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MEMORANDUM OF UNDERSTANDING

This Memorandum of Understanding is made and executed on 28 th day of February 2022 at Sambalpur, Odisha by and between.

BETWEEN

TP Western Odisha Distribution Limited, is a joint venture between Tata Power and the Government of Odisha, having its Registered Office and Corporate Office at TPWODL, Headquarters, P. O. Burla, District Sambalpur, Odisha, Pin-768017, hereinafter referred to as "TPWODL", which expression shall unless it be repugnant to the context or meaning hereof shall be deemed to mean and include its successors and permitted assigns);


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AND


THE SAMBALPUR UNIVERSITY INSTITUTE OF INFORMATION TECHNOLOGY (SUIIT) is a constituent unit of Sambalpur University having its registered office at Jyoti Vihar, Burla, Odisha, India, 768019 (hereinafter referred to as "SUIIT")

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Jyoti Vihar-768019




6 DEC 2020
DISTRICT TREASURY
SAMBALPUR

1382
No.
Sold to
S/o, W/o, D/o
Resident of
P.S. Dist. Sambalpur


(SURYA KUMAR NATH)
Stamp Vendor, Sambalpur

Pinaki Saha

WHEREAS
A. WHEREAS TPWODL is
51% and 49% equit
retail supply
Bargarh, B
B. SUIT
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WHEREAS

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- A. **WHEREAS** TPWODL is a Joint Venture in which TATA POWER and the GRIDCO is holding 51% and 49% equity shares respectively. It is engaged in the business of distribution and retail supply of electricity in Odisha's five circles consisting of Sambalpur, Rourkela, Bargarh, Bolangir and Kalahandi.
- B. SUIIT is functioning successfully since 2010 as an autonomous constituent unit of Sambalpur University in the line of IITs to impart training and to have quality research programme relating to Information Technology and allied subjects. The training in the institute has been envisioned to be holistic academic programme which includes training in humanities, management sciences and basic sciences besides the relevant technical subjects.

Sambalpur University is one of the oldest Universities of the State of Odisha and catering to the higher educational need of over 10 districts and a part of Angul district of the state since 1966. With time, the University has established itself as a leading educational institute with global footprints and has been centre of attraction for students and scholars from other states as well.

Sambalpur University has been at the forefront of nurturing technical educations in the state of Odisha through R.E.C. Rourkela (presently NIT, RKL) and U.C.E, Burla (presently VSSUT, Burla) and its alumni have earned name and fame not only in India but also in abroad.

SUIIT is a unique venture to make use of the decades of rich academic experience and achievements of the University in diverse fields for nurturing the young minds in the contemporary globalized environment where the demand is for innovation, research and technical skill of international standard.

TPWODL and SUIIT are hereafter individually referred to as a "Party" and collectively as the "Parties".

WHEREAS SUIIT proposes to partner with TPWODL towards the shared objective of making design and development of Large-Scale Time Series Forecasting Methods using Deep Learning Techniques for Electricity Load Forecasting

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AND WHEREAS the Parties wish to sign this MOU in order to set forth the basic structure and scope of the Parties so they can later jointly proceed to negotiate and execute definitive agreements as mutually agreed on a case to case basis.

NOW, THEREFORE, IN CONSIDERATION OF THE MUTUAL UNDERSTANDINGS STATED ABOVE AND CONTAINED HEREIN, THE PARTIES HEREBY AGREE AS FOLLOWS:

1. Scope of co-operation

Through this partnership, SUIIT and TPWODL will jointly develop the necessary technologies, where TPWODL will provide specific facilities (described below) and guidance. In addition, TPWODL will also participate in contributing resources in the areas of data providing, power scheduling and load forecasting to work along with SUIIT to develop innovative and cost-effective technologies. If these technologies meet the agreed-upon performance and cost standards (and assuming market conditions continue to be favourable), TPWODL will explore partnership and collaboration from visionary companies and institutions to work along with SUIIT to develop a comprehensive solution for load forecasting software making process.

2. Responsibility Matrix

SUIIT's contribution to this partnership

SUIIT will identify relevant early-stage technologies that can address these problems, improve the technologies as required, and develop supplementary technologies required to complete the broader system. Recognizing the urgency and the need for speedy, practical action, SUIIT will take advantage of near-market-ready technologies and conduct its work in as short a timeline as possible, aiming to get it ready for full deployment within two years along with interim versions beginning 2022.

SUIIT will work on the following technologies/topics:

- Design and Development of Large-Scale Time Series Forecasting Methods using Deep Learning and/or Machine Learning Techniques for Electricity Load Forecasting. The main motivation towards the areas of
 - 1.) Plug-in Electric Vehicles


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- 2.) Weather Conditions
- 3.) Distributed Solar Generation
- 4.) Consumer Behaviour
- 5.) Economic condition
- 6.) Calendar.

The Forecast observation will predict through Time Series, Discrete and Continuous methods.

There are three different forecast methods like


a.) Judgmental b.) Univariate c.) Multivariate.

- Traditional statistical and Machine Learning (ML) models have been widely used. Authors have used swarm and evolutionary optimization algorithms to determine the shallow ML model parameters.
- Design and development of Large-Scale time series forecasting methods employing Deep Learning (DL) and/or ML, evolutionary DL and/or ML, hybrid statistical, DL and/or ML and fuzzy time series forecasting of electricity load time series. Design and development of crisp large-scale time series forecasting methods employing DL models to forecast electricity load time series. Design and development of evolutionary DL and/or ML models for large scale time series forecasting like electricity load time series. Design and development of new hybrid forecasting methods for large scale time series like electricity load time series using hybrid statistical, DL and/or ML models. Design and development of fuzzy time series forecasting methods employing DL and/or ML models to forecast electricity load time series.
- Objective-1: Large Scale Time Series Forecasting (TSF) using DL and/or ML models.
Objective-2: Large Scale TSF using evolutionary DL and/or ML models
Objective-3: Large Scale TSF using hybrid Statistical, DL and/or ML models
Objective-4: Large Scale TSF using fuzzy TSF employing DL and/or ML models

DELIVERABLES

- A. A Software that can be used to efficiently forecast the electric load Time Series of TPWODL
- B. The developed methods can be published in international journals of high repute.
- C. The developed models can be scaled to the entire state of Odisha.

TPWODL's contribution to this partnership


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To enable the design and development of these technologies, TPWODL will:

- Provide the necessary data for making analysis, prediction of load forecasting software development.
- Assist in power scheduling and power quality analysis.
- Provide necessary technical support and guidance and make available intellectual resources.
- To develop the software and for early deliverable, the technical department of TPWODL will provide support as and when required.
- A commitment to use the developed technology on providing electricity to large number of consumers and power purchase to be done accordingly.

3. Appointment of Nodal Officers and review mechanism

Both the Parties will nominate the "Nodal Official" from each side who shall keep in touch and exchange information to explore opportunities for joint participation and for every communication and correspondence under this MoU. The designated nodal officer of TPWODL shall be of rank Team Lead & Above and the designated nodal officer from SUIIT shall be of level of Asst. Professor & Above.

- a. The nodal contact persons so appointed will hold periodic joint meetings through audio/video conferences every two months and also have in person meetings as and when required, to discuss and share any information/ developments that might arise during the course of this MoU.
- b. The Parties will be responsible for their conduct, including maintaining the confidentiality of information and discharge remuneration of their employees, officers and agents involved to work under this MoU.
- c. Both parties can change their nodal officer on the designations as mentioned above, if a nodal officer move to other organizations and do not wish to continue.

4. Intellectual Property Rights

- a. As an organization funded by the Government of Odisha and dedicated to social impact, SUIIT shall structure all intellectual property agreements to ensure its partners can utilize its innovations towards large-scale deployment.

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- b. SUIIT and TPWODL will jointly own the rights to any new technologies developed within this project.
- c. SUIIT and TPWODL will work towards developing entities, for new technologies and software making.
- d. New technologies developed by other partners are under separate agreements.

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e. Existing IPRs

- o Each Party shall retain and/or own their intellectual property rights in all of its pre-existing and/or independently developed intellectual property including but not limited to reusable software assets, tools, documents, manuals, frameworks and solutions among other things during the term of this MoU.
- o This MoU does not confer any right or license on one party to use the trade name or trademark or logo of the other party in any manner without obtaining the written consent of such party for the purposes mentioned in this MoU or otherwise.

f. Subsequent IPRs and registration

- o It has been agreed to between the Parties that in the broader framework of this MoU, the Parties shall constantly endeavour to jointly develop such business products, new technologies and mechanisms of such nature which will be innovative.
- o It has been specifically agreed to between the Parties that such new business products, new technologies, mechanisms, etc. in terms of this MoU shall be registered in accordance with the applicable intellectual property laws of this country.
- o It has been specifically agreed to between the Parties that it shall be the responsibility of TPWODL to get the business products, new technologies, mechanisms, etc. registered in India jointly under the name of TPWODL and SUIIT for which both the parties shall have equal rights and protection.

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- The charges for such registration (if any) under the applicable laws shall be equally borne by TPWODL and SUIIT for which TPWODL shall provide original invoices, payment slips, etc. as proof of such charges.
- The IPR of Product developed in joint collaboration with TPWODL under this agreement shall have joint ownership in the ratio of 80% (TPWODL) and 20%(SUIIT). A separate agreement shall be executed detailing the arrangements therein.
- TPWODL , TATA Power including its affiliates or subsidiary companies and SUIIT shall be allowed to use the product developed for its self-use.
- If market conditions continue to be favourable, subject to mutual agreement, TPWODL will assist to develop a research facility at SUIIT.

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g. Protection of IPRs after the expiry of this MoU

- It has been agreed to between the Parties that the protection of rights conferred through the IPRs registered during the period of this MoU or subsequent agreements, shall survive the termination of this MoU or such subsequent agreements.
- It has been agreed to between the Parties that if a new product, technology, mechanism, etc. (by whatever name called), is developed by either Party, individually or by collaboration with any third Party, during the term or upon expiry of this MoU using the product, technology, mechanism, etc. (by whatever name called) of the registered IPRs through this MoU, then the same shall also confer equivalent rights and protections on the other Party.
- It has been mutually agreed between the parties that each party shall keep the other party informed about such new developments.

5. Representations and warranties

Each party hereby represents and warrants to the other party that it is an entity organized and valid in accordance with the applicable laws and has the requisite authority to enter into and adopt this MoU. Each party represents and warrants that neither the execution nor the performance of this MoU by either party will violate its Memorandum of Association or Articles of Association or other conditions of its incorporation or bye-laws or any indenture, loan, MoU, contract, or instrument to

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which it is subject or a party or by which it is bound or any order, rule or regulation of any government authority.

6. Termination

This MOU shall commence on date of its execution and continue in full force and effect for a period of 2 year, unless terminated by the parties as per the provisions of this MOU, whichever is earlier. Either Party may terminate this MOU upon 30 days' written notice sent to the other parties by registered post acknowledgment to the other Parties. Prior to the original expiration date of this MOU, the Parties may extend this MOU for such further period as mutually agreed upon between them.

7. Confidentiality

- a. The terms and conditions described in this MoU including its existence, and any Confidential Information (defined hereinafter below), shall be confidential and shall not be disclosed by any receiving Party to any person except to its affiliates, advisors, officers and directors for the sole purpose described in this MoU. If any receiving Party determines that it is required by law or court order to disclose any Confidential Information it shall, at a reasonable time before making any such disclosure or filing, consult with the disclosing Party regarding such disclosure or filing and seek confidential treatment for such portions of the disclosure or filing as may be requested by the disclosing Party, or provide reasonable assistance to the disclosing Party so that the disclosing Party can contest the same.
- b. Parties agree to keep confidential any Confidential Information received under this MoU and which is not generally known, including, but not limited to, scientific research and legal information obtained under this MoU and to refrain from publishing or revealing any such information without the prior written consent of the disclosing Party.
- c. "Confidential Information" means information disclosed by or on behalf of the disclosing Party that is designated as such or a reasonable person would assume is confidential but does not include information already in the possession of the receiving Party without obligation of confidentiality prior to date of this MoU; information in the public domain; information independently

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developed by the receiving Party without the use of any Confidential Information; and information obtained by the receiving Party from third parties without breach of confidentiality obligations.

- d. The terms of this clause shall survive termination or expiry of the MoU and proposed arrangement between the Parties.
- e. Upon termination of this MoU for whatever reason, either Party shall immediately return or destroy all Confidential Information obtained under this MoU without any delay or limitation and any Confidential Information shared for an opportunity will be subject to the terms of this MoU.

8. Costs

Unless agreed otherwise specifically and in writing, Parties will bear their own costs and expenses in relation to or in undertaking their respective performances under this MoU.

9. Information provided in "as is" basis

Notwithstanding anything contained in this MoU, each Party acknowledges and agrees that all information is provided "AS IS" without representation, warranties or indemnities of any kind. Each Party disclaims any and all warranties, whether express or implied, whether by statute or otherwise, including but not limited to implied warranties of merchantability, fitness for particular purpose, and non-infringement.

10. Limitation of Liability

- a. Neither Party shall be liable to the other Party for damages, whether in contract, tort or otherwise, arising out of or in connection with this MoU other than for breach of confidentiality obligations and for unauthorized use of trade name, trademark or logo of either Party under this MoU.
- b. Except with respect to any breach of obligations specified under Clause 4 and 7, in no event shall either Party be liable for any indirect, special, incidental, consequential, punitive, tort or other damages, however caused arising out of or in connection with this MoU, or of any other obligations relating to this MoU, whether or not the Party has been advised of the possibility of such damages.

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11. Severability

If any provision of this MoU is held by a court of law to be illegal, invalid or unenforceable, (a) that provision shall be deemed amended to achieve as nearly as possible the same effect as the original provision, and (b) the remaining terms shall remain in full force and effect.

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12. Force Majeure

Neither Party shall be held responsible for a failure or delay in performing any of its obligations under this MoU if such failure or delay is caused due to reasons beyond the reasonable control of such affected Party. The affected Party shall however notify the other Party, in writing, of such failure or delay in performing its obligations within (15) fifteen days of such event occurring or as soon as reasonably practical after the occurrence of such force majeure event.

13. Non-binding Obligation

Neither Party shall have authority to bind the other Party in relation to any third Party for any costs, claims or damages in relation to any failure to establish the proposed business relationship and/or cooperation described herein or the failure of such business relationship to successfully pursue the opportunities.

14. Creation of Agencies

Unless otherwise agreed to between the parties, there shall be no delegation of work, assignments, projects, etc. to any third party pursuant to this MoU, with respect to any of the terms mentioned in this MoU. The Parties agree that this MoU is specifically between TPWODL and SUIT only and in no way binds its parent or subsidiary or any other associates of any nature.

15. Applicable law and disputes resolution

- a. This MoU shall be governed by the laws of India.
- b. All disputes between the Parties hereto arising in connection with this MoU shall be settled amicably through negotiations between the Parties. In case no settlement has been reached between the Parties within 90 (ninety) days after

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a dispute arises, either party may request that the dispute be submitted for arbitration.

- c. Any dispute, controversy or claim arising out of, relating to or in connection with this MoU, including any question regarding its existence, validity or termination, or regarding a breach thereof shall be submitted to arbitration under the (Indian) Arbitration and Conciliation Act, 1996 and the Rules framed thereunder, as may be amended from time to time. A party wishing to submit a dispute to arbitration shall give written notice to such effect to the other party. The arbitration shall be before a sole arbitrator, appointed jointly by the Parties. The arbitration proceedings shall be conducted in English. The seat and venue of the arbitration shall be Sambalpur, Odisha, India.
- d. Subject to the foregoing provisions of arbitration, the courts of law at Sambalpur, Odisha will have exclusive jurisdiction in all matters arising out of or pertaining to this MoU.

16. Documentation

All notices, certificates, acknowledgments and other reports hereunder shall be in writing and shall be deemed properly delivered when duly mailed by registered letter/ sent by courier of international repute by registered letter to the other party at its address mentioned above, or to such other address as either party may, by written notice, designate to the other. All such documents shall be duly maintained by each of the Parties in original and shall be produced when called upon to do so, either by the other Party or by a court of law.

17. Notice

All the notices which are required to be given under this MoU shall be in writing and shall be sent to the address of the recipient designated by written notice. Any such notice may be delivered personally, by e-mail, first class pre-paid registered letter or facsimile transmission to the addresses mentioned under Annexure A. Both parties shall, in writing, keep the other informed of any change of address. In case of any change in any of the aforesaid contact details of any party, the same shall be notified to the other party within 30 (thirty) days of such change. Any such change shall be construed to be effective and operative from the next day of the receipt of notice to

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such effect. All notices to be given in connection with this MoU shall be effective upon its receipt only.

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18. Assignment

Neither Party will have the right to assign or otherwise transfer its rights or obligations under this MOU without receiving the express prior written consent of the other Party, such consent not be unreasonably withheld. Notwithstanding the above or any contrary provision contained in this MOU, the Parties shall have the right to assign this MOU, in whole or in part, to any successor by way of merger, consolidation or acquisition of all or substantially all of the assets of said corporation or its parent company, or any other change of control event. Such successor will expressly assume in writing the obligation to perform in accordance with the terms of this MOU. Any other purported assignment will be void.

19. No Relationship between the Parties

It is expressly understood that neither Party has the authority to bind the other to any third person nor otherwise to act in any way as the representative of the other, unless otherwise expressly agreed to in writing signed by both Parties hereto. The Parties undertake that none of their respective employees, officers, and agents shall be construed in any manner, either expressly or by implication, as the employees or agents of the other Party and the other Party shall not be liable in any manner whatsoever for any claims, demands and the like made by them.

20. Miscellaneous

- a. No amendment, modification or discharge of this MoU shall be valid or binding unless set forth in writing and signed by both Parties.
- b. This MoU is made in two original counterparts, one for each Party, having an identical legal effect.

(SIGNATURE PAGES TO FOLLOW)

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TP WESTERN ODISHA DISTRIBUTION LIMITED

IN WITNESS WHEREOF, the Parties through their duly authorised representatives have executed this MOU as of the Effective Date.

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For TP WESTERN ODISHA DISTRIBUTION LTD. (TPWODL)	For SAMBALPUR UNIVERSITY INSTITUTE OF INFORMATION TECHNOLOGY (SUIIT)
Signature <i>G. Kale</i> 28/02/22	Signature <i>Dr. Nruparaj Sahu</i> 28/02/22
Name: Mr. Gajanan S. Kale	Name: Dr. Nruparaj Sahu
Designation: CEO, TPWODL	Designation: Registrar, Sambalpur University
Place: Burla	Place: Burla
Date	Date

Witness 1	Witness 2
Name: - Mr. Anil Kumar	Name: - Mr. Shishir Dudeja
Designation: - Head – Technical Services	Designation: - Company Secretary
Signature: - <i>Anil Kumar</i>	Signature: - <i>Shishir Dudeja</i>
Address: - PSCC, Office Burla	Address: - Corp. Office , TPWODL, Burla
Date: - 28/2/22	Date 28/2/22
Place: - Sambalpur, Odisha	Place: - Sambalpur, Odisha

Witness 3	Witness 4
Name: - Dr. Sibarama Panigrahi	Name: - Prof. Basanta Kumar Mohanty
Designation: - Assistant Professor, SUIIT	Designation: - Director, SUIIT
Signature: - <i>S. Panigrahi</i> 28/2/22	Signature: - <i>Prof. Basanta Kumar Mohanty</i> 28.12.22
Address: - SUIIT, Jyoti Vihar, Burla, Sambalpur	Address: - SUIIT, Jyoti Vihar, Burla, Sambalpur
Date: -	Date

Dr. Nruparaj Sahu
Registrar
Sambalpur University



Place: - Sambalpur, Odisha	Place: - Sambalpur, Odisha
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Registrar
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Jyoti Vihar-768019



ANNEXURE A

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If addressed to TPWODL:

Name of the concerned person: Mr. Anil Kumar Ojha
Head (PSCC, AUTOMATION, GIS, COMMUNICATION)-Technical Services
Address: West Block, Burla,Sambalpur- 768017
Mob:+91 9717299045
Email id _ anilkumar.ojha@tpwesternodisha.com

If addressed to SUIIT:

Name of the concerned person: Dr. Sibarama Panigrahi, Assistant Professor, Dept. of CSE&A
Mob: +91 7377302566

Vice Chancellor

Address: Sambalpur University Chairmain
Governing Body, SUIIT
Jyoti Vihar, Burla Sambalpur, Orissa – 768019 Phone: + 0663-2113254


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