



**INTERNATIONAL  
INSTITUTE OF  
INFORMATION  
TECHNOLOGY**

**Innovation & Leadership**

**P-14, Rajiv Gandhi Info Tech Park, Phase – 1,  
Hinjawadi, Pune – 411057, India**

**Department of  
Electronics and Telecommunication**

**Grants Received File**



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INSTITUTE OF  
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P-14, Rajiv Gandhi Info Tech Park, Phase – 1,  
Hinjawadi, Pune – 411057

**Department of  
Electronics and Telecommunication**

**Academic Year 2019 – 2020**

**Grants Received**



Hope Foundation's

## International Institute of Information Technology (I<sup>2</sup>IT)

P-14, Rajiv Gandhi Infotech Park, Phase - 1, Hinjawadi, Pune - 411057

Grants for research projects sponsored by the government/non-government sources such as industry, corporate houses, international bodies, endowments, Chairs in the institution during the academic year 2019-20

Name of the Project/ Endowments, Chairs	Name of the Principal Investigator/Co-investigator	Department of Principal Investigator	Month & Year of Award	Amount Sanctioned	Duration of the project	Amount Utilized in current Academic Year	Name of the Funding Agency	Type (Government/non-Government)
Development of near real time regional TEC mapping at low-latitude Asean region using GNSS stations	Dr. V Rajesh Chowdhary	Electronics & Telecommunication	2019	Rs.3027816	2 year	Rs. 504595	ASEAN- India Collaborative R&D scheme ( Science & Engineering Research Board (SERB), Department of Science and Technology, Government of India.)	Government
Service Oriented Participatory Platform for Local SDI : Smart Civic Services for Second Tier Cities in Thailand and India	Dr. V Rajesh Chowdhary	Electronics & Telecommunication	2019	Rs.1095000	3 years		Indo-Thai project (department of science & technology, Government of India )	Government
Opensource WEBGIS platforms	Dr. Rishil Chhatrala	Electronics & Telecommunication	10/01/2020	Rs. 117500	2 days	Rs. 117500	Savitribai Phule Pune University	

IQAC Coordinator

  
Head of Department

Principal

FILE NO. IMRC/AISTDF/CRD/2018/000037  
AISTDF Secretariat  
Science & Engineering Research Board (SERB)

5 & 5A, Lower Ground Floor  
Vasant Square Mall  
Plot No. A, Community Centre  
Sector-B, Pocket-5, Vasant Kunj  
New Delhi-110070

Dated: 20-May-2019

No. IMRC/AISTDF/R&D/P-1/2017

**ORDER**

Approval of the Chairman AISTDF (Secretary DST) is hereby accorded for implementation of the ASEAN-India Collaborative research project entitled "**Development of near real time regional TEC mapping at low-latitude Asean region using GNSS stations**" for a period of 2 years from the date of release of 1st installment of fund.

The composition of the project team(s) is as below:

**INDIA**

**Lead PI**

Dr. Rajesh Chowdhary Vattikuti

International Institute Of Information Technology, P-14, Rajiv Gandhi Infotech Park, Phase - I Hinjawadi, Pune, Maharashtra, Pune-411057, P-14, rajiv gandhi infotech park, phase - i hinjawadi, pune, Pune, Maharashtra-411057

**Other Participant**

To Be Appointed Later

**ASEAN MS-1**

**Lead PI**

Prof. nitin kumar tripathi

Asian Institute of Technology Asian Institute of Technology Klong Luang Pathumthani 12120 Thailand

**Other Participant**

Dr. Sanit Arunpold

Asian Institute of Technology Information and Communication Technology, School of Engineering & Technology

**ASEAN MS-2**

**Lead PI**

Prof. Mardina Abdullah

Universiti Kebangsaan Malaysia Space Science Centre, Level 3, Research Complex Building, Universiti Kebangsaan Malaysia, 43600 UKM Bangi, Selangor, Malaysia

**Other Participant**

Ms. Siti Aminah Bahari

Universiti Kebangsaan Malaysia Space Science Centre (ANGKASA), Institute of Climate Change

The change/ replacement of project participants is not allowed. The participating scientists should be working on the project and affiliated with the Institute/University holding the indicated position at the time of start of the project as well as at the time of exchange visits under the project. The project grant can be utilized only for the approved items /visits of participating scientists, as mentioned above.

The break-up of estimated expenditure is as indicated below-

**1. Mobility budget:**

Year : 1

Name	Source Country	Destination Country	No. of Days	Airfare, Visa Fee etc	Accommodation, per-diem etc	Total Amount
Dr. Sanit Arunpold	Thailand	India	5	50000	30000	80000
Prof. nitin kumar tripathi	Thailand	India	5	50000	30000	80000
To Be Appointed Later	India	Thailand	30	50000	150000	200000
To Be Appointed Later	India	Malaysia	14	50000	70000	120000
Dr. Rajesh Chowdhary Vattikuti	India	Thailand	14	50000	84000	134000
Dr. Rajesh Chowdhary Vattikuti	India	Malaysia	5	50000	30000	80000
Prof. Mardina Abdullah	Malaysia	India	5	50000	30000	80000
Ms. Siti Aminah Bahari	Malaysia	India	5	50000	30000	80000

Year : 2

Name	Source Country	Destination Country	No. of Days	Airfare, Visa Fee etc	Accommodation, per-diem etc	Total Amount
To Be Appointed Later	India	Malaysia	14	50000	70000	120000
To Be Appointed Later	India	Thailand	14	50000	70000	120000
Dr. Sanit Arunpold	Thailand	India	5	50000	30000	80000
Prof. Mardina Abdullah	Malaysia	India	5	50000	30000	80000
Ms. Siti Aminah Bahari	Malaysia	India	5	50000	30000	80000
Prof. nitin kumar tripathi	Thailand	India	5	50000	30000	80000
Dr. Rajesh Chowdhary Vattikuti	India	Thailand	14	50000	84000	134000
Dr. Rajesh Chowdhary Vattikuti	India	Malaysia	5	50000	30000	80000

**2. Research Grant:**

S. No	Head	Year-I	Year-II	Total Budget Sanctioned (in INR)
A	<b>Non-recurring (Capital Items)</b>			
1	Equipment	0	0	0
	<i>Total - Non - recurring grant</i>			0
B	<b>Recurring Items</b>			
1	Manpower	461280	461280	922560
2	Consumables	200000	150000	350000
3	Contingencies	0	0	0
4	Other Cost	0	0	0
	Total (Manpower, Consumables, Contingencies, Other Cost)			1272560
C	<b>Overhead Expenses ( 5% of Non-travel expenses)</b>	66128	61128	127256
	<b>Total cost of the project (Without Travel)</b>	<b>727408</b>	<b>672408</b>	<b>1399816</b>

**3. Overall Budget:**

S. No	Head	Year-I	Year-II	Total Budget Sanctioned (in INR)
A	<b>Non-recurring (Capital Items)</b>			
1	Equipment	0	0	0
	<i>Total - Non- recurring grant</i>			0
B	<b>Recurring Items</b>			
1	Manpower	461280	461280	922560
2	Consumables	200000	150000	350000
3	Travel (Domestic and International)	854000	774000	1628000
4	Contingencies	0	0	0
5	Other Cost	0	0	0
	Total-I (Travel - Domestic and International)			1628000



Total-II (Manpower, Consumables, Contingencies, Other Cost)			1272560
Overhead Expenses ( 5% of Non-travel expenses)	66128	61128	127256
Total cost of the project	1581408	1446408	3027816

Sanction of the Chairman-AISTDF is also accorded for the sanction of Rs. 3027816/- (Rs. Thirty Lakh Twenty Seven Thousand Eight Hundred and Sixteen Only) with break-up of Rs. 0/- under Capital (Non-recurring) head and Rs.3027816/- under General (Recurring) head for a duration of 24 months. The items of expenditure for which the total allocation of Rs. 3027816/- has been approved.

The release of this grant is subject to:-

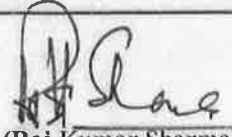
1. No re-appropriation of funds from one sub-head to another is allowed.
2. Obtaining prior approval of the AISTDF Secretariat for all project related visits to be undertaken by the scientist(s) from the either side in connection with the implementation with of this project, separately through online system ([aistic.gov.in](http://aistic.gov.in)), at-least 4 weeks in advance before incurring any expenditure for this purpose.
3. Submission of Utilization Certificate (UC) and a Statement of Expenditure (SE) along with up-to-date progress report at the end of each financial year for the grants already received under the project and seeking specific approval of this Department for carry forward of unspent funds to the next financial year for utilization under the project
4. The international / domestic air-travel pertaining to visits under this project is to be performed by lowest economy class by shortest route.
5. The grantee Institute/University shall maintain separate audited accounts for the project and the amount of grant will be kept in a bank account earning interest. The Interest earned should be reported to AISTDF Secretariat while submitting the SE/UC. The Interest thus earned will be treated as a credit to the institute to be adjusted towards further instalment of grant.
6. The accounts of the grantee institution shall be open to inspection by the sanctioning authority /audit whenever the institution is called upon to do so, as laid down under Rule 211 of General Financial Rules.

The expenditure involved is to be debited "Grant-in-Aid" sub-head of the ASEAN-India Science & Technology Development Fund (AISTDF) during the current financial year 2019-20

The Sanction has been issued to International Institute Of Information Technology, P-14, Rajiv Gandhi Infotech Park, Phase - I Hinjawadi, Pune with the approval of the competent authority under delegated powers on 06 May, 2019 and vide Diary No. SERB/F/409/2019-2020 dated 09 May, 2019

The release amount of Rs. 1581408/- (Rupees Fifteen Lakh Eighty One Thousand Four Hundred and Eight only) will be drawn by the Under Secretary of the SERB and will be disbursed by means of RTGS transaction as per their Bank details given below:

Account Name	INTL INSTITUTE OF INFORMATION TECHNOLOGY
Account Number	00071450000112
Bank Name & Branch	HDFC BANK LTD LAUKIK APARTMENTS, GROUND FLOOR, PLOT NO. 3, CTS NO. 870, BHANDARKAR ROAD, PUNE 411004, MAHARASHTRA, INDIA
IFSC/RTGS Code	HDFC0000007
Email id of A/C Holder	principal@isquareit.edu.in
Email id of PI	vrajeshc@isquareit.edu.in

  
 (Raj Kumar Sharma)  
 Member Secretary(AISTDF)

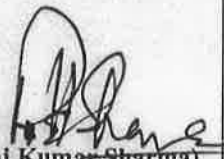
To,  
 Under Secretary  
 SERB, New Delhi  
 Copy forwarded for information and necessary action to: -

1. The Principal Director of Audit, A.G.C.R.Building, IIIrd Floor I.P. Estate, Delhi-110002
2. Sanction Folder, SERB , New Delhi.
3. File Copy

4. **Dr. Rajesh Chowdhary Vattikutl**  
**Electronics & Telecommunication Engineering**  
**International Institute Of Information Technology,P-14, Rajiv Gandhi Infotech Park, Phase - I Hinjawadi, Pune ,Maharashtra,Pune-411057 , P-14, rajiv gandhi infotech park, phase - i hinjawadi, pune , Pune, Maharashtra-411057**  
**Email: vrajeshc@isquareit.edu.in**  
**Mobile: 918459557727**

5. **International Institute Of Information Technology, P-14, Rajiv Gandhi Infotech Park, Phase - I Hinjawadi, Pune**

(Receipt of Grant may be intimated by name to the undersigned)

  
(Raj Kumar Sharma)  
Member Secretary(AISTDF)

Close

Send Sanction Letter to DDO

Print

DST/INT/Thai/P-17/2019  
Government of India  
Ministry of Science and Technology  
Department of Science & Technology  
(International Bilateral Cooperation Division)

Technology Bhavan, New Mehraulli Road  
New Delhi-110016

Date: 15-06-2019

**ORDER**

Subject: Implementation of Indo- Thai Joint project entitled: "Service Oriented Participatory Platform for Local SDI : Smart Civic Services for Second Tier Cities in Thailand and India" coordinated by Dr. Surya Durbha, Centre of Studies in Resources Engineering, Indian Institute of Technology Bombay with the Thai partner Dr. Sittichai Choosumrong, Department of Natural Resources & Environment, Faculty of Agriculture Natural Resources and Environment, Naresuan University - regarding.

Sanction of the President is hereby accorded for incurring an expenditure not exceeding **Rs. 10,95,000/-** (Rupees Ten lakh ninety five thousand only) for implementation of the Indo-Thai joint project entitled "Service Oriented Participatory Platform for Local SDI : Smart Civic Services for Second Tier Cities in Thailand and India" coordinated by Dr. Surya Durbha, Centre of Studies in Resources Engineering, Indian Institute of Technology Bombay in collaboration with Dr. Sittichai Choosumrong, Department of Natural Resources & Environment, Faculty of Agriculture Natural Resources and Environment, Naresuan University, Thailand for a total duration of three years from the date of issue of the sanction order. The detailed breakup of the grant for General as well as Capital Components are given below:-

General Component : Rs. 10,95,000/-  
Capital Component : NIL

2. As per the terms and conditions, agreed by both side, under the project the sending side will bear the cost related to the International air travel, medical insurance and visa charges whereas the receiving side shall bear the cost of accommodation, hospitality and local travels of the visiting scientist. The break-up of approved expenditure is as indicated below :

Item of expenditure	1 <sup>st</sup> Year	2 <sup>nd</sup> Year	3 <sup>rd</sup> Year	Total
(i) Consumable	Rs. 1,00,000/-	Rs. 1,00,000/-	Rs. 1,00,000/-	Rs. 3,00,000/-
(ii) Contingency	Rs. 50,000/-	Rs. 50,000/-	Rs. 50,000/-	Rs. 1,50,000/-
<b>Sub-Total of A</b>	<b>Rs. 1,50,000/-</b>	<b>Rs. 1,50,000/-</b>	<b>Rs. 1,50,000/-</b>	<b>Rs. 4,50,000/-</b>
Indian Scientists to Thai (2 visits per year)	Rs. 70,000/- (2 visits)	Rs. 70,000/- (2 visits)	Rs. 70,000/- (2 visits)	Rs. 2,10,000/- (6 visits)
Thai Scientists to India (2 visits per year)	Rs. 1,35,000/- (2 visits)	Rs. 1,35,000/- (2 visits)	Rs. 1,35,000/- (2 visits)	Rs. 4,05,000/- (6 visits)
<b>Sub-Total of B</b>	<b>Rs. 2,05,000/-</b>	<b>Rs. 2,05,000/-</b>	<b>Rs. 2,05,000/-</b>	<b>Rs. 6,15,000/-</b>
C. Institutional Overhead (10% on Component A (i))	Rs. 10,000/-	Rs. 10,000/-	Rs. 10,000/-	Rs. 30,000/-
<b>Total (A+B+C)</b>	<b>Rs. 3,65,000/-</b>	<b>Rs. 3,65,000/-</b>	<b>Rs. 3,65,000/-</b>	<b>Rs. 10,95,000/-</b>

2.1 Break up for proposed expenditure on each exchange visit is calculated broadly as below:

**For Indian Scientist visiting Thailand** (for an average duration of two weeks)

A. International travel (India to Thailand by lowest available economy class) Rs. 30,000/-  
B. Medical insurance (Silver class) and visa fee) Rs. 5,000/-  
**Total** Rs. 35,000/-





**For Thailand Scientist visiting India** (For an average duration of two weeks)

A	Per diem @ Rs. 2,500/- per day x 15 days	Rs. 37,500/-
B	Accommodation @ Rs. 2,000/- per day x 15 days	Rs. 30,000/-

**Total**

**Rs. 67,500/-**

3. Sanction of the President is hereby accorded for release of 1<sup>st</sup> instalment amounting of **Rs. 3,65,000/-** (Rupees Three lakh sixty five thousand only) to Indian Institute of Technology Bombay. The amount of grant will drawn by the Drawing and Disbursing Officer, DST and will be disbursed to Indian Institute of Technology Bombay. The bank details for electronic transfer of funds through RTGS are given below:-

Account Holders name/ designation	Indian Institute of Technology Bombay
Name of Bank	State Bank of India
Bank Account Number	10725729173
IFSC Code	SBIN0001109
E-Mail	

**Condition for placing of grant amount :**

4. The grantee organisation will maintain separate audited account for the project and the entire amount of grant will be kept in an interest bearing account. For Grants released during F.Y. 2017-18 and onwards, all interest or other earnings against Grant shall be remitted to the Consolidated Fund of India (through Non-Tax Receipt Portal (NTRP), i.e. [www.bharatkosh.gov.in](http://www.bharatkosh.gov.in)), immediately after finalization of the accounts, as it shall not be allowed to be adjusted against future releases of grant. **A certificate to this effect shall have to be submitted along with Statement of Expenditure / Utilisation Certificate for considering subsequent release of Grant/ closure of Project accounts.**

**Conditions for submission of SE/UC and Progress report:**

5. (i) The grantee organisation will furnish to the Department of Science & Technology, financial year wise Utilization Certificate (UC) in the proforma prescribed as per GFR 2017 and audited statement of expenditure (SE) along with up to date progress report at the end of each financial year duly reflecting the interest earned / accrued on the grants received under the project. This is also subject to the condition of submission of the final statement of expenditure, utilization certificate and project completion report within one year from the scheduled date of completion of the project.
- (ii) While submitting Utilisation Certificate/Statement of Expenditure, the organisation has to ensure submission of supporting documentary evidences with regard to purchase of equipment/capital assets as per the provisions of GFR 2017. Subsequent release of grants under the project shall be considered only on receipt of the said documents.
- (iii) A transparent procurement procedure in line with the Provisions of General Financial Rules 2017 will be followed by the Institute/ Organisation under the appropriate rules of the grantee organisation while procuring capital assets sanctioned for the above mentioned project and a certificate to this effect will be submitted by the Grantee organisation immediately on receipt of the grant;

6. The grantee organisation will have to enter & upload the Utilization Certificate in the PFMS portal besides sending it in physical form to this Division. The subsequent/final instalment will be released only after confirmation of the acceptance of the UC by the Division and entry of previous Utilization Certificate in the PFMS.

7. In the event grant has been released under capital head through separate sanction order under the same project for purchase of equipment(s), separate SE/UC has to be furnished for the released Capital head grant.

**Conditions of Assets (if any) :**

8. DST reserves sole rights on the assets created out of grants. Assets acquired wholly or substantially out of government grants (except those declared as obsolete and unserviceable or condemned in accordance with the procedure laid down in GFR 2017), shall not be disposed of without obtaining the prior approval of DST.

**Conditions for International Visits :**

9. All project related visits to be undertaken by the Scientists from either side in connection with the implementation of the project shall require prior approval from this Department separately on a case to case basis before any expenditure is incurred in this regard.

10. As per MoF instructions, it has been decided that in all cases of air travel, both domestic and international, where the Government of India bears the cost of air passage, the officials concerned may travel only by Air India. For travel to stations not connected by Air India, the officials may travel by Air India to the hub/point closest to their eventual destination, beyond which they may utilize the services of another airline which should also preferable be an alliance partner of Air India.

**Other Conditions:**

11. The account of the grantee organisation shall be open to inspection by the sanctioning authority and audit (both by C&AG of India and Internal Audit by the Principal Accounts Office of the DST), whenever the organisation is called upon to do so, as laid down under Rule 236(1) of General Financial Rules 2017.

12. Due acknowledgement of technical support / financial assistance resulting from this project grant should mandatorily be highlighted by the grantee organisation in bold letters in all publications / media releases as well as in the opening paragraphs of their Annual Reports during and after the completion of the project.

13. Failure to comply with the terms and conditions of the Bond will entail full refund with interest in terms of Rule 231 (2) of GFR 2017.

14. The expenditure involved is debit to Demand No.84, Department of Science & Technology for the year 2019-20:

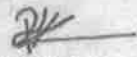
3425	:	Other Scientific Research (Major Head)
60	:	Others
60.798	:	International Cooperation (Minor Head)
14	:	Research and Development
14.00.31	:	Grants-in-aid General for the year 2019-20 (Previous : ICD-3425.60.798.12.00.31)

15. This sanction order being 1<sup>st</sup> instalment for implementation of this project, no SE/UC is due from the grantee institution against this project.

16. This issues with the concurrence of IFD vide their concurrence Dy. No. C/935/IFD 2019-20 dated 11-06-19.




17. As per Rule 234 of GFR 2017, this sanction has been entered at S. No. 38... in the register of grants maintained in the Division.

  
(Rajiv Kumar)  
Scientist-E

To,  
The Pay & Accounts Officer,  
Department of Science & Technology,  
New Delhi-110016

Copy to:

1. Office of the Principal Director of Audit, AGCR Bldg., IP Estate, New Delhi-110002
2. Cash Section (3 copies), DST
3. I.F. Division/Accounts Section, DST
4. Dr. Surya Durbha, Centre of Studies in Resources Engineering, Indian Institute of Technology Bombay-400076
5. Director, Indian Institute of Technology Bombay-400076
6. Accounts officer, Indian Institute of Technology Bombay-400076
7. Sanction Folder
8. Project File.

  
(Rajiv Kumar)  
Scientist-E

**From:** Surya Durbha <[sdurbha@iitb.ac.in](mailto:sdurbha@iitb.ac.in)>  
**Date:** 27 February 2019 at 1:52:37 PM IST  
**To:** sittichai choosumrong <[sittichaic@nu.ac.th](mailto:sittichaic@nu.ac.th)>, [rajesh vattikuti](mailto:rajesh.vattikuti@gmail.com)  
<[rajesh.vattikuti@gmail.com](mailto:rajesh.vattikuti@gmail.com)>, Phaisarn Jeefoo <[p.jeefoo@gmail.com](mailto:p.jeefoo@gmail.com)>, Gérald Fenoy <[gerald.fenoy@geolabs.fr](mailto:gerald.fenoy@geolabs.fr)>, Venkatesh Raghavan <[raghavan@media.osaka-cu.ac.jp](mailto:raghavan@media.osaka-cu.ac.jp)>  
**Subject:** Fwd: Joint selection of Indo-Thai proposal

FYI please.

--  
Dr. Surya Durbha  
Professor  
CSRE, IIT Bombay  
Powai, Mumbai-400076  
Ph: 022-25767679  
URL:<http://www.geosysiot.in/faculty/>  
**Geocomputational Systems and IoT Group:** <http://www.geosysiot.in/>  
**IoT Product:** <http://www.agsense4water.com/>

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Life is either a daring adventure, or nothing. Security is mostly a superstition.  
It does not exist in nature. -Helen Keller

----- Forwarded message -----  
**From:** **Rajiv Kumar** <[rajivarc@nic.in](mailto:rajivarc@nic.in)>  
**Date:** Wed, Feb 27, 2019 at 12:30 PM  
**Subject:** Joint selection of Indo-Thai proposal  
**To:** <[sdurbha@iitb.ac.in](mailto:sdurbha@iitb.ac.in)>

Dear Dr. Durbha

I am pleased to inform you that your proposal submitted against last India-Thailand joint call has been recommended for support. To obtain the administrative and financial approval, we need security / sensitivity check list and Bank details of your institute (format attached). You also need to submit quantified list of consumables with price implications for each item and justifications.

Accordingly you are requested to submit these additional documents to enable us to secure the formal administrative as well as financial approval to support this project.

With best regards

Dr. Rajiv Kumar, Ph.D.  
Scientist 'E', International Division,  
Department of Science & Technology  
विज्ञान एवं प्रौद्योगिकी विभाग  
Ministry of Science & Technology, GOI  
विज्ञान एवं प्रौद्योगिकी मंत्रालय, भारत सरकार  
Technology Bhawan, New Mehrauli Road  
New Delhi - 110016  
Tel: +91-11-26590454 / 26862503  
Fax: +911126862418  
E-mail: [rajivarc@nic.in](mailto:rajivarc@nic.in)



## **Project Proposal On**

# **Service Oriented Participatory Platform for Local SDI Smart Civic Services for Second Tier Cities in Thailand and India**

**Submitted to:**

**Division :International Cooperation (Bilateral)**

**Programme or Scheme :Thailand**

**Submitted By**

**Project Investigator:**

**Prof. Surya S Durbha**

**INDIAN INSTITUTE OF TECHNOLOGY BOMBAY-  
Powai**



## Part 1 : General Information

### General Information:

**1. Name of the Institute/University/Organisation submitting the Project Proposal :**

INDIAN INSTITUTE OF TECHNOLOGY BOMBAY

**2. State**

Maharashtra

**3. Principal Investigator Name:**

Prof. Surya S Durbha

**4. Category:**

General

**5. Type of the Institute :**

A c a d e m i c  
Institutions(Government)

**6. Project Title :**

Service Oriented  
Participatory Platform for  
Local SDI Smart Civic  
Services for Second Tier  
Cities in Thailand and India

**7. Division :**

International Cooperation  
(Bilateral)

**8. Programme Or Scheme :**

Thailand

**9. Academic Area :**

**10. Application Area :**

**11. Government National Initiative :**

Swasth Bharat, Swachh  
Bharat, Smart Cities,

**12. Is the Proposal Submitted Under Specific Call for Proposal:**

Yes

**13. Project Duration :**

3 Years and 0 Months

**14. Project Keywords:**

Smart Civic Amenities, Geospatial Web Services, GIS, Open source, Cloud Platform, Crowdsourcing

**15. Project Summary (Not to exceed one page. Please use separate sheet).**

The maturing of geospatial technologies and penetration of Internet and GPS enabled mobile devices offers tremendous possibilities in deploy Societal GIS applications and services in improve access to civic amenities in both urban and rural areas. In developed economies Civic Tech, Crowdsourcing and Participatory GIS approaches have proven to be both cost-effective and sustainable means to deliver and redress civic services effectively. The recent advances in Open Source Software, availability of Open Data and maturing of Open Geospatial Standards affords a distinct possibility for deploying robust and scalable solutions even in second tier towns and cities in developing economies such as Thailand and India. This project seeks to leverage Free and Open Geospatial Solutions for Geoinformatics FOSS4G to deploy a Geospatial platform for civic services focussing on crucial issues such as waste collection, maintenance of rural roads and optimizing emergency medical services.

The core objectives of the project are as follows

-To analyse the town-specific citizen amenities requirements for the townships of Navi Mumbai and Lavasa in India and Phitsanulok and Phayao in Thailand

-To design and develop a holistic, extensible and scalable crowd-sourced geospatial framework facilitating citizen amenities such as

- 1.Waste disposal Management Service
- 2.Emergency Service Ambulance Routing
- 3.Road Condition Monitoring Service

-To design and develop mobile and desktop enabled Location Based Applications for various citizen amenities implementing the proposed framework

The expected outcome of this project is to enable more efficient access to civic amenities for the citizens in Tier 2 cities. The project will culminate with the deployment of smart GIS services that are built upon standardized and open source geospatial software.

These smart civic amenities services would be accessible to both the citizens and authorities via different platforms such as desktop computers and mobile phones. The system integrates participatory approach in the form of crowdsourcing to allow citizens to identify and tag events that are essential for enhancing the civic amenities services. The GIS platform is capable of facilitating the discovery and querying of resources related to the amenities, and also integrate various ancillary information. The proposed system is designed keeping in mind the diverse services that can be integrated in the future, so scalability of the proposed solution is given high importance, and is capable of integrating a variety of information sources using the Cloud-based Open GIS platform.

## Part 2: Particulars of Investigators

### Principal Investigator:

<b>1. Name:</b>	Prof. Surya S Durbha
<b>Designation :</b>	Associate Professor
<b>Department:</b>	CSRE
<b>Institute/University:</b>	INDIAN INSTITUTE OF TECHNOLOGY BOMBAY
<b>State:</b>	Maharashtra
<b>District:</b>	Mumbai City
<b>City/Place:</b>	Powai
<b>Date of Birth:</b>	16/08/1973
<b>Gender:</b>	Male
<b>Address:</b>	Address: IIT Bombay, Powai, Mumbai 400 076, Maharashtra, India
<b>Pin:</b>	400076
<b>Communication Email:</b>	sdurbha@csre.iitb.ac.in
<b>Alternate Email:</b>	surya.durbha@gmail.com
<b>Mobile:</b>	8369258956
<b>Phone:</b>	02225767679
<b>Fax:</b>	
<b>Category:</b>	General

## Co-Investigator:

**1. Name:** Dr. V Rajesh Chowdhary

**Designation :** Associate Professor

**Department:** Electronics  
Telecommunications  
Engineering

**Institute/University:** INTERNATIONAL  
INSTITUTE OF  
INFORMATION  
TECHNOLOGY, PUNE

**State:** Maharashtra

**District:** Pune

**City/Place:** Hinjawadi

**Date of Birth:** 12/03/1988

**Gender:** Male

**Address:** P-14, Hinjewadi Rajiv  
Gandhi Infotech Park,  
Hinjawadi, Pune,  
Maharashtra

**Pin:** 411057

**Communication Email:** vrajeshc@isquareit.edu.in

**Alternate Email:**

**Mobile:** 8459557727

**Phone:**

**Fax:**

**Category:** General

## Part 3: Suggested Refrees

### Suggested Refrees:



## Savitribai Phule Pune University



SCW191911002



Planning & Development  
Ganeshkhind, Pune-7

### Application for getting financial assistance for organization of State/ National and International level Seminar/Conference/Workshop during the financial year 2019-2020

<b>1.(a)</b>	<b>Name of the College/ Institute</b>	: Hope Foundation and Research Centre (Hope Foundation) International Institute of Information Technology (I <sup>2</sup> IT) Addr: P - 14 Rajiv Gandhi Infotech Park Phase - I Hinjawadi Pune Tal: Mulashi Dist: Pune, Pincode: 411057	
<b>(b)</b>	<b>Address in Details</b>	: P - 14 Rajiv Gandhi Infotech Park Phase - I Hinjawadi Pune Ta: Mulashi Dist: Pune Pincode: 411057	
<b>(c)</b>	<b>Telephone No.</b>	: 020-22933441	
<b>(d)</b>	<b>Email</b>	: principal@isquareit.edu.in	
<b>(e)</b>	<b>District</b>	: PUNE	
<b>2.</b>	<b>Affiliated to Savitribai Phule Pune University</b>	: Yes	<b>(Please attach Affiliation letter Copy)</b>
<b>3.</b>	<b>Course Run by College/Institute</b>	: Graduate,	<b>(Please attach University Course Approval Letter)</b>
<b>4.</b>	<b>Name of the Principal/Director</b>	: Vaishali Vishwas Patil	
	<b>Mobile No</b>	: 9595459547	
	<b>Principal/Director Approved?</b>	: Yes-Permanent	<b>(If Yes, Please attach approval Copy)</b>
<b>5.</b>	<b>Whether accredited/reaccredited by NAAC/NBA</b>	: NAAC Grade: B++	<b>(If Yes, Please attach Copy)</b>
<b>6.</b>	<b>Whether AISHE DCF-II &amp; M.I.S Information Uploaded ?</b>	Yes-C-41681-2018-19-2019	<b>(If Yes, Please Attach Certificate Mention AISHE Ref.No &amp; Year)</b>
<b>7.</b>	<b>Annual Report Information Given to University (Pervious Academic Year 2018-19)</b>	: Yes	<b>(If Yes, Please attach Copy of Covering Letter)</b>
	<b>Ref. No.&amp; Date</b>	: 02/08/2019 I2IT/2019-20/SPPU/Annual Reports/165	
<b>8.</b>	<b>Last Year Q.I.P. Sanctioned Grant Utilized and settled accounts</b>	: Yes	<b>(If, 'No' Please attach Letter of Clarification)</b>
<b>9.</b>	<b>University All types of contribution i.e. Student Welfare Fund, Sports, Admission Section Prorata, Affiliation fee, etc. paid by college/Institutes (2019-2020)</b>	: Yes	<b>( If Yes, Please attach Copy)</b>
<b>10.</b>	<b>Is the College/Institute in Tribal Area?</b>	: No	<b>(If 'Yes', Please attach Copy of Tribal area college certificate of concern authority)</b>
<b>11.</b>	<b>Title of the Seminar/Conference/Workshop</b>	: Opensource WEBGIS platforms	
<b>(a)</b>	<b>Level</b>	: State	
<b>(b)</b>	<b>Faculty under which the Seminar is proposed.</b>	: Engineering	
<b>12.(a)</b>	<b>Scope and area to be covered.</b>	: Geoinformatics, Remote Sensing, Opensource Softwares	
<b>(b)</b>	<b>Objectives</b>	: To Introduce the MapMint framework that provides quick and easy way to build and manage geospatial web application using opensource, open standards and open data To perform hands-on session on Open Data Kit (ODK)	
<b>13.</b>	<b>Total No. of days of the Programme</b>		
<b>(a)</b>	<b>Opening date</b>	: 10/01/2020	

## Savitribai Phule Pune University



SCW191911002



**Planning & Development  
Ganeshkhind, Pune-7**

(b) Closing date	:	11/01/2020
14. Number of participants Expected to be enrolled (as per guideline)		
(a) No. of Outstation Participants	:	10
(b) No. of Local Participants	:	20
15. Whether accommodation would be available to participants	:	Yes
16. Name and address of the Coordinator of the Programme	:	Dr. Risil Chhatrala Department of E&TC International Institute of Information Technology

**17. Names with full addresses of the Resource Persons, if any, to be Invited and duration of their visits. (Annex separate sheet, if necessary)**

Full Name	Address
Prof. (Dr.) Vanketesh Raghwan	Osaka City University, japan
Prof. Natraj Vaddadi	Aundh Pune
Prof. (Dr.) Nitin K Tripathi	AIT, Thailand

18. Whether student participation is involved (expenditure for their participation)	:	Student Participation Involved-Yes, Number of College Students-20, Cost Per Student-300.00
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19. Total estimated amount for			
(a) Honorarium and T.A. to resource persons	:	Rs.	70000.00
(b) Research Journal / Article Publication	:	Rs.	13750.00
(c) Conference kit, Reading material, Xerox, CD etc.	:	Rs.	27500.00
(d) Hospitality , Miscellaneous and Contingencies	:	Rs.	41250.0000
		<b>TOTAL</b>	<b>Rs. 152500.00</b>
<b>MINUS</b>			
(e) Contribution, if any, from the college/institute and other sources such as registration fees. (income from other sources, please Indicate the source and amount).	:	Rs.	35000.00
(f) Net amount required	:	Rs.	117500.00

20. Any other information	:	
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Signature & Seal of the  
Coordinator of the Programme.

Signature & Seal of  
The Principal/Director of the College/Institute.

**Note:-**

1. Submit sr.no. 1 to 4 documents alongwith application form.
2. Sr.no. 5 to 8 documents submit on or before 30th november 2017 after payment of all dues and submission of documents to the university.

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Planning & Development  
Ganeshkhind, Pune-7

For Office Use Only :	2019-2020
प्राचार्य/ संचालकांचे मान्यतेचे पत्र	
ज्या विषयाचा नॅशनल सेमिनारचा प्रस्ताव असेल त्या विषयाचे P. G. Course मान्यतेचे पत्र	
ज्या विषयाचा इंटरनॅशनल सेमिनारचा प्रस्ताव असेल त्या विषयाचे Ph.D.Research Centre मान्यतेचे पत्र	
NAAC/NBA सर्टिफिकेट	
वार्षिक अहवाल माहिती विध्यापीठाकडे सादर केल्याची पोहोच प्रत (2018-2019)	
संलग्नता/नुतनीकरण शुल्क जमा केल्याची बँकेच्या पावतीची प्रत (ऑक्टोबर 2019)	
विद्यार्थी कल्याण मंडळ, क्रीडा विभाग, शैक्षणिक प्रवेश विभाग येथे जमा केलेल्या शुल्क/निधीचा प्रोरेटा पोहोच प्रत (2019)	
AISHE व MIS Certificate (2019-2020)	

Checked By \_\_\_\_\_



## Part 4: Financial Details

### Financial Details:

**Total Project Cost(In Rs.):**

2550000.00

**PFMS Unique Code:**

IITbombay



## Part 5: Current Ongoing Project

### Current Ongoing Project:

<b>1. Project Title:</b>	ICT In Water And Pest Disease Management For Yield Improvement In Horticulture
<b>Funding Department:</b>	Ministry of Electronics and Information Technology
<b>Project Duration :</b>	5 Years 0 Months
<b>Total Project Cost (In Rs.) :</b>	10755000.00
<b>Start Date in :</b>	September 2013

## **List of Uploaded Documents:-**

1. Complete Project proposal
2. Biodata
3. Certificate from PI
4. Conflict of interest
5. Endorsement from head of Institute

**INDIA-THAILAND PROGRAMME OF COOPERATION  
IN SCIENCE & TECHNOLOGY**

**(Proforma for Application for Joint Research Project)**

**A. PROJECT IDENTIFICATION**

1. Title of the Project: **Service Oriented Participatory Platform for Local SDI: Smart Civic Services for Second Tier Cities in Thailand and India**

2. Duration of the Project in months: 36

Expected date of commencement: November 2018

3. Field of Science & Technology covered by the proposal: Geographic Information Systems, Geospatial Standards, MapMint, Open Data Kit and/or MapMint4ME, GeoReport, Cloud Platform, Crowdsourcing

Key words qualifying the scope of the proposal: Open Source, Open Data, Open Standard, software as a service (SaaS), process optimization

4. Project Investigators (PI) & Collaborating Institutions

	<u>Indian</u>	<u>Thai</u>
<b>Name of Principal Investigator:</b>	Dr. Surya Durbha	Dr. Sittichai Choosumrong
<b>Designation:</b>	Associate Professor, Centre of Studies in Resources Engineering	Assistant Professor, Dept. of Natural Resources & Environment
<b>Date of Birth</b>	August 16, 1973	21 September 1981
<b>Institute</b>	Indian Institute of Technology Bombay	Faculty of Agriculture Natural Resources and Environment
<b>Contact Address</b>	211, GeoComputational and IoT Systems Lab, CSRE, Indian Institute of Technology Bombay, Powai, Mumbai 400076	Naresuan University, 65000
<b>Telephone No. : Office</b>	+91 02225767679	+66 55 96 2753
<b>Residence</b>	+91 022 25768679	+66 91 767 2963
<b>Fax No.</b>		
<b>e-mail</b>	sdurbha@iitb.ac.in	sittichaic@nu.ac.th

<b>Name of the Co-Investigator(s)</b>	<b>Dr. V Rajesh Chowdhary</b>	<b>Dr. Phaisarn Jeefoo</b>
<b>Designation</b>	Associate Professor, Electronics & Telecommunications Engineering	Associate Professor, University of Phayao · GIS FoS
<b>Date of Birth</b>	12 March 1988	21 May 1981
<b>Institute</b>	International Institute of Information Technology	School of Information Communication and Technology (ICT)
<b>Contact Address</b>	P-14, Hinjewadi Rajiv Gandhi Infotech Park, Hinjawadi, Pune, Maharashtra 411057	
<b>Telephone No. : Office</b>	+91 20 22933441	+66 5446-6666 Ext. 2312
<b>Residence</b>	+91 8459557727	+66-8-7203-0721
<b>Fax No.</b>	+91 20 22934191 (Fax)	p.jeefoo@gmail.com
<b>e-mail</b>	vrajeshc@isquareit.edu.in	

## B. TECHNICAL INFORMATION

### 1. Objectives of the Project (up to 200 words)

The core objectives of the project are as follows:

- To analyse the town-specific citizen amenities requirements for the townships of Navi Mumbai and Lavasa in India and Phitsanulok and Phayao in Thailand
- To design and develop a holistic, extensible and scalable crowd-sourced geospatial framework facilitating citizen amenities such as:
  - Waste disposal Management Service
  - Emergency Service (Ambulance Routing)
  - Road Condition Monitoring Service
- To design and develop mobile and desktop enabled Location Based Applications for various citizen amenities implementing the proposed framework

### 2. Justification for collaboration & brief information about national and international scenario in the proposed area of research (up to 200 words)

The maturing of geospatial technologies and penetration of Internet and GPS enabled mobile devices offers tremendous possibilities in deploy Societal GIS applications and services in improve access to civic amenities in both urban and rural areas. In developed economies Civic Tech, Crowdsourcing and Participatory GIS approaches have proven to be both cost-effective and sustainable means to deliver and redress civic services effectively. The recent advances in Open Source Software, availability of Open Data and maturing of Open Geospatial Standards affords a distinct possibility for deploying robust and scalable solutions even in second tier towns and cities in developing economies such as Thailand and India. This project seeks to leverage Free and Open Geospatial Solutions for Geoinformatics (FOSS4G) to deploy a Geospatial platform for civic services focussing on crucial issues such as waste collection, maintenance of rural roads and optimizing emergency medical services. The PI from India has deep knowledge on geospatial standards and Cloud computing and the Co-PI, besides technical expertise in mobile GIS technologies has a first hand experience about situation in Thailand. The PI from Thailand has vast expertise in deploying Open Source based solutions for various applications such as Emergency Medical Services and has several publication on optimizing routing on road networks. The Co-PI from Thailand is an expert in deploying Web-GIS solutions and has vast experience on GIS applications in public health. The problems to be addressed and the expertise available with the research team offers a strong justification for research collaboration focused on delivering viable geospatial solutions for second tier cities in Asia.

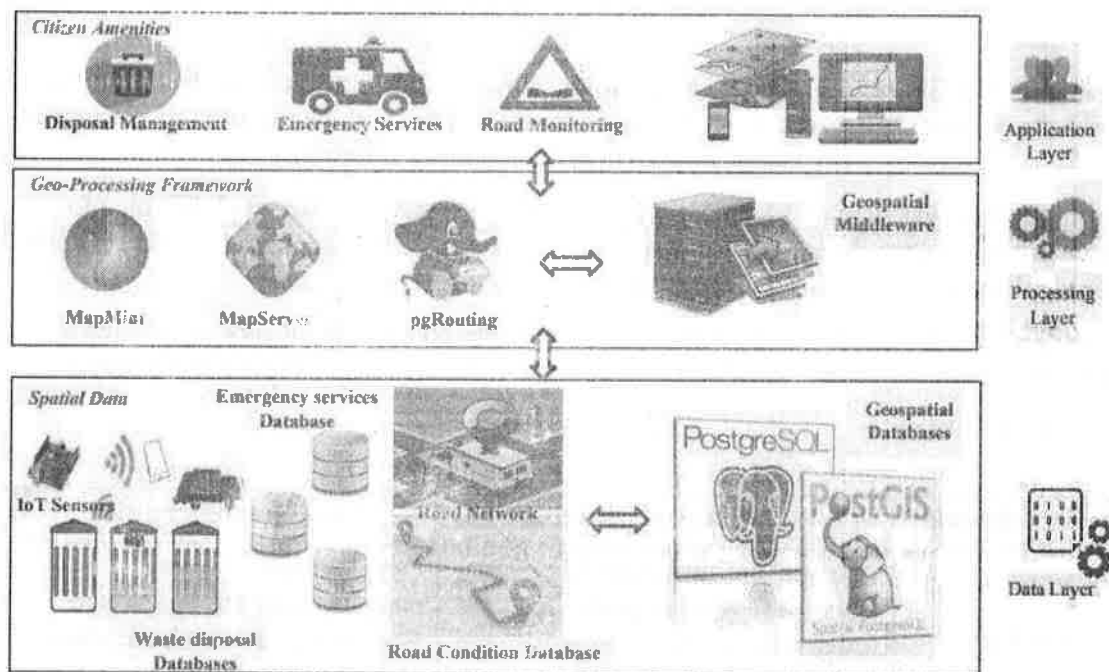
3. Scientific & technical description of the project including methodology (up to 400 words)

The Software as a Service (SaaS) platform proposed in the project is planned to be implemented for 4 locations, 2 in India and 2 in Thailand. The architecture of the proposed platform (Figure 1), comprises of a layered approach and can be described as follows:

1. **Data Layer:** The spatial data required for the platform would be acquired from different sources for different applications.
  - a. The waste disposal database would store the data acquired from the Internet of Things (IoT) sensing modules deployed over the waste accumulation regions (IoT nodes) throughout different locations in the town. These IoT modules would be transmitting the structured information about the vacant disposal spots. The users can find the route to the nearest available vacant spot for dumping the wastes.
  - b. Emergency services database would encompass the comprehensive road network of the town with the hospitals and medical facilities forming nodal points in the network. The resulting application is intended to be used by Ambulances to reach emergency locations using the fastest route available during the time of emergency.
  - c. The Road Condition Monitoring Database would store the locations of road anomalies as point features over the township's road network.



2. **Processing Layer:** The data from the Geospatial databases would be processed by the Processing Layer which comprises of Open-source libraries like MapMint<sup>1</sup> (A Spatial Data Infrastructure used for visualizing and analysing spatial data), pgRouting<sup>2</sup> (A routing library implementing functions for routing over a relational database) and GeoServer<sup>3</sup> (A java-based server capable of editing, processing and sharing geospatial data).
3. **Application Layer:** The Application layer comprises of three applications as services for efficient waste disposal management, emergency routing and road condition monitoring. The road condition monitoring service would be a two-way crowdsourcing encouraged service as it would be useful for authorities as well as commuters.



**Figure (1):** Architecture of the geospatial management, emergency routing and road monitoring services platform

The crowd-sourced application for road condition monitoring is in the process of development. The application can show the route between two locations (source and destination) on the basis of minimum number of potholes. This application is of particular interest to the ambulances and school vans. Figure 2 shows some illustrations of the developed (preliminary) road monitoring application.

<sup>1</sup> MapMint: <https://github.com/mapmint/mapmint>

<sup>2</sup> pgRouting: <https://pgrouting.org/>

<sup>3</sup> GeoServer: <http://geoserver.org/>



(a)



(b)

**Figure (2):** Illustrations of road monitoring service. (a) depicts the route based on the minimum potholes. The red dots in the image represents the pothole reported by commuters. (b) shows the interface for reporting a pothole

This application has won an ESRI All India competition, **mApp your way**<sup>4</sup>. We plan to integrate it with other citizen amenities application proposed in this project to make it's use more significant.

The project would culminate into a Geospatial platform comprising of services related to amenities, which we believe would be of great use to the citizens of India and Thailand.

#### 4. Plan of work

Time Schedule	Indian Responsibilities	Thai Responsibilities
1st Year	Analyse the town-specific citizen amenities requirements for the townships of Navi Mumbai and Lavasa in India and Phitsanulok and Phayao in Thailand	Development of spatial database for Pithsanulok and Phayao based on existing data as well as ancillary data through field data collection campaigns. Development of mobile GIS for data collection
2nd Year	To design and develop a holistic, extensible and scalable crowd-sourced geospatial framework facilitating civic amenities such as Waste Disposal Management Service, Emergency Services (ambulance routing) and Road Condition Monitoring Service	Deploying of Web-GIS platform to assimilate field data from mobile devices and provide data services for for optimal routing in garbage collection and medical emergency, road condition mapping and reporting. Testing

<sup>4</sup> mApp your way by ESRI: <http://www.csre.iitb.ac.in/esriAppChallenge.php>

		of Web-GIS platform in real case scenarios
3rd Year	<p>Design and develop mobile and desktop enabled Location Based Applications for various citizen amenities implementing the proposed framework.</p> <p>Test, advertise and publish the developed applications for use by citizens of Navi Mumbai and Lavasa, in India and Phitsanulok and Phayao in Thailand</p>	<p>Validation of workflow and integrated software package for deploying Mobile-Web-GIS framework based on Virtualization Technology (e.g. OSGeo-Live). Testing of the Virtualized solutions on public cloud such as Amazon and Azure. Development of documentation to facilitate adoption in other town and cities in Asia</p>

5. Number of exchange visit required to achieve the Project Objectives (Year wise)

Period	India to Thailand		Thailand to India	
	Number	Duration	Number	Duration
1st Year	2	15 days	2	15 days
2nd Year	2	15 days	2	15 days
3rd Year	2	30 days	2	30 days

6. Expected results of this cooperation (e.g. joint publications, patents etc.)

Are any of the expected results like to have commercial value? How do you propose to share it? (up to 100 words)

The platform and applications developed as a part of this research have big societal and commercial value in terms of civic issues to be tackled and the savings in software licensing costs due to the adoption of Open Source Software suite. The results would be widely disseminated in the form of research publications, conference presentations and training workshops to encourage adoption in other towns. The software developed will be published on software development platform such as GitHub to facilitate customization/localizations and business use by civic contractors and start-ups. We expect to have at least 4 publications in peer reviewed journal, and also several presentations at national and international seminar and conference to present the research outcomes. The entire software suite to be used and developed during the project will be based on Open Source Software licence and, therefore, will not involve any patents.

7. Bio-data of Indian and Thai investigators to appended in about 2 pages each.

Bio-data appended towards the end of the document.

## C. ADMINISTRATIVE & FINANCIAL INFORMATION

### 1. Project Cost

Year	Consumables# (Lakhs)	Contingency (Lakhs)	Exchange Visits ( Lakhs)		Total (Lakhs)
			India to Thailand	Thailand to India	
1st Year	1.5	1.0	2.5	2.5	7.5
2nd Year	1.0	1.5	2.5	2.5	7.5
3rd Year	1.0	1.5	4	4	10.5
Total	3.5	4.0	9	9	25.5

#### Justification for consumables

The consumables budget is required for purchasing various sensors (pressure sensors, Range sensors, GPS modules, microcontroller kits, etc.) that would be deployed for the waste management, emergency services and road condition monitoring modules of the project. These are essential components of the proposed IoT based sensing system integrated with GIS services to significantly improve the quality of service for civic amenities management. Further, deployment of the webGIS platform requires us to buy a domain and website hosting charges with Dedicated and Virtual Private Server capabilities to enable us to install our own software, configure it and deploy.

#### Justification for contingency

Contingency amount is needed for covering stationery, printing, photocopying and other incidental charges. Expenses related to field data collection in all the selected four places. In addition, it will be utilized for other things like, buying small accessories, equipments for setting up of sensors, charges for hauling the equipment for field deployment.

#### Justification for travel

Travel amount is required for understanding the ground conditions at the selected Tier 2 cities and also to be able to meet with local authorities to gauge their needs. Requirements collection, analysis and development of the framework requires face-to-face-meeting and extensive discussions. Further, travel is necessary for presenting research results in conferences and DST review meetings. On an average, results will be presented annually in one or two national conferences.

## 2. Signatures of the Project Investigators & Co - investigators



### **Certificate from Principal Investigators**

“Service Oriented Participatory Platform for Local SDI: Smart Civic Services for Second Tier Cities in Thailand and India”

submitted as a project proposal under the Programme of Cooperation in the fields of Science and Technology for the years 2018-20, the Indian Department of Science and Technology (DST), Ministry of Science and Technology, Government of India and the Ministry of Science & Technology (MOST) of the Kingdom of Thailand.

We the undersigned, confirm on behalf of our organisations, Centre of Studies in Resources Engineering (CSRE), IIT Bombay, India and the Faculty of Agriculture Natural Resources and Environment, Naresuan University, Thailand, our interest in the above-mentioned project. We would seek to collaborate for the progress of this project and support the project submission.

We strongly believe that the submitted proposal is in line with the goals and aspirations of Programme of Cooperation in the fields of Science and Technology for the years 2018-20 and is consistent with the strategies of our organization.

We therefore fully support this initiative.

**Dr. Sittichai Choosumrong (PI)**  
Naresuan University, Thailand  
E-mail: [sittichaic@nu.ac.th](mailto:sittichaic@nu.ac.th)  
Tel: +66-5-5962753  
Dated: 16/07/2018

**Dr. Surya Durbha (PI)**  
CSRE, IIT Bombay, India  
E-mail: [sdurbha@iitb.ac.in](mailto:sdurbha@iitb.ac.in)  
Tel: +91-22-25767679  
Dated: 16/07/2018

**Declaration from the Heads of the Collaborating Institutions:**

It is certified that :

- i. The Institutions agree to participate in this Joint Research Project; (Indo-Thailand) under the Research area: "Geospatial Technologies covering creation of GIS of towns in Thailand for urban development". The title of the proposed project is: "*Service Oriented Participatory Platform for Local SDI: Smart Civic Services for Second Tier Cities in Thailand and India*"
- ii. The Institutions shall provide infrastructure & necessary facilities for implementing the joint project;
- iii. The Institutions assume to undertake financial & other management responsibility for the part of the project work to be carried
- iv. the back-up funding for manpower, consumabl

Signature & Seal of the Head of the Institutions

(India)

विभागाध्यक्ष/Head  
सी.एच.एन.ए.  
Centre of Studies in Resources Engineering  
आर.वाय.टी. मुंबई/RT Bombay,  
महाराष्ट्र, मुंबई-४०६/Powai, Mumbai - 70.



(Assoc. Prof. Dr. Vidhaya Jansila)  
Vice President, Naresuan University



## Biodata of investigators

### Curriculum vitae

Dr. Surya S. Durbha  
Associate Professor  
Centre of Studies in Resources Engineering (CSRE)  
Indian Institute of Technology Bombay (IITB)  
Ph. 022-25767679, email. [sdurbha@iitb.ac.in](mailto:sdurbha@iitb.ac.in)

#### A. PROFESSIONAL PREPARATION

<u>College/University</u>	<u>Major</u>	<u>Degree&amp;Year</u>
Andhra University	Civil-Environmental Engineering	B.E., 1994
Andhra University	Remote Sensing	M.Tech, 1997
Mississippi State University (USA)	Computer Engineering	Ph.D., 2006

#### B. ACADEMIC/PROFESSIONAL APPOINTMENTS

- Associate Professor(Sep 2014-till date), Centre of Studies in Resources Engineering (CSRE), IIT Bombay
- Assistant professor (Apr 2011-Aug 2014), Centre of Studies in Resources Engineering (CSRE), IIT Bombay
- Assistant Research Professor (June 2009 –March 2011), Mississippi State University, Center for Advanced Vehicular Systems (CAVS), USA.
- Assistant Research Professor (2006 – June 2009), Mississippi State University, GeoResources Institute (GRI), USA.
- Scientist, 'SD', (1998-2001), Indian Institute of Remote Sensing (IIRS), Department of Space, India;

#### C. SELECTED PUBLICATIONS

(Full list of Publications:

<https://scholar.google.co.in/citations?user=9b5RVUAAAAJ&hl=en&oi=ao>)

- U. Bharambe., S. S. Durbha (2018), Adaptive Pareto-based approach for geo-ontology matching. *Computers & Geosciences*, Elsevier, 119, 92-108.
- U. Bhangale., S. S. Durbha, R. L. King., N. H Younan., & R. Vatsavai. (2017). High performance GPU computing based approaches for oil spill detection from multi-temporal remote sensing data. *Remote Sensing of Environment*, Elsevier.
- S. Sawant, S. S. Durbha, A. Jagariapudi, (2017), Interoperable agro-meteorological observation and analysis platform for precision agriculture: A case study in citrus crop water requirement estimation. "Computers and Electronics in Agriculture", Volume 138, Pages 175-187, 2017 (Elsevier)
- K. R. Kurte, S. S. Durbha, R. L. King., N. H Younan., & R. Vatsavai. (2016). Semantics-Enabled Framework for Spatial Image Information Mining of Linked Earth Observation Data. *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, 10(1), 29-44.)
- S. S. Durbha, R. L. King, A. Prakash, & N. H. Younan, (Aug 2012). Transfer Learning for Image Information Mining Applications. *International Journal of Image and Data Fusion* Taylor & Francis, 10, 17. DOI: 10.1080/19479832.2012.698658.



- B. Gokaraju, S. S. Durbha R. L. King, & N. H Younan (Sep 2011). A Machine Learning Based Spatio-Temporal Data Mining Approach for Detection of Harmful Algal Blooms in the Gulf of Mexico. *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing* IEEE, 4(3), 710-720
- S. S. Durbha, R. L. King,, S. K.,Amanchi, S. Bheemireddy, & N.H. Younan (2010). Standards-based middleware and tools for coastal sensor web applications. *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, 3(4), 451-466.
- S. S. Durbha, R. L. King, and N.H. Younan (2007) "Support Vector Regression to estimate Leaf Area Index from Multi-angle Imaging Spectroradiometer, *Remote Sensing of Environment*, 107, 348-361
- V. P. Shah, N. H. Younan, S. S. Durbha, and R. L. King, (April 2007). "A Systematic Approach to Wavelet Decomposition-Level Selection for Image Information Mining From Geospatial Data Archives," *IEEE Transactions on Geoscience and Remote Sensing*, Vol. 45, no. 4, pp. 875 – 878,.
- S. S. Durbha and R. L. King, (Nov 2005.) "Semantics-enabled framework for knowledge discovery from Earth observation data archives", *IEEE Transactions on Geosciences and Remote Sensing* Vol.43, NO.11,

#### D. SYNERGISTIC ACTIVITIES

- Disclosure filed at NASA eNTRe system on a new technology Report (NF1679) by MSU office of technology and commercialization

Report title: Semantics-Enabled Knowledge Retrieval from Earth Observation Data Archives

- **Patent:** Sawant S.A., Durbha S.S., J. Adinarayana. SenseTube: Interoperable Wireless Sensing System for Precision Agriculture, Patent File Number: 2236/MUM/2015. (Status: published)
  - Co-instructor for a full day Tutorial on "Advanced Classification Techniques for remote sensing "at International Geoscience and Remote Sensing Symposium (IGARSS 2009,2010,2012).
  - **Program Committee Member:** Pattern Recognition in Remote Sensing 2012, 2014, 2016, Big Spatial, 2015, PetascaleData Analytics: Challenges, and Opportunities (PDAC-12), ICVGIP12, Spatial and Spatio-temporal data mining (SSTDM 08, 09, 10,11,12), Theme coordinator/Session Organizer, IGARSS 09,14,15,16 Semantic Scientific Knowledge Integration (SSKI) Symposium, Stanford. **Invited session co-chair:** IGARSS 2009, 2010, 2011 (Data Mining and Machine Learning for Remote Sensing), **Session co-chair (IGARSS 2008, 2009, 2010):** GIS Techniques and Standards (oral), Geographic Information Science: Techniques (oral) GIS Techniques and Standards I (poster), GIS Techniques and Standards II (poster), Geographic Information Science Applications Data Mining Tools and applications, Geographic Information Science tools
  - **Manuscript Reviewer**
- Journals:** Computers and Geosciences Journal, IEEE Geoscience and Remote Sensing, IEEE Geoscience and Remote Sensing Letters, IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing, Geoinformatica, International Journal of Image and Data Fusion, Earth Science Informatics (Springer), Optical Engineering, Journal of Geomatics. Computers and Electronics in Agriculture. **Conference papers reviewer:** IGARSS (2008-2017), SSTDM (2008-2017), IAPR Workshop on Pattern Recognition in Remote Sensing PRRS-2012,2014, 2016,2017, SSTDM-2015, 2016,2017, Big spatial 2015,16,17, ICSD-2015, Petascale Data Analytics: Challenges and Opportunities (PDAC-12), SSKI 2008
- Thesis Advisor and Postgraduate Scholar Sponsors over the Last Five Years ( 3 PhD, 16 M.Tech):**
- 2011 - current Supervisor for 5 PhD students, Co-supervisor to 4 PhD students, CSRE, IIT Bombay

- 2011-2017 Supervisor to 12 M.Tech and Co-supervisor to 4 M.Tech Students
- 2008-2010 Co-Major Professor for 6 students (MSU, USA)
- 2008-2010 Ph.D. Graduate committee member for 4 students (MSU, USA)
- 2007- 2010 PhD. Co-Major Professor and dissertation Supervisor for 1 student (MSU, USA)

**Awards/Recognition**

- NVIDIA Innovation award, NVIDIA, 2016
- Excellence in Teaching award, IIT Bombay, 2016
- StatePride Faculty award, MSU, 2009
- Outstanding Research award at MSU, 2008

## Curriculum vitae

Dr. Sittichai Choosumrong  
Assistant Professor  
Department of Natural Resource and Environment  
Faculty of agriculture, natural resources and environment,  
Naresuan university, Phitsanulok, Thailand  
Ph. +66(55)962753, email, [sittichaic@nu.ac.th](mailto:sittichaic@nu.ac.th)

### PROFESSIONAL PREPARATION

College/University	Major	Degree&Year
Naresuan University, Thailand	Geography	B.Sc., 2004
Osaka City University, Japan	Urban Informatics	M.S, 2011
Osaka City University, Japan	Urban Informatics	Ph.D., 2014

### B. ACADEMIC/PROFESSIONAL APPOINTMENTS

- Assistant Professor (2014 - till date), Department of Natural Resource and Environment, Naresuan University, Thailand
- Meteorologist (2007-2008), at National Disaster Warning Center and Thai Meteorological Department
- Team Leader (2005- 2007), Ortho Photogrammetry section at Pasco Co., Ltd. Bangkok, Thailand

### C. SELECTED PUBLICATIONS

Choosumrong, S., Raghavan, V., Delucchi, L., Yoshida, D. and Vinayaraj, P. (2014) Implementation of Dynamic Routing as a Web Service for Emergency Routing Decision Planning, *International Journal of Geoinformatics*, Vol.10, No.2, pp.13-20 (ISSN 1686-6576)

Choosumrong, S., Raghavan, V. and Bozon, N. (2012) Multi-Criteria Emergency Route Planning Based on Analytical Hierarchy Process and pgRouting, *Geoinformatics*, Vol.23, No. 4, 159-168. Choosumrong, S., (2014) Development of A Web-GIS Application Based on Mobile Interface for Multi-Purpose Application Fields Using FOSS4G, *Proceedings of GIS-IDEAS 2014, Danang, Vietnam*, 6-9 December 2014

Choosumrong, S., Raghavan, V. and Yoshida, D. (2013) Implementing Dynamic Routing as a Web Service for Multi-purpose Applications, *Proceedings of Geoinforum 2013, Tsukuba, Japan*, 20-21 June 2013, *Geoinformatics*, Vol. 24, No. 2, pp. 98-99 (ISSN 0388-502X).

Choosumrong, S., Raghavan, V. and Bozon, N. (2012) Development of Web-GIS Application for Emergency Route Decision and Planning using AHP analysis and

pgRouting algorithm, Proceedings of GIS-IDEAS 2012, Hochiminh, Vietnam, 16-20 October 2012.

Choosumrong, S., Raghavan, V. and Realini, E. (2010) Implementation of dynamic cost based routing for navigation under real road conditions using FOSS4G and OpenStreetMap, Proceedings of Geoinform 2010, Tokyo, Japan, 22-23 June 2010, Geoinformatics, Vol. 21, No. 2, pp. 108-109 (ISSN 0388-502X).

Choosumrong, S. and Raghavan, V. (2011) Optimal Traffic Routing Based on Real-time Cost Updates for Current Road Conditions, Proceedings of Geoinform 2011, Osaka, Japan, 23-24 June 2011, Geoinformatics, Vol. 22, No. 2, pp. 66-67 (ISSN 0388-502X)

#### **D. SYNERGISTIC ACTIVITIES**

##### **Projects:**

⊙

PI "Development of an elderly database to support change and follow up with GIS" granted from the budget of 2018 for National Strategic Plan Budget during 2017-2018

⊙

PI for "Development of a Timely Environmental Alert System in Farms to Enhance Productivity for Small Farmers" on Annual Research and Innovation Project to transfer technology funded by CMR Foundations during 2016-2017

PI for "Development of Decision Support Systems to Find Routes for Emergency Medical Services" funded by Institute of Emergency Medicine, Thailand during 2016-2017.

⊙

Project Consultant for "Data Analysis and Mapping for One Map Improvement" funded by Ministry of Natural Resources and Environment during 2016

##### **Selected Professional Training Received/Conducted:**

November 7-8, 2008 : Attended to FOSS4G (Free and Open Source Software for Geospatial) Osaka conference, MapServer workshop and pgRouting workshop in Osaka.

August 2009: Attended the Database Management System using PostgreSQL/PostGIS Workshop in Osaka.

September 2009: Attended the OpenLayers and MapServer workshop in Umeda Campus, Osaka City University.

October 2009: Attended the ZOO-Web processing Service workshop in Umeda Campus, Osaka City University.

June 2011: Attended an Opensource Geospatial workshop in Umeda Campus, Osaka City University.

June 2011: Attended the Plugin for QGIS using Python programming workshop in Osaka City University.

June 5th, 2013: Attended the UAV, disaster mapping workshop in Umeda Campus, Osaka City University.

June 12th, 2013: Attended DEM analysis using QGIS workshop in Umeda Campus, Osaka City University.

August 12, 2014 : special lecturer on MapServer workshop at University of Phayao, Phayao, Thailand.

December 2, 2014 : ZOO WPS and MapMint workshop in AIT, Bangkok, Thailand.

December 6, 2014 : ZOO WPS and MapMint workshop in University of Danang, Vietnam. December 12, 2014 : MapServer workshop in Naresuan University, Phitsanulok, Thailand.

**Awards/Recognition**

2011-2014 Japanese Government (Monbukagakusho) Scholarship for pursuing Doctoral Degree in Urban Informatics, Osaka City University, Japan

2009-2011 Japanese Government (Monbukagakusho) Scholarship for pursuing Master Degree in Urban Informatics Osaka City University, Japan

2008-2009 Japanese Government (Monbukagakusho) Scholarship for Research student in Urban Informatics Osaka City University, Japan.

## Curriculum vitae

Dr. V Rajesh Chowdhary  
Associate Professor  
Electronics & Telecommunication Engineering (E&TC)  
International Institute of Information Technology, Pune (IIITP)  
Ph. 020-22933441, email. [vrajeshc@iisquareit.edu.in](mailto:vrajeshc@iisquareit.edu.in)

### A. PROFESSIONAL PREPARATION

<u>College/University</u>	<u>Major</u>	<u>Degree&amp;Year</u>
Jawaharlal Nehru Technological University, Kakinada	Electronics & Communication Engineering	B.E., 2009
International Institute of Information Technology, Pune	Satellite Communication & Space Systems	M.Tech, 2011
Asian Institute of Technology (Thailand)	Remote Sensing & GIS	Ph.D., 2015

### B. ACADEMIC/PROFESSIONAL APPOINTMENTS

- Associate Professor (Jan 2018 - till date), Electronics & Telecommunication Engineering (E&TC), IIIT Pune
- Research Associate (Jun 2015 -- Dec 2017), Remote Sensing & GIS, Asian Institute of Technology, Thailand

### C. SELECTED PUBLICATIONS

Sivavaraprasad, G., Otsuka, Y., Tripathi, N.K., Chowdhary, V.R., Ratnam, D.V., Khan, A.K., "Spatial and temporal characteristics of ionospheric total electron content over Indian equatorial and low-latitude GNSS stations" in Conference on Signal Processing And Communication Engineering Systems (SPACES), 4th -5th January 2018, IEEE Xplore. ☞  
Suraj P.S., Kumar Dabbakuti, J.R.K., Chowdhary, V.R., Nitin K. Tripathi, D.Venkata Ratnam "Linear time series modeling of GPS-derived TEC observations over the Indo-Thailand region" <https://doi.org/10.1007/s00190-017-1099-6>, Journal of Geodesy, 2017.  
☞ V Rajesh Chowdhary, Nitin K Tripathi, Sanit Arunpold, "Ionospheric Impact of Severe Space Weather Events on GNSS Measurements from Thailand" in 2nd International Conference on Aerospace Electronics, Electrical, Communications & Instrumentation, Vijayawada, India, 22nd -23rd October 2016. ☞ Sarawoot Rungruenwajiake, Dessi Marlia, Azad Ahmad Mansoori, V. Rajesh Chowdhary, "Investigation of 08 November 2004 Storm effects on Ionosphere at Southern and Northern hemisphere and its comparison with IRI and RT-IRI", in International Reference Ionosphere (IRI) 2015 Workshop, during 2nd -13th November 2015, Bangkok, Thailand. ☞ Chowdhary, V.R., Tripathi, N.K., Arunpold.S.,

Raju, D.K., Characterization of GPS-TEC in low-latitude region over Thailand during 2010-2012, *Annals of Geophysics*. Vol 58, No 5, 2015. ☛ Chowdhary, V.R., Tripathi, N.K., Arunpold, S., Raju, D.K., Variations of total electron content in the equatorial anomaly region in Thailand, *Advance in Space Research*, 55, 231-242, 2015. ☛ Arunpold, S., Tripathi, N.K., Chowdhary, V.R., Raju, D.K., Comparison of GPS-TEC measurements with IRI-2007 and IRI-2012 modeled TEC at an equatorial latitude station, Bangkok, Thailand. *J. Atmos. Sol. Terr. Phys.* 117, 88-94, 2014. ☛ Tripathi, N.K., Chowdhary, V.R., Arunpold, S., "Ionospheric Scintillations during increasing Solar Activities using GPS", in *Asian Congress on Citizen & Environment Safety & Security*, U-Town, Singapore, 5th - 7th June 2013.

#### **D. SYNERGISTIC ACTIVITIES**

##### **Projects:**

☛ Collaborative Research for the Regional Forum on Climate Change on the topic "Developing new methods to monitor forest carbon in Asian tropical forests" 2016 - 2018, funded by French Government as Research Associate ☛ Project for developing course modules on "GIS for Health & Geoinformatics for Coastal & Marine Resource Management" 2015 - 2018, funded by Erasmus + (EU) as Research Associate ☛ Local ionospheric scintillation analysis (LISA) using GNSS stations in Thailand, 2014-2016, funded by US AOARD as Research Associate ☛ Research on ionospheric Scintillations in Asia (RISA) using GNSS, 2011- 2014, funded by US AOARD (United States Asian Office of Aerospace Research & Development) as Doctoral Student

##### **Selected Outreach Activities:**

☛ Conducted 3 days National level Faculty Development Program on "Geoinformatics System" at Department of Computer Engineering, International Institute of Information Technology, Pune, India during 24th - 26th April 2018 ☛ Conducted five days workshop on "Remote Sensing & GIS Applications" at Civil Department, Vasireddy Venkatadri Institute of Technology, Nambur, Guntur, Andhra Pradesh, India, during 18th - 22th December 2017. ☛ Conducted two days training for "Capacity Building Programme on Flood Risk Assessment and Management" at AIT for Climate Technology Centre & Network (CTCN) project, during 30th October - 8th November 2017 as a resource personnel. ☛ Conducted 5 days workshop on "Geoinformatics System Development" at JIS College of Engineering, Kalyani, West Bengal, India during 24th - 28th July 2017. ☛ Conducted a one week hands-on training on Urban Planning & Management for SJ College of Engineering at Mysore, India under MHRD sponsored GIAN project during 24th -30th July 2016 with Prof Nitin Kumar Tripathi. ☛ Conducted a one-week hands-on training on RS & GIS for UNDP personnel at AIT during 24th -28th November 2015.

##### **Selected Conferences/Workshop Organized:**

☛ Organized one day conference on "Flood Rapid Defence System" in association with Korean Institute of Civil Engineering & Building Technology, South Korea at AIT on 21st November 2017.

☛ Organized two days workshop on "Mobile Web GIS Applications for Monitoring & Evaluation" in association with Open Source Geo (OSGeo) at Holiday Inn, Bangkok during 25th -26th August 2017. ☛ Organized four days workshop on "Creating Research Competency" in association with "National Research Council of Thailand" at Asian Institute of Technology, Thailand, funded by NRCT, during 3rd - 6th July 2017. ☛ Organized two weeks "Geo Services 4 Sustainability (GeoS4S) International Summer School - 1" co-funded by the Erasmus+ programme of the European Union at Asian Institute of Technology, Thailand during 22nd May - 2nd June 2017. ☛ Organized a one week workshop on BioShare Asia at Asian Institute of Technology, Thailand, during 2nd -6th August 2016. ☛ Program Coordinator for "6th International Conference on Health GIS 2015" during 19th

-21st November 2015 in Mysore, India. 🐼 Organizing and Logistics committee member for "Free and Open Source Solution for Geoinformatics (FOSS4G), ASIA Conference" Bangkok, Thailand, 2nd -5th December, 2014. 🐼 Organizing and Logistics committee member for "5th International Conference on Health GIS 2013" Bangkok, Thailand, 21st -23rd August 2013.

**Awards/Recognition**

🐼 Japanese Government Scholarship for pursuing PhD in Asian Institute of Technology, Bangkok, Thailand during 2011-2015. 🐼 Received full grant by office of Outer Space Affairs, United Nations to participate in workshop and Conference on NeQuick" at International Centre for Theoretical Physics, Trieste, Italy during 4th – 8th May 2015





**PHAISARN JEEFOO, PH.D.**

ASSISTANT PROFESSOR

MALE, THAISARN, 37

No. 19, Moo 2,

Mae-Ka, Muang, Phayao

Thailand 56000

Email: [p.jeefoo@gmail.com](mailto:p.jeefoo@gmail.com)

URL: <http://ict.up.ac.th/phaisarn/>

Tel., (Office): +66-54466666 ext., 2312

Fax: +66-54466666 ext., 2329

Mobile: +66-872030721

**PERSONAL DETAILS**

- Father's Name : Lee Jeefoo
- Date of Birth : 21th May 1981
- Linguistic Proficiency : English, Thai

**EDUCATION**

Degree/ Examination	Year of Passing	School/Institute	Board/University	Percentage /Grade
Ph.D (Remote Sensing & Geographic Information Systems)	2011	Department of Information and Communication Technologies, School of Engineering and Technology	Asian Institute of Technology (AIT)	3.75/4.00
M.Tech (Remote Sensing & Geographic Information Systems)	2006	Department of Information and Communication Technologies, School of Engineering and Technology	Asian Institute of Technology (AIT)	3.25/4.00
B.S. (Geography)	2004	Geography, Faculty of Agriculture, Natural Resources and Environment	University, Thailand	2.71/4.00
Class XII	2000	Wired Science - Mathematics	Chak Kham Khanathon School, Lamphun, Thailand	2.24/4.00

**PROJECT WORK / TRAINING**

## PUBLICATIONS

- Jeefoo, P., Tripathi, N.K., Souris, M., Phonekeo, V., and Pirasteh, S., (2009). Exploring Geospatial Factors Contributing to Malaria Prevalence in Kanchanaburi, Thailand. *International Journal of Geoinformatics*, 5(1), 21-26.
- Jeefoo, P., Tripathi, N.K., Souris, M., (2011). Spatio-temporal Diffusion Pattern and Hotspot Detection of Dengue in Chachoengsao Province, Thailand. *International Journal of Environmental Research and Public Health*, 8(1), 51-74.
- Jeefoo, P., Tripathi, N.K., (2011). Dengue Risk Zone Index (DRZI) for Mapping Dengue Risk Areas. *International Journal of Geoinformatics*, 7(1), 53-62.
- Jeefoo, P. (2012). Space-Time Analysis Tools of Dengue Epidemics in Chachoengsao Province, Thailand. *International Journal of Geoinformatics*, 8(3), 9-13.
- Jeefoo, P. (2012). Spatial Temporal Dynamics and Risk Zonation of Dengue Fever, Dengue Hemorrhagic Fever, and Dengue Shock Syndrome in Thailand. *International Journal of Education and Computer Science*, 4(9), 58-68.  
DOI: 10.5815/ijmecs.2012.09.08
- Phaisarn Jeefoo (2016). Analyzing Spatial Clustering and Hotspots Detection of HIV/AIDS Prevalence using GIS Technology. *International Journal of Geoinformatics*, 12(1), 65-73.
- Sittichai Choosumrong, Veerachai Raghavan, Phaisarn Jeefoo, and Natraj Vaddadi (2016). Development of Service Oriented Web-GIS Platform for Monitoring and Evaluation using FOS4G. *International Journal of Geoinformatics*, 12(3), 67-77.

## AREAS OF RESEARCH INTERESTS

- Remote Sensing and GIS for Environmental
- GIS database
- Digital Cartography
- Digital Photogrammetry
- 3D GIS
- Web Base GIS (WMS/WFS/WPS)
- Digital Image Processing
- Spatial Analysis
- Database Management
- Free and Open Source Software
- GPS Technology

## Book:

P K Joshi and T P Singh (eds, 2011). *Geoinformatics for Climate Change Studies* (Chapter 9 – Impact of Climate Variability on Human Health – Malaria Prevalence in Kanchanaburi, Thailand by Phaisarn Jeefoo). Delhi: The Energy and Resources Institute (TERI) 2011.  
ISBN 978-81-7993-409-8

ไพศาล จีฟู (2018). การพัฒนาโปรแกรมประยุกต์สำหรับระบบสารสนเทศภูมิศาสตร์บนเว็บ (Application Development for Web-based GIS), พิมพ์ครั้งที่ 1, พิมพ์จุฬาลงกรณ์มหาวิทยาลัย, ISBN : 9789740337508.



## Biodata of investigators

### Curriculum vitae

Dr. Surya S. Durbha  
Associate Professor  
Centre of Studies in Resources Engineering (CSRE)  
Indian Institute of Technology Bombay (IITB)  
Ph. 022-25767679, email. [sdurbha@iitb.ac.in](mailto:sdurbha@iitb.ac.in)

#### A. PROFESSIONAL PREPARATION

<u>College/University</u>	<u>Major</u>	<u>Degree&amp;Year</u>
Andhra University	Civil-Environmental Engineering	B.E., 1994
Andhra University	Remote Sensing	M.Tech, 1997
Mississippi State University (USA)	Computer Engineering	Ph.D., 2006

#### B. ACADEMIC/PROFESSIONAL APPOINTMENTS

- Associate Professor (Sep 2014-till date), Centre of Studies in Resources Engineering (CSRE), IIT Bombay
- Assistant professor (Apr 2011-Aug 2014), Centre of Studies in Resources Engineering (CSRE), IIT Bombay
- Assistant Research Professor (June 2009 –March 2011), Mississippi State University, Center for Advanced Vehicular Systems (CAVS), USA.
- Assistant Research Professor (2006 – June 2009), Mississippi State University, GeoResources Institute (GRI), USA.
- Scientist, 'SD', (1998-2001), Indian Institute of Remote Sensing (IIRS), Department of Space, India;

#### C. SELECTED PUBLICATIONS

(Full list of Publications:

<https://scholar.google.co.in/citations?user=9b5RVUAAAAJ&hl=en&oi=ao>)

- U. Bharambe., S. S. Durbha (2018), Adaptive Pareto-based approach for geo-ontology matching. Computers & Geosciences. Elsevier, 119, 92-108.
- U. Bhangale., S. S. Durbha, R. L. King., N. H Younan., & R. Vatsavai. (2017). High performance GPU computing based approaches for oil spill detection from multi-temporal remote sensing data. Remote Sensing of Environment, Elsevier.
- S. Sawant, S. S. Durbha, A. Jagarlapudi, (2017), Interoperable agro-meteorological observation and analysis platform for precision agriculture: A case study in citrus crop water requirement estimation, "Computers and Electronics in Agriculture", Volume 138, Pages 175-187, 2017 (Elsevier)

- K. R. Kurte, S. S. Durbha, R. L. King., N. H Younan., & R. Vatsavai. (2016). Semantics-Enabled Framework for Spatial Image Information Mining of Linked Earth Observation Data. *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, 10(1), 29-44.)
- S. S. Durbha, R. L. King, A. Prakash, & N. H. Younan, (April 2012). Transfer Learning for Image Information Mining Applications. *International Journal of Image and Data Fusion Taylor & Francis*, 10, 17. DOI: 10.1080/19479832.2012.698658.
- B. Gokaraju, S. S. Durbha R. L. King, & N. H Younan (Sep 2011). A Machine Learning Based Spatio-Temporal Data Mining Approach for Detection of Harmful Algal Blooms in the Gulf of Mexico. *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing IEEE*, 4(3), 710-720
- S. S. Durbha, R. L. King,, S. K., Amanchi, S. Bheerappa Reddy, & N.H. Younan (2010). Standards-based middleware and tools for coastal sea level rise applications. *IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing*, 3(4), 451-466.
- S. S. Durbha, R. L. King, and N.H. Younan (2007) "Support Vector Regression to estimate Leaf Area Index from Multi-angle Imaging Spectroradiometer, *Remote Sensing of Environment*, 107, 348-361
- V. P. Shah, N. H. Younan, S. S. Durbha, and R. L. King, (April 2007). "A Systematic Approach to Wavelet Decomposition-Level Selection for Image Information Mining From Geospatial Data Archives," *IEEE Transactions on Geoscience and Remote Sensing* Vol. 45, no. 4, pp. 875 – 878,.
- S. S. Durbha and R. L. King, (Nov 2005.) "Semantics-enabled framework for knowledge discovery from Earth observation data archives", *IEEE Transactions on Geosciences and Remote Sensing* Vol.43, NO.11,

#### D. SYNERGISTIC ACTIVITIES

- Disclosure filed at NASA eNTRE system on a new technology Report (NF1679) by MSU office of technology and commercialization

Report title: Semantics-Enabled Knowledge Retrieval from Earth Observation Data Archives

- **Patent:** Sawant S.A., Durbha S.S., J. Adinarayana. Semantics-Enabled Interoperable Wireless Sensing System for Precision Agriculture, Patent File Number: 2236/MUM/2015. (Status: published)
- Co-instructor for a full day Tutorial on "Advanced Classification Techniques for remote sensing "at International Geoscience and Remote Sensing Symposium (IGARSS 2009,2010,2012).
- **Program Committee Member:** Pattern Recognition in Remote Sensing 2012, 2014, 2016, Big Spatial, 2015, Petascale Data Analytics: Challenges, and Opportunities (PDAC-12), ICVGIP12, Spatial and Spatio-temporal data mining (SSTDM 08, 09, 10,11,12), Theme coordinator/Session Organizer, IGARSS 09,14,15,16 Semantic Scientific Knowledge Integration (SSKI) Symposium, Stanford. **Invited session co-chair:** IGARSS 2009, 2010, 2011 (Data Mining and Machine Learning for Remote Sensing). **Session co-chair (IGARSS 2008, 2009, 2010):** GIS Techniques and Standards (oral), Geographic Information Science: Techniques (oral) GIS Techniques and Standards I (poster), Geographic Information Science Applications Data Mining Tools and applications, Geographic Information Science tools
- **Manuscript Reviewer**

**Journals:** Computers and Geosciences Journal, IEEE Geoscience and Remote Sensing, IEEE Geoscience and Remote Sensing Letters, IEEE Journal of Selected Topics in Applied Earth Observations and Remote Sensing, Geoinformatica, International Journal of Image and Data Fusion, Earth Science Informatics (Springer), Optical Engineering, International Journal of Geomatics.

Computers and Electronics in Agriculture. **Conference papers reviewer:** IGARSS (2008-2017), SSTDM (2008-2017), IAPR Workshop on Pattern Recognition in Remote Sensing PRRS-2012,2014, 2016,2017, SSTDM-2015, 2016,2017, Big spatial 2015,16,17, ICSD-2015,Petascale Data Analytics: Challenges and Opportunities (PDAC-12), SSKI 2008

**Thesis Advisor and Postgraduate Scholar Sponsors over the Last Five Years ( 3 PhD, 16**

**M.Tech):**

● 2011 - current Supervisor for 5 PhD students, Co-supervisor to 4 PhD students, CSRE, IIT Bombay

- 2011-2017 Supervisor to 12 M.Tech and Co-supervisor to 4 M.Tech Students
- 2008-2010 Co-Major Professor for 6 students (MSU, USA)
- 2008-2010 Ph.D. Graduate committee member for 4 students (MSU, USA)
- 2007- 2010 Ph.D. Co-Major Professor and dissertation Supervisor for 1 student (MSU, USA)

**Awards/Recognition**

- NVIDIA Innovation award, NVIDIA, 2016
- Excellence in Teaching award, IIT Bombay, 2016
- StatePride Faculty award, MSU, 2009
- Outstanding Research award at MSU, 2008

## Curriculum vitae

Dr. Sittichai Choosumrong  
Assistant Professor  
Department of Natural Resource and Environment  
Faculty of agriculture, natural resources and environment,  
Naresuan university, Phitsanulok, Thailand  
Ph. +66(55)962753, email. [sittichaic@nu.ac.th](mailto:sittichaic@nu.ac.th)

### PROFESSIONAL PREPARATION

College/University	Major	Degree&Year
Naresuan University, Thailand	Geography	B.Sc., 2004
Osaka City University, Japan	Urban Informatics	M.S, 2011
Osaka City University, Japan	Urban Informatics	Ph.D., 2014

### B. ACADEMIC/PROFESSIONAL APPOINTMENTS

- Assistant Professor (2014 - till date), Department of Natural Resource and Environment, Naresuan University, Thailand
- Meteorologist (2007-2008), at National Disaster Warning Center and Thai Meteorological Department
- Team Leader (2005- 2007), Ortho Photogrammetry section at Pasco Co., Ltd. Bangkok, Thailand

### C. SELECTED PUBLICATIONS

Choosumrong, S., Raghavan, V., Delucchi, L., Yoshida, D. and Vinayaraj, P. (2014) Implementation of Dynamic Routing as a Web Service for Emergency Routing Decision Planning, *International Journal of Geoinformatics*, Vol.10, No.2, pp.13-20 (ISSN 1686-6576)

Choosumrong, S., Raghavan, V. and Bozon, N. (2012) Multi-Criteria Emergency Route Planning Based on Analytical Hierarchy Process and pgRouting, *Geoinformatics*, Vol.23, No. 4, 159-168. Choosumrong, S., (2014) Development of A Web-GIS Application Based on Mobile Interface for Multi-Purpose Application Fields Using FOSS4G, *Proceedings of GIS-IDEAS 2014*, Danang, Vietnam, 6-9 December 2014

Choosumrong, S., [unclear] and Yoshida, D. (2013) Implementing Dynamic Routing as a Web Service for Mobile Applications, Proceedings of Geoinforum 2013, Tsukuba, Japan, 20-21 June 2013, Geoinformatics, Vol. 24, No. 2, pp. 98-99 (ISSN 0388-502X).

Choosumrong, S., Raghavan, V. and Bozon, N. (2012) Development of Web-GIS Application for Emergency Route Decision and Planning using AHP analysis and pgRouting algorithm, Proceedings of GIS-IDEAS 2012, Hochiminh, Vietnam, 16-20 October 2012.

Choosumrong, S., Raghavan, V. and Realini, E. (2010) Implementation of dynamic cost based routing for navigation under real road conditions using FOSS4G and OpenStreetMap, Proceedings of Geo [unclear] Tokyo, Japan, 22-23 June 2010, Geoinformatics, Vol. 21, No. 2, pp. 108-109 (ISSN 0388-502X)

Choosumrong, S. and Raghavan, V. (2011) Optimal Traffic Routing Based on Real-time Cost Updates for Current Road Conditions, Proceedings of Geoinforum 2011, Osaka, Japan, 23-24 June 2011, Geoinformatics, Vol. 22, No. 2, pp. 66-67 (ISSN 0388-502X)

#### **D. SYNERGISTIC**

##### **Projects:**

©

PI "Development of an elderly database to support change and follow up with GIS" granted from the budget of 2018 for National Strategic Plan Budget during 2017-2018

©

PI for "Develop [unclear] Environmental Alert System in Farms to Enhance Productivity for Small Farmers" on Annual Research and Innovation Project to transfer technology funded by CMR Foundations during 2016-2017

PI for "Development of Decision Support Systems to Find Routes for Emergency Medical Services" funded by Institute of Emergency Medicine, Thailand during 2016-2017.

©

Project Consultant for "Data analysis and Mapping for One Map Improvement" funded by Ministry of Natural Resources and Environment during 2016

##### **Selected Professional Training Received/Conducted:**

November 7-8, 2008 : Attended to FOSS4G (Free and Open Source Software for Geospatial) Osaka conference, MapServer workshop and pgRouting workshop in Osaka.

August 2009: Attended the Database Management System using PostgreSQL/PostGIS Workshop in Osaka.

September 2009: Attended the OpenLayers and MapServer workshop in Umeda Campus, Osaka City University.

October 2009: Attended to Web processing Service workshop in Umeda Campus, Osaka City University.



June 2011: Attended an Opensource Geospatial workshop in Umeda Campus, Osaka City University.

June 2011: Attended the Plugin for QGIS using Python programming workshop in Osaka City University.

June 5th, 2013: Attended the UAV, disaster mapping workshop in Umeda Campus, Osaka City University.

June 12th, 2013: Attended DEM analysis using QGIS workshop in Umeda Campus, Osaka City University.

August 12, 2014 : special lecturer on MapServer workshop at University of Phayao, Phayao, Thailand.

December 2, 2014 : ZOO WPS and MapMint workshop in AIT, Bangkok, Thailand.

December 6, 2014 : ZOO WPS and MapMint workshop in University of Danang, Vietnam.

December 12, 2014 : MapServer workshop in Naresuan University, Phitsanulok, Thailand.

#### **Awards/Recognition**

2011-2014 Japanese Government (Monbukagakusho) Scholarship for pursuing Doctoral Degree in Urban Informatics, Osaka City University, Japan

2009-2011 Japanese Government (Monbukagakusho) Scholarship for pursuing Master Degree in Urban Informatics Osaka City University, Japan

2008-2009 Japanese Government (Monbukagakusho) Scholarship for Research student in Urban Informatics Osaka City University, Japan.

## Curriculum vitae

Dr. V Rajesh Chowdhary

Associate Professor

Electronics & Telecommunication Engineering (E&TC)

International Institute of Information Technology, Pune (IIITP)

Ph. 020-22933441, email. [vrajeshc@isquareit.edu.in](mailto:vrajeshc@isquareit.edu.in)

### A. PROFESSIONAL PREPARATION

<u>College/University</u>	<u>Major</u>	<u>Degree&amp;Year</u>
Jawaharlal Nehru Technological University, Kakinada	Electronics & Communication Engineering	B.E., 2009
International Institute of Information Technology, Pune	Satellite Communication & Space Systems	M.Tech, 2011
Asian Institute of Technology (Thailand)	Remote Sensing & GIS	Ph.D., 2015

### B. ACADEMIC/PROFESSIONAL APPOINTMENTS

- Associate Professor (Jan 2018 - till date), Electronics & Telecommunication Engineering (E&TC), IIIT Pune
- Research Associate (Jun 2015 – Dec 2017), Remote Sensing & GIS, Asian Institute of Technology, Thailand

### C. SELECTED PUBLICATIONS

Sivavaraprasad, G., Otsuka, Y., Tripathi, N.K., Chowdhary, V.R., Ratnam, D.V., Khan, A.K., "Spatial and temporal characteristics of ionospheric total electron content over Indian equatorial and low-latitude GNSS stations" in Conference on Signal Processing And Communication Engineering Systems (SPACES), 4th -5th January 2018, IEEE Xplore. ☛ Suraj P.S., Kumar Dabbakuti, J.R.K., Chowdhary, V.R., Nitin K. Tripathi, D.Venkata Ratnam "Linear time series modeling of GPS-derived TEC observations over the Indo-Thailand region" <https://doi.org/10.1007/s00190-017-1099-6>, Journal of Geodesy, 2017. ☛ V Rajesh Chowdhary, Nitin K Tripathi, Sanit Arunpold, "Ionospheric Impact of Severe Space Weather Events on GNSS Measurements from Thailand" in 2nd International Conference on Aerospace Electronics, Electrical, Communications & Instrumentation, Vijayawada, India, 22nd -23rd

October 2016. ☛ Sarawoot Rungruenwajai, Dessi Marlia, Azad Ahmad Mansoori, V. Rajesh Chowdhary, "Investigation of 08 November 2004 Storm effects on Ionosphere at Southern and Northern hemisphere and its comparison with IRI and RT-IRI", in International Reference Ionosphere (IRI) 2015 Workshop, during 2nd -13th November 2015, Bangkok, Thailand. ☛ Chowdhary, V.R., Tripathi, N.K., Arunpold, S., Raju, D.K., Characterization of GPS-TEC in low-latitude region over Thailand during 2010-2012, *Annals of Geophysics*, Vol 58, No 5, 2015. ☛ Chowdhary, V.R., Tripathi, N.K., Arunpold, S., Raju, D.K., Variations of total electron content in the equatorial anomaly region in Thailand, *Advance in Space Research.*, 55, 231-242, 2015. ☛ Arunpold, S., Tripathi, N.K., Chowdhary, V.R., Raju, D.K., Comparison of GPS-TEC measurements with IRI-2007 and IRI-2012 modeled TEC at an equatorial latitude station, Bangkok, Thailand. *J. Atmos. Sol. Terr. Phys.* 117, 88-94, 2014. ☛ Tripathi, N.K., Chowdhary, V.R., Arunpold, S., "Ionospheric Scintillations during increasing Solar Activities using GPS", in Asian Congress on Citizen & Environment Safety & Security, U-Town, Singapore, 5th - 7th June 2013.

#### **D. SYNERGISTIC ACTIVITIES**

##### **Projects:**

☛ Collaborative Research for the Regional Forum on Climate Change on the topic "Developing new methods to monitor forest carbon in Asian tropical forests" 2016 – 2018, funded by French Government as Research Associate ☛ Project for developing course modules on "GIS for Health & Geoinformatics for Coastal & Marine Resource Management" 2015 – 2018, funded by Erasmus + (EU) as Research Associate ☛ Local ionospheric scintillation analysis (LISA) using GNSS stations in Thailand, 2014-2016, funded by US AOARD as Research Associate ☛ Research on ionospheric Scintillations in Asia (RISA) using GNSS, 2011- 2014, funded by US AOARD (United States Asian Office of Aerospace Research & Development) as Doctoral Student

##### **Selected Outreach Activities:**

☛ Conducted 3 days National level Faculty Development Program on "Geoinformatics System" at Department of Computer Engineering, International Institute of Information Technology, Pune, India during 24th – 26th April 2018 ☛ Conducted five days workshop on "Remote Sensing & GIS Applications" at Civil Department, Vasireddy Venkatadri Institute of Technology, Nambur, Guntur, Andhra Pradesh, India, during 18th – 22th December 2017. ☛ Conducted two days training for "Capacity Building Programme on Flood Risk Assessment and Management" at AIT for Climate Technology Centre & Network (CTCN) project, during 30th October – 8th November 2017 as a resource personnel. ☛ Conducted 5 days workshop on "Geoinformatics System Development" at JIS College of Engineering, Kalyani, West Bengal, India during 24th – 28th July 2017. ☛ Conducted a one week hands-on training on Urban Planning & Management for SJ College of Engineering at Mysore, India under MHRD sponsored GIAN project during 24th -30th July 2016 with Prof Nitin Kumar Tripathi. ☛ Conducted a one-week hands-on training on RS & GIS for UNDP personnel at AIT during 24th -28th November 2015.

##### **Selected Conferences/Workshop Organized:**

☛ Organized one day conference on "Flood Rapid Defence System" in association with Korean Institute of Civil Engineering & Building Technology, South Korea at AIT on 21st November 2017.

☛ Organized two days workshop on "Mobile Web GIS Applications for Monitoring & Evaluation" in association with Open Source Geo (OSGeo) at Holiday Inn, Bangkok during 25th -26th August 2017. ☛ Organized four days workshop on "Creating Research Competency" in

association with "National Research Council of Thailand" at Asian Institute of Technology, Thailand, funded by NRCT, during 3rd – 6th July 2017. ☛ Organized two weeks "Geo Services 4 Sustainability (GeoS4S) International Summer School – 1" co-funded by the Erasmus+ programme of the European Union at Asian Institute of Technology, Thailand during 22nd May – 2nd June 2017. ☛ Organized a one week workshop on BioShare Asia at Asian Institute of Technology, Thailand, during 2nd -6th August 2016. ☛ Program Coordinator for "6th International Conference on Health GIS 2015" during 19th -21st November 2015 in Mysore, India. ☛ Organizing and Logistics committee member for "Free and Open Source Solution for Geoinformatics (FOSS4G), ASIA Conference" Bangkok, Thailand, 2nd -5th December, 2014. ☛ Organizing and Logistics committee member for "5th International Conference on Health GIS 2013" Bangkok, Thailand, 21st -23rd August 2013.

#### **Awards/Recognition**

☛ Japanese Government Scholarship for pursuing PhD in Asian Institute of Technology, Bangkok, Thailand during 2011-2015. ☛ Received full grant by office of Outer Space Affairs, United Nations to participate in workshop and Conference on NeQuick" at International Centre for Theoretical Physics, Trieste, Italy during 4th – 8th May 2015



**PHAISARN JEEFOO, PH.D.**

ASSISTANT PROFESSOR

MALE, THAISARN, 37

No. 19, Moo 2,

Mae-Ka, Muang, Phayao

Thailand 56000

Email: [p.jeefoo@gmail.com](mailto:p.jeefoo@gmail.com)

URL: <http://ict.up.ac.th/phaisarn/>

Tel., (Office): +66-54466666 ext., 2312

Fax: +66-54466666 ext., 2329

Mobile: +66-872030721

**PERSONAL DETAILS**

- Father's Name : Lee Jeefoo
- Date of Birth : 21th May 1981
- Linguistic Proficiency : English, Thai

**EDUCATION**

Degree/ Examination	Year of Passing	School/Institute	Board/University	Percentage /Grade
Ph.D (Remote Sensing & Geographic Information Systems)	2011	Department of Information and Communication Technologies, School of Engineering and Technology	Asian Institute of Technology (AIT)	3.75/4.00
M.Tech (Remote Sensing & Geographic Information Systems)	2006	Department of Information and Communication Technologies, School of Engineering and Technology	Asian Institute of Technology (AIT)	3.25/4.00
B.S. (Geography)	2004	Geography, Faculty of Agriculture Natural Resources and Environment	Naresuan University, Thailand	2.71/4.00
Class XII	2000	Wired Science - Mathematics	Chak Kham Khanathon School, Lamphun, Thailand	2.24/4.00

## PROJECT WORK / TRAINING

## PUBLICATIONS

- Jeefoo, P., Tripathi, N.K., Souris, M., Phonekeo, V., and Pirasteh, S., (2009). Exploring Geospatial Factors Contributing to Malaria Prevalence in Kanchanaburi, Thailand. *International Journal of Geoinformatics*, 6(1), 1-10.
- Jeefoo, P., Tripathi, N.K., Souris, M., (2011). Spatio-temporal Diffusion Pattern and Hotspot Detection of Dengue in Chachoengsao Province, Thailand. *International Journal of Environmental Research and Public Health*, 8(1), 51-74.
- Jeefoo, P., Tripathi, N.K., (2011). Dengue Risk Zone Index (DRZI) for Mapping Dengue Risk Areas. *International Journal of Geoinformatics*, 7(1), 53-62.
- Jeefoo, P. (2012). Spatio-temporal Diffusion Pattern of Dengue Epidemics in Chachoengsao Province, Thailand. *International Journal of Geoinformatics*, 8(3), 9-13.
- Jeefoo, P. (2012). Geospatial Analysis of Dengue Risk Zonation of Dengue Fever, Dengue Hemorrhagic Fever, and Dengue Encephalitis in Thailand. *International Journal of Education and Computer Science*, 4(9), 58-68.  
DOI: 10.5815/ijmecs2012.09.08
- Phaisarn Jeefoo (2016). Analyzing Spatial Clustering and Hotspots Detection of HIV/AIDS Prevalence using GIS Technology. *International Journal of Geoinformatics*, 12(1), 65-73.
- Sittichai Choosumrit, Phaisarn Jeefoo, and Natraj Vaddadi (2016). Development of a Web-based Platform for Monitoring and Evaluation using FOS4G. *International Journal of Geoinformatics*, 12(3), 67-77.

## AREAS OF RESEARCH INTERESTS

- Remote Sensing and GIS for Environmental
- GIS database
- Digital Cartography
- Digital Photogrammetry
- 3D GIS
- Web Base GIS (WMS/WFS/WPS)
- Digital Image Processing
- Spatial Analysis
- Database Management
- Free and Open Source Software
- GPS Technology

## Book

P K Joshi and T P Singh (eds) 2011. *Geoinformatics for Climate Change Studies* (Chapter 9 – Impact of Climate Change on Human Health – Malaria Prevalence in Kanchanaburi, Thailand) by Phaisarn Jeefoo. *Geoinformatics for Climate Change Studies* Resources Institute (TERI) 2011. ISBN 978-81-7993-409-8

ไพศาล จีฟู (2018). การพัฒนาโปรแกรมประยุกต์สำหรับระบบสารสนเทศภูมิศาสตร์บนเว็บ (Application Development for Web-based GIS), พิมพ์ครั้งที่ 1, สำนักพิมพ์จุฬาลงกรณ์มหาวิทยาลัย, ISBN : 9789740337508.



### **Certificate from Principal Investigators**

**“Service Oriented Participatory Platform for Local SDI: Smart Civic Services for Second Tier Cities in Thailand and India”**

submitted as a project proposal under the Programme of Cooperation in the fields of Science and Technology for the years 2018-20, the Indian Department of Science and Technology (DST), Ministry of Science and Technology, Government of India and the Ministry of Science & Technology (MOST) of the Kingdom of Thailand.

We the undersigned, confirm on behalf of our organisations, Centre of Studies in Resources Engineering (CSRE), IIT Bombay, India and the Faculty of Agriculture Natural Resources and Environment, Naresuan University, Thailand, our interest in the above-mentioned project. We would seek to collaborate for the progress of this project and support the project submission.

We strongly believe that the submitted proposal is in line with the goals and aspirations of Programme of Cooperation in the fields of Science and Technology for the years 2018-20 and is consistent with the strategies of our organization.

We therefore fully support this initiative.

**Dr. Sittichai Choosumrong (PI)**  
Naresuan University, Thailand  
E-mail: [sittichaic@nu.ac.th](mailto:sittichaic@nu.ac.th)  
Tel: +66-5-5962753  
Dated: 16/07/2018

**Dr. Surya Durbha (PI)**  
CSRE, IIT Bombay, India  
E-mail: [sdurbha@iitb.ac.in](mailto:sdurbha@iitb.ac.in)  
Tel: +91-22-25767679  
Dated: 16/07/2018

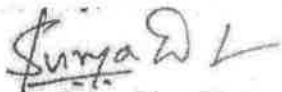


**CONFLICT OF INTEREST**

**I have read the "Policy on Conflict of Interest" of the DST applicable to the Applicant and agree to abide by provisions thereof.**

I hereby declare that I have no conflict of interest of any form \_\_\_\_\_ the proposed grant

**Signature**


A handwritten signature in black ink, appearing to read "Surya S. Durbha", with a stylized flourish at the end.

**Principal Investigator: Prof. Surya S. Durbha**

**Declaration from the Heads of the Collaborating Institutions:**

It is certified that :

- i. The Institutions agree to participate in this Joint Research Project; (Indo-Thailand) under the Research area: "Geospatial Technologies covering creation of GIS of towns in Thailand for urban development". The title of the proposed project is: "*Service Oriented Participatory Platform for Local SDI: Smart Civic Services for Second Tier Cities in Thailand and India*"
- ii. The Institutions shall provide infrastructure & necessary facilities for implementing the joint project;
- iii. The Institutions assume to undertake financial & other management responsibility for the part of the project work to be carried
- iv. the back-up funding for manpower, consumables

  
Signature & Seal of the Head of the Institutions  
(India)

विभागाध्यक्ष/Head  
डी.एस.आर.ई.  
Centre of Studies in Resources Engineering  
आय.आय.टी. पुणे/IT Bombay,  
पुणे, पुणे-४१/POWEL, Mumbai - 78



  
(Assoc. Prof. Dr. Withaya Jansila)  
Vice President, Naresuan University







Bhagyashri T &lt;bhagyashrit@isquareit.edu.in&gt;

**Fwd: ASEAN-India STI Cooperation - Notification**

11 messages

**V. Rajesh Chowdhary** <vrajeshc@isquareit.edu.in>  
To: ISquareIT All Faculty and Staff <allstaff@isquareit.edu.in>  
Cc: Principal I2IT <principal@isquareit.edu.in>

9 February 2019 at 14:15

Dear ISquareIT Family,

Greetings of the day....!!!

I am glad to inform that we have bagged an International Multilateral Research Project under Science & Engineering Research Board (SERB), Department of Science & Technology (DST), Government of India. In this project, our institute will be the lead Project Investigator (PI), along with two partners i.e., Asian Institute of Technology, Thailand and Universiti Kebangsaan Malaysia. This project will involve two major research giants of our country, namely, Indian Space Research Organization (ISRO) and Airport Authority of India (AAI).

A total grant of INR 25.73 Lakhs will be released to our institute for execution of this research project over a two years period. I am grateful to each and everyone's support for making this happen. Next two years, will be very crucial for us for carrying out research and completion of the project on time. Meanwhile, during this period, our partner universities will be visiting our campus for annual meetings. This is also the time to prove our research capabilities and outcomes at the national and international space science community.

I am so excited to work for this prestigious project which involves space agencies of three countries namely, India, Thailand and Malaysia. Looking forward for the continued support and strength from our ISquareIT family members as always.

Thank you once again. Have a nice weekend.

Best Regards,  
Rajesh

----- Forwarded message -----

From: <aistic@serbonline.in>  
Date: Fri, 8 Feb 2019 at 17:55  
Subject: ASEAN-India STI Cooperation - Notification  
To: <aseanindiainfo@gmail.com>



**Government of India**  
**Department of Science and Technology**  
**(International Multilateral and Regional Cooperation Division)**

**Government of India**

**Department of Science and Technology**  
**International Multilateral Regional Cooperation Division**  
(AISTDF Secretariat)

Science and Engineering Research Board  
5 & 5A, Lower Ground Floor  
Vasant Square Mall  
Sector-B, Pocket-5  
Vasant Kunj  
New Delhi - 110 070

Approval Letter

File Number: CRD/2018/000037

Dated: 08-Feb-2019

To,

**Subject:** Project titled "Development of near real time regional TEC mapping at low-latitude Asean region using GNSS stations".

**Dear Dr. Rajesh Chowdhary Vattikuti,**

The above cited project has been approved for funding under ASEAN- India Collaborative R&D scheme under ASEAN-India S&T Development Fund (AISTDF).

Kindly follow the below steps only then you will be able to acknowledge the approval letter :

1. Go to [www.aistic.gov.in](http://www.aistic.gov.in) through your credentials
2. Go to Menu --> Proposal submission --> View submitted proposals

3. Click on the link under Status column "Proposal Approved, Acknowledgement pending from PI"

In order to process the issue of formal sanction order for release of funds to your Institute, you are requested to upload the following documents:

1. "Check list" duly signed by PI and forwarded by Head of the Institute / University etc for processing the security sensitivity clearance of HLC, as per template available at ePPMS.
2. Quotation for equipment/s, if any, (including freight, insurance, customs charges etc., if any) and salary structure for the project staff (including HRA, Medical Benefits, if applicable etc.)
3. RTGS details of your Institute to facilitate transfer of the fund as per the template available at ePPMS.

The above mentioned requisite documents may be uploaded at ePPMS within 15 days of receipt of this communication.

The project's reference no. CRD/2018/000037 may also be mentioned in all research communications arising from the above project.

Kindly quote the reference number in all future correspondence.

Sincerely your,  
AISTDF Secretariat (SERB)

\*\*\*\*\* LEGAL DISCLAIMER \*\*\*\*\*

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Dr. V Rajesh Chowdhary  
Associate Professor  
Electronics & Telecommunications Engineering,  
Hope Foundation's International Institute of Information Technology  
P-14, Hinjewadi Rajiv Gandhi Infotech Park,  
Hinjawadi, Pune, Maharashtra 411057  
+91 8459557727

---

**Adesh Patwardhan** <adeshp@isquareit.edu.in> 9 February 2019 at 14:18  
To: "V. Rajesh Chowdhary" <vrjeshc@isquareit.edu.in>  
Cc: ISquareIT All Faculty and Staff <allstaff@isquareit.edu.in>, Principal - I<sup>2</sup>IT <principal@isquareit.edu.in>

Congrats Sir !! Best Wishes...  
[Quoted text hidden]

---

**Manjusha A** <manjushaa@isquareit.edu.in> 9 February 2019 at 14:23  
To: "V. Rajesh Chowdhary" <vrjeshc@isquareit.edu.in>  
Cc: allstaff@isquareit.edu.in, Principal I2IT <principal@isquareit.edu.in>

Congratulations Sir!!  
[Quoted text hidden]

---

**Madhuri R** <madhurir@isquareit.edu.in> 9 February 2019 at 14:48  
To: Manjusha A <manjushaa@isquareit.edu.in>  
Cc: Principal I2IT <principal@isquareit.edu.in>, "V. Rajesh Chowdhary" <vrjeshc@isquareit.edu.in>, allstaff@isquareit.edu.in

Congratulations sir.  
[Quoted text hidden]

Regards  
Prof.Madhuri Reddy

**Asst.Professor & CEO**  
"Hope Foundation's  
International Institute of InformationTechnology (I<sup>2</sup>IT)".  
P-14 Hinjawadi Rajiv Gandhi Infotech Park,  
411057

---

**Hodce I2IT** <hodce@isquareit.edu.in> 9 February 2019 at 17:26  
To: "V. Rajesh Chowdhary" <vrjeshc@isquareit.edu.in>  
Cc: ISquareIT All Faculty and Staff <allstaff@isquareit.edu.in>, Principal I2IT <principal@isquareit.edu.in>

Heartiest congratulations sir

Sent from BlueMail  
[Quoted text hidden]

---

**Sandeep P** <sandeep@isquareit.edu.in> 9 February 2019 at 18:52  
To: "V. Rajesh Chowdhary" <vrjeshc@isquareit.edu.in>  
Cc: allstaff@isquareit.edu.in, Principal - I<sup>2</sup>IT <principal@isquareit.edu.in>