne, S.W.M.P. & De Silva, P.C.P. (University of Moratuwa, Sri Lanka)	ID 68: A shape describing QGIS attribute table plugin by Philip Whitten (The Pennsylvania State University)	ID 25: Forest area derivation from Landsat data by Bayanmunkh, N., Tsolmon, R., Batchuluun T., & Ariunzul.Y. (NUM, India)
17.50 pm	<b>Session – 2</b>  ID 12: Open Source Smart City Dashboard: Analysing the structure and Trends in Infrastructure Proposals under the Smart cities mission India by Mehta Y.D. & Bandyopadhyay S. (CEPT University, India)	ID 67: Attempt of the implementation of spatial information extension for the data catalog server CKAN and release its service using cloud computing environment by Yoichi Kayama, Shingo Otomo & Dai Yagishita (Aeroasahi Corporation, Japan)	ID 149: A study using multi GNSS services in India semi urban environment by Prasenjit Ghosh, Anindya Bose & Atanu Santra (The University of Burdwan, India)
		ID 101: Webgis Based Polling Booths Information System by Humaira Sanam, Shailesh Chaure, Ajay Auddy & Biplob Biswas. (The University of Burdwan, India)	ID 351: The rise of istSOS3 by Antonovic, M.P., Cannata, M., & Strigaro, D., (University of Applied Sciences and Arts of Southern Switzerland – SUPSI, Switzerland)
17.00 pm	BoF/ OSGeo Committee Meetings @ 4 <sup>th</sup> Floor		
18.00 pm			
18.30 pm	Gala Dinner @ Mount Lavinia Hotel, Mount Lavinia (Note: Bus will leave from Town & Country Planning Department @ 18.30)		
21.30 pm			

# Programme Overview: Poster Presentation

Date: Day 02 | 3<sup>rd</sup> December 2018 | Venue: Department of Town and Country Planning (TCP), University of Moratuwa

Time	Programme	
	<b>Session Chair: Dr. Chameera De Silva (University of Moratuwa, Sri Lanka) &amp; Dr. Sittichai Choosumrong (Naresuan University, Thailand)</b>	
14.30 pm – 16.00 pm	<p>1. Implementation of The Flood Warning and Management System Using an Open Source GIS Software by Molkaraei, M. (National Land and House Organization, Iran)</p> <p>2. Validation of TRMM 3B42 Research Version Rainfall Product at Lai Nullah Basin in Islamabad, Pakistan by Asid Ur Rehman, Professor Dr. Farrukh Chishtie, Dr. Imran Shahid (Institute of Space Technology-Pakistan, ADPC-Thailand)</p> <p>3. Building Extraction in High Resolution Satellite Imagery Using Deep Learning by Muhammad Shoaib and S Ghuffar (Institute of Space Technology, Pakistan)</p> <p>4. Development of Mobile Online Solar Powered Smart Weather and Air Quality by Nandanavanam V.B.S. Karthikeya, S., Tripathi, N.K., Chowdary, R. &amp; Pal, V.I. (AIT, Thailand)</p> <p>5. A hybrid indoor positioning system using WLAN and iBEACON by Nidhi, B.S. &amp; Tripathi, N.K. (AIT, Thailand)</p> <p>6. An Open Access Framework for Urban Flood Vulnerability Assessment by Musunuru, A., Tripathi, N.K., Pal, V.I., Virdis, S. &amp; Mozumder, C. (AIT, Thailand)</p> <p>7. Exploring the need and the sustainability of an open source platform for dengue prevention in Sri Lanka by Wickramaarachchi, N. (University of Moratuwa, Sri Lanka)</p> <p>8. Preparation of Groundwater Potential Map for Periyamadu Village, Mannar, Sri Lanka - A QGIS based participatory approach by Lasantha Bandara (PLAN B TECH Consultants (Pvt) Ltd, Sri Lanka)</p>	<p>9. Examining the relationship between the centrality parameters and the vehicular mode choice by L. D. C. H. N. Kalpana, H.M.W.T. Rathnayake &amp; Amila Jayasinghe (University of Moratuwa, Sri Lanka)</p> <p>10. Identifying Possible Planning Interventions to Control the Increase of Land Surface Temperature [LST] in Sri Jayawardhanapura Kotte Area by Lakmali K.G.D. (University of Moratuwa, Sri Lanka)</p> <p>11. GIS-based Rainwater Harvesting Application for Urban Flood by De Silva K.I.U.T. &amp; Abenayake C.C. (University of Moratuwa, Sri Lanka)</p> <p>12. Mobile Game to Nature Recycling Disciplines in Children H.W.A.S. Sathsarana, V.M.B.C Karunarathna; University of Moratuwa</p> <p>13. A Comparative Study about the Selection of Optimal Locations for Large-scale Supermarkets; Related to Western Province, Sri Lanka by Jayewardene, P.N.P. &amp; H.U.C.P. Hewawasam (University of Moratuwa)</p> <p>14. Geocoding for post-disaster compensation projects in Sri Lanka by Rathnayaka, R.M.P.S. &amp; Gunawardena, G.M.W.L. (University of Moratuwa)</p> <p>15. Land Information System by Piyathilaka, K.R.M. (Survey Department, Sri Lanka)</p>
Poster Session @ 5 <sup>th</sup> Floor (with Tea)		

## Programme Overview: Session 03

Date: Day 03 | 4<sup>th</sup> December 2018 | Venue: Department of Town and Country Planning (TCP), University of Moratuwa

Time	Programme	
8.00 am	Tea @ 5 <sup>th</sup> Floor	
9.00 am	Dhammadika Dayawansa (Senior Lecturer, University of Peradeniya, Sri Lanka): Geospatial Data for Sustainable Development	
9.30 am	Keynote Session – 2 @ Main Auditorium, Ground Floor Sanghee Shin (Founder and CEO, Gaia3D Inc., Korea): Bringing Business into FOSS4G and FOSS4G to Business!	
10.00	Shilpa Vyapari (Founder & CEO, Indicus Software Driving Digital Transformation, Japan: Society 5.0 a concept of future cities evolving in Japan	
10.40 am	<b>Academic Track – 3</b> (@ Studio-1, 3 <sup>rd</sup> Floor) <b>Session Chairs:</b> Dr. Rizvi Noordeen (University of Moratuwa, Sri Lanka) & Dr. Nobusuke Iwasaki (National Institute for Agro-Environmental Sciences, Japan)	<b>General Track – 3</b> (@ Main Auditorium, Ground Floor) <b>Session Chairs:</b> Dr. Wathsala Gunewardhene (University of Moratuwa) & Dr. Yann Chemin (Harvesting Co, France)
10.45 am	ID 10: Design and reality gap of the E-Government Policy within the Local Authorities, Sri Lanka by Devaniranjala Michael & Prathibhani Bandusena (University of Moratuwa, Sri Lanka)	SFOSS4G Talk 1: Implementation of The Flood Warning and Management System Using an Open Source GIS Software by Molkaraei, M. (National Land and House Organization, Iran)
11.05 am	ID 14: Access to Property Rights and Empowerment of Urban Poor Women in Lucknow by Anjali Pathak & Sejal Patel (CEPT University, India)	ID 122: Modelling natural hazards in gvSIG with the HortonMachine plugins by Silvia Franceschi & Andrea Antonello (HydroloGIS S.R.I, Italy)
11.25 am	Session – 3 ID 33: SDI and Open Source Geospatial Data Potential for Development: A case study on Dhaka City, Bangladesh. by Khan Zarin Tasnim & Md. Ahsanul Hoque (World Bank, Bangladesh)	ID 205: Semi-Automated workflow for glacier monitoring using Google earth engine by Asim Ali, Ghuffar, S., Amjad Ali & Imran Shahid (Institute of Space Technology, Pakistan)
11.45 am	ID 48: Open Data Kit (ODK) applications in rural development, A case of National Institute of Rural Development and Panchayati Raj, Hyderabad, India by Solanki, H.K. (National Institute of Rural Development and Panchayati Raj, India)	ID 114: Using location data to open 10,000 LPG distribution centres to reach 50 Million BPL Women by Rishabh Jain (SocialCops, India)
12.05 am	ID 72: Fair and equitable approach using GIS for solving the Krishna River Conflict, India by Siddharth Chaudhary, Durga Prasad Panday & Rakesh Khosa (AIT, Thailand)	ID 144: Age Detection of Moon using Crater Counting Techniques by Tarnpreet Singh Gill, Salghuna, N.N., & Prasad, P. R.C. (IIIT Hyderabad, India)
12.25 am	ID 21: Assessing the sustainability of opensource software development: the role of sociology in software development by Wickramaarachchi, N. (University of Moratuwa, Sri Lanka)	ID 143: Analogous Mineralogical Study of Moon with respect to Earth by Keertana Daliparthy, N. N. Salghuna & Prasad, P. R.C. (IIIT Hyderabad, India)

## Programme Overview: Session 03 Cont.

Date: Day 03 | 4<sup>th</sup> December 2018 | Venue: Department of Town and Country Planning (TCP), University of Moratuwa

Time	Programme	
Cont.	<b>Academic Track – 3 (@ Studio-1, 3<sup>rd</sup> Floor)</b> Session Chairs: Dr. Rizvi Noordeen (University of Moratuwa, Sri Lanka) & Dr. Nobusuke Iwasaki (National Institute for Agro-Environmental Sciences, Japan)	<b>General Track – 3 (@ Main Auditorium, Ground Floor)</b> Session Chairs: Dr. Wathsala Gunewardhene (University of Moratuwa) & Dr. Yann Chemin (Harvesting Co, France)
12.45 pm	Session – 3 ID 9: A Geo-Spatial Analysis of identify the urban Sprawl Based on Accessibility in Surrounding Area of Negombo Municipal Council by Kodippili,N. P., Ratnayake, R.M.K. & Rathnayake,G.R. (University of Sri Jayewardenepura, Sri Lanka)	ID 54: Flood Hazard Zonation of Guwahati City: A remote sensing-based approach by Goswami, A. & Kumar, R. (IIIT RoorkeeIndia)
13.05 pm	ID 350: ALBIS: integrated system for risk-based surveillance of invasive mosquito Aedes albopictus by Strigaro, D., Cannata, M., & Antonovic, M.P. (University of Applied Sciences and Arts of Southern Switzerland – SUPSI, Switzerland)	ID 106: Progressive Web GIS App – towards better User Experience by Sonal D. Kumar, Vinod M. Bothale, Gopala Krishna, B. & Santanu Chowdhury (National Remote Sensing Centre, India)
12.30 pm– 13.30 pm	Lunch @ 5th Floor	

## Programme Overview: Session 04

Date: Day 03 | 4<sup>th</sup> December 2018 | Venue: Department of Town and Country Planning (TCP), University of Moratuwa

Time	Programme		
13.34 pm	Session – 4	Academic Track – 3 (@ Studio-1, 3 <sup>rd</sup> Floor) <b>Session Chairs:</b> Dr. Wattage P. (University of Moratuwa) & Prof. Prasad, R.C. (IIIT Hyderabad, India)	General Track – 3 (@ Main Auditorium, Ground Floor) <b>Session Chairs:</b> Dr. Firdhous M.F.M. (University of Moratuwa) & Sanghee Shin (Gaia3D, Inc., Korea)
13.35 pm		ID 4: Assessing the Effect of Land Use Changes on Landslide: A case of Sabaragamuwa Province, Sri Lanka by Gunarathana, B.W.G.I.D., Amila Jayasinghe & Chethika Abenayake. (University of Moratuwa)	SFOSS4G Talk 2: Korean Chapter's 10 years journey to open source, open mind, and open community by Kim Ji-yoon (OSGeo Korea)
13.55 pm		ID 16: Flood Risk Assessment based on OpenStreetMap Application: A case study in Manmunai North Divisional Secretariat of Batticaloa, Sri Lanka by S. Suthakaran, Amindika Withanage, Gunawardhane M. & Gunatilake, J. (University of Peradeniya, Sri Lanka)	ID 151: Identifying factors effecting the Business Information Systems at the implementation stage by Edirisinghe, H. (Sri Lanka Institute of Information Technology, Sri Lanka)
14.05 pm		ID 56: Application of Open Street Map and Geo Spatial Techniques in Disaster Exposure Mapping: Attanagalu Oya by Jayakody D.S.N., Seneviratne S.B.M.N. D., & Suthakaran, S. (Urban Development Authority, Sri Lanka)	ID 24: An enterprise version of OSGEO stack products to overcome customer challenges by María Arias de Reyna (GeoCat BV, Spain / OSGeo)
14.25 pm		ID 105: Mapping of Malaria in Colonial Bengal using FOSS4G by Tanusri Roy & Biplob Biswas (The University of Burdwan, India)	ID 230: Developing a Report Automation Software to Conduct a Traffic Impact Assessment for Effective Decision Making in Transport Planning by Pathiraja, A.L.A.C. & De Silva, P.C.P. (University of Moratuwa, Sri Lanka)
14.55 pm		ID 221 : MGNREGA based microlevel watershed planning and analysis using SWAT model by Padmini, P., Deva Pratap, Girish Pujar & Venkata Reddy, K. (NIIT- Warangal, India)	ID 147: Introducing FOSS4G to pre-university students (OSGeo first experience with the Google Code-in Contest) by Jeff McKenna (OSGeo, Canada)
15.15 pm		ID 222: Spatial Management Planning for Restoration of Small Tank Cascade System in Sri Lanka by Fernando, K.D., Shantha, W.H.A., Gunawardena,G.M.W.L., & Senevirathne, S.W.M.P. (University of Moratuwa)	ID 75: Urban Geological Information System of Bhopal City: An Open Source Web-GIS Approach by Shailesh Chaure, Gupta, D. C. & Pramod Dubey (The University of Burdwan, India)
15.35 pm		ID 223: Is non-conventional low-cost weather station a sustainable monitoring system? by Sudantha, B.H., Warusavitharana, E.J., Ratnayaka, G.R., Mahanama, P.K.S., Cannata, M. & Strigaro, D. (University of Moratuwa)	ID 209: GeoEDGE Map Engine: Data visualization Tool for collaborative Map Editing by Rajanayake, R.M.A.B. & Dharmathilake, D.D.N. (GeoEDGE (Pvt) Ltd, Sri Lanka)
15.55 pm		Tea @ 5 <sup>th</sup> Floor	
16.30 pm	Keynote Session – 3 @ Main Auditorium, Ground Floor	Udayakantha, P.M.P. (Surveyor General, Survey Department, Sri Lanka): Empowerment of Civil Society with Geospatial Information – Removing Barriers	
17.00 pm		Massimiliano Cannata (Professor, University of Applied Sciences and Arts, Switzerland): Open Science	
17.45 pm	Closing Ceremony @ Main Auditorium	Awards Ceremony & Closing Remarks	
18.30 pm			
18.45 pm		BoF/ OSGeo Committee Meetings @ 4 <sup>th</sup> Floor	

## Programme Overview: Session 04

Date: Day 04 | 5<sup>th</sup> December 2018 | Venue: Department of Town and Country Planning (TCP), University of Moratuwa

Time	Programme
8.00 am	Tea @ 5th Floor
9.00 am	<b>Code Sprint</b> (@ Studio-1, 3rd Floor)
12.45 pm	DICB – Department Industrial Collaboration Meeting (@ Main Auditorium, Ground Floor)
12.30 pm	Lunch @ 5th Floor

## FOSS4G community sprint

Date: Day 04 | 5<sup>th</sup> December 2018

Join the OSGeo tribes and enjoy this friendly and interactive coding session. Register and come to improve and learn about the software project you most interest ! This Code Sprint is a unique opportunity to experience open source collaborative development and to meet FOSS4G users and developers.

We are following the old tradition of hosting a codesprint on the FOSS4G Asia. More precisely, we offer a setting so that individual projects can meet for their codesprint. Since projects benefit from each other as well, the codesprint will naturally be held conjointly at one place.

During the FOSS4G Asia there will be space and time for you to improve your favorite Open Source project. Since projects benefit from working with each other as well, there will be also a dedicated day for the codesprint, 5 December 2018, the last day of the conference.

This is open to all who wish to participate in one or more projects. There's always plenty to do – it's not all about programming. Translation, documentation, feedback, discussions, testing – all this is also important for projects so everyone is cordially invited to attend the codesprints! Registration with the conference is not a prerequisite for participation in the codesprint, the codesprint is \*free of charge\*.

If you have questions/comments/ideas please let us know, contacting the conference secretariat.

Participants can register for Code Sprint from the venue.

## Bird-of-a-feather

Date: Day 04 | 5<sup>th</sup> December 2018

There is an old saying that “Birds of a feather flock together”. The Birds of a feather sessions are a regular feature at FOSS4G conferences, and are an opportunity for like-minded people to informally gather and discuss their interests.

These could be groups linked by particular software, by geographical area, by language (human or computer), or any other aspect of free and open source geospatial.

We'll provide some rooms for this self-organizing gatherings.

Use the OSGeo mailing lists ([foss4ga.discuss@gisws.media.osaka-cu.ac.jp](mailto:foss4ga.discuss@gisws.media.osaka-cu.ac.jp)) for discussions.

### FOSS4G Asia 2018 Conference – Birds of a Feather Submissions

We invite community members to submit proposals to organize BoF (Birds of a Feather) sessions at FOSS4G Asia 2018 Conference, Moratuwa, Sri Lanka.

BoF sessions provide an informal forum for the discussion networking and collaborations. BoFs are limited to 1 hour. To encourage informal discussion, no projectors or machines will be provided for BOF sessions. A BoF proposal must include:

- BoF Title
- Organizer(s) Information (name, email, affiliation)
- Topic description (up to 250 words)
- The target audience
- The estimate of the number of attendees

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Department of Town and Country Planning  
University of Moratuwa

International Conference on Free and Open Source Software for Geospatial (FOSS4G)

(2nd : 5th, December 2018 : University of Moratuwa)

Proceedings of the conference

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FOSS4G Asia 2018

Moratuwa - Sri Lanka

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## Editorial Preface

On behalf of the FOSS4G Asia 2018 conference organizing committee, it is our pleasure to welcome you to the FOSS4G-Asia 2018 conference at the University of Moratuwa. We extend a warm welcome to all the delegates who have traveled from across continents and also from around the country. We believe the conference theme of Free and Open Source for sustainable futures is timely and applicable for both mature and emerging economies in Asia. We are delighted to inform you all that we have received about 175 abstracts for FOSS4G-Asia 2018 conference.

We have been very privileged for this event to attract eminent keynote presenters as Prof. Massimiliano Cannata, Dr. Dammika Dayawansa Dr. Hidenori Fujimura, Ms. Samadani Kiriwandeniya, Prof. K.S. Rajan, Mr. Sanghee Shin, Mr. P.M.P. Udayakantha, Dr. Shilpa Vyapari and Dr. Sanjeeva Weerawarana.

In addition, our concurrent academic and general sessions covering the conference theme have a rich mix of international and national presenters. We trust the insights that such diverse spectra of speakers will provide, along with the array of high-quality papers will stimulate discussion and contemplation about our achievements and directions for future pursuits. To facilitate such discussions, we have tried to organize a range of social activities throughout this conference. There will be a student's Social Night or 'Paduru Party' on 2 December, 2018. Further, the FOSS4G conference Gala dinner will be held at the Mt. Lavina Hotel on 3rd December, 2018. This event will provide the much required festive mood for social interaction.

In planning this conference, we have been assisted by many people. Faculty of Graduate Studies and UoM provided valuable financial assistance as well as administrative support and access to important resources. Similarly, we greatly appreciate the support from our Sponsors and supporters for invaluable financial and in-kind assistance. Organising this event would have been impossible without the motivation and the knowledge of Prof. Kapila Perera, the Vice Chancellor, UoM, Prof. PKS Mahanama, Deputy Vice-Chancellor and Prof. Lalith De Silva, the Dean of Faculty of Architecture of UOM. We express our gratitude to all conference committee members and university staff who have assisted us at every stage of organization, and we greatly appreciate their willingness to take part in so many difficult tasks. Finally, I thank student volunteers for providing assistance throughout the event and it is truly our good fortune that they are an incredible valued part of our team.

Once again a warm welcome to the FOSS4G-Asia 2018 conference. May you find it intellectually stimulating, professionally rewarding and socially to be a great fun to cherish in the times to come. We wish you all a wonderful time at FOSS4G-Asia 2018 and a very pleasant stay in Sri Lanka.

Conference Chair,  
FOSS4G-Asia, 2018



**Dr. Rangajewwa Rathnayake**  
Head of the Department,  
Department of Town and Country  
Planning  
University of Moratuwa, Sri Lanka



**Prof. Venkatesh Raghavan**  
Professor, Graduate School for  
Creative Cities,  
Osaka City University, Japan

## Key Note Speakers



Collaboration of Geospatial Information Communities through the UN Open GIS Initiative

### Hidenori Fujimura

Hidenori Fujimura is the lead of optimal vector tile project of the United Nations Open Geographic Information System Initiative (UN Open GIS Initiative). As a geospatial digital service enthusiast inside the government, since 2013 he has managed GSI Maps, a product of Geospatial Information Authority of Japan (GSI) to provide its geospatial data following the governmental Open Data policy, making full use of Open Source software. In 2017 he moved to the United Nations Geospatial Information Section, and initiated a project to mainstream base map vector tiles within public organizations. He believes in the power of performance and interoperability.



Learning and Building Open Source Software – Sharing our experience

### K.S. Rajan

KS Rajan is an Associate Professor at IIIT Hyderabad and leads the institute's Lab for Spatial Informatics. He is a multi-disciplinarian, with interests in Geo-Spatial Technologies; Land use modelling and Environmental Policy. He works in the gap-areas between computer science and GIS, on topics like spatio-temporal data mining, Web-GIS, OBIA and time-series analysis for satellite imagery. A founding member of OSGeo-India and an active member of other Free and OpenSource groups in India. His Lab released two Open Source tools – LSI Viewer and VRGeo.in. Has over 135 publications in Books, Journals and Conferences and given close to 100 Expert lectures and invited talks in a range of topics. He was awarded the Indian National Geospatial Award 2013 by Indian Society of Remote Sensing.



### Massimiliano Cannata

Massimiliano is a Professor in Geomatics at the University of Applied Sciences and Arts of Southern Switzerland (SUPSI). He received his PhD in Geodesy and Geomatics after his Master degree in Environmental Engineering at the "Politecnico di Milano". Since 2007, he is the Head of the Geomatic division within the Institute of Earth Sciences at the SUPSI. He has been a Director of the Open Source Geospatial foundation (OSGeo) and is a member of the project steering committee of the ZOO-project. From 2006 to 2016, he was also PSC member of the GIS GRASS. He led the development of the istSOS project implementing open standards for sensor observation services. He conducted a large number of research projects and consultancies for the local Swiss government administration in the field of spatial data infrastructure, natural hazard mitigation, environmental monitoring network & decision support systems.

## Key Note Speakers



Bringing Business into FOSS4G and FOSS4G to Business

### Sanghee Shin

Mr. Shin is a founder and CEO of Gaia3D, Inc., an open source geospatial company in Korea. He has been involved in various open source activities around the world for more than 10 years. He established OSGeo Korean Chapter in 2008 and was elected as a Charter Member of OSGeo Foundation in 2011. He organized an international FOSS4G Seoul 2015 conference as a chair person and has served as a board member of OSGeo Foundation for 2 years. He is an active promoter of open source, open standard and open data. His major interests include open source, GeoBIM, climate technology.



Empowerment of Civil Society with Geospatial Information – Removing Barriers

### P.M.P. Udayakantha

Currently working as Surveyor General in Survey Department of Sri Lanka which is the National Mapping and Geospatial Information Management Agency. Master's Degree holder in Geodetic Science from The Ohio State University USA. Pioneer member of the National Spatial Data Infrastructure Initiative. Extensively involved Geospatial information capture including LiDAR Surveys. Presently also working as the chairman of the taskforce on Registering Property connected with improving the ease of doing business index of Sri Lanka and engaged in developing a parcel fabric based citizen services to improve performance of Colombo Municipal Council .



Opportunities and Challenges in promoting open source technologies in Sri Lanka

### Sanjiva Weerawarana

Sanjiva is the Founder, Chairman and Chief Architect of WSO2. WSO2 was founded by Sanjiva in 2005 with a vision to reinvent the way enterprise middleware is developed, sold, delivered and supported through an open source model.

Prior to starting WSO2, Sanjiva worked for nearly eight years in IBM Research, where he focused on innovations in middleware and emerging industry standards. At IBM, he was one of the founders of the Web services platform, and he co-authored many Web services specifications, including WSDL, BPEL4WS, WS-Addressing, WS-RF and WS-Eventing. In recognition for his company-wide technical leadership, Sanjiva was elected to the IBM Academy of Technology in 2003.

# Key Note Speakers



The principle behind open sourcing and how relevant it is for poverty alleviation

## M.S.Kiriwandeniya

Ms. Samadanie Kiriwandeniya is the Chairperson of SANASA Development Bank, Sri Lanka. She completed her academic education in Year 2000 at the University of Saskatchewan, Canada and obtained an MA in Sociology. Her thesis was on the topic: "Emancipatory Potential for Women in Credit Cooperatives". Prior to her posting as the Chairperson, she served as the Deputy General Manager, International Relations- SDBL – responsible for the improvement of the local and international recognition of SANASA Development Bank and SANASA Movement through partnerships with international Co-operative banks, Development Banks and other organizations. She is a Board Member of Ceylon Chamber of Commerce, member of GIZ FLICT Steering Committee and the National Committee on Re-integration of Ex-Combatants.



## Dhammadika Dayawansa

Dr. N.D.K. Dayaawansa is former secretary GISSL ( Geo-Infomatics Society of Sri Lanka) and a Senior Lecturer attached to the Department of Agricultural Engineering, Faculty of Agriculture, University of Peradeniya. She graduated from the Faculty of Agriculture, University of Peradeniya with specialization in Agricultural Engineering. Dr. Dayawansa obtained her M.Sc. from Asian Institute of Technology , Thailand in Remote Sensing and GIS. Her Ph.D. is on Agricultural Pollution Modelling obtained from University of Newcastle upon Tyne, United Kingdom. Her major research interests are applications of remote sensing and GIS technology in natural resources management.



Society 5.0 a concept of future cities evolving in Japan

## Shilpa Vyapari

Shilpa is the Founder and CEO of Indicus Software. She was the first and youngest lady entrepreneur from India to start her own software development firm in Japan, an achievement which not many people are aware of and a distinction she continues to hold even today. In the more than 2 decades that she has been in the IT industry, she has played a leading role in the design and architecture of highly complex systems in a broad range of domains. Even till this date, she enjoys the challenge of designing complex solutions that are based on varied platforms and technology is never an issue for her. Her tireless fight against all odds and her remarkable achievements as an entrepreneur were also recognized by the MCCIA and the Institute of Engineers (India) when she was felicitated with the "Jamshed and Shirin Gazdar Award" and the "Lilavati Mehendale Woman Entrepreneur Award" from the respective organizations.

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