



महाराष्ट्र MAHARASHTRA

2021

BE 720362

या प्रमाणपत्रासाठी प्रत्येकी रु. 500 खर्च केला आहे त्यांनी त्याच कारणासाठी तो रॉयल्टी व महसुलाचा अपात वापर करायचा आहे.

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Director college of Engineering, Pune

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प्रथम मुद्रांक शिपीक  
कोषागार मुणे नगरिका

The Pune Consumers' Co-op Society Ltd. Pune-411005  
LIC. No. 2201111

SPONSORED RESEARCH MASTER AGREEMENT

This Sponsored Research Master Agreement (hereinafter "Agreement") is made and entered into as of the date of last signature below and shall be effective from 1<sup>st</sup> day of August 2020 ("Effective Date"),

BY AND BETWEEN

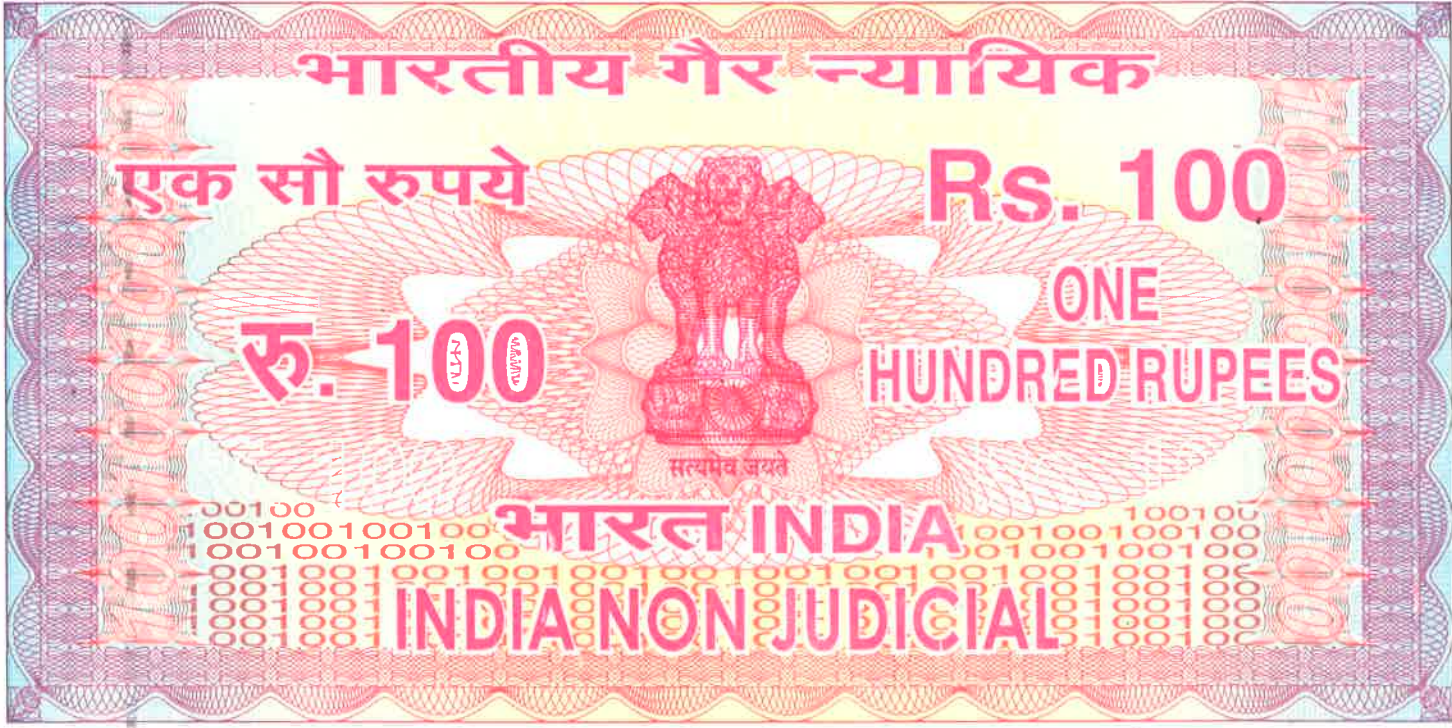
TATA CONSULTANCY SERVICES LTD., a company organized and existing under Indian law, registered under the Companies Act, 1956, having its registered office at TCS House, Raveline Street, Fort, Mumbai 400 001, (herein after referred to as "TCS"),

TCS Confidential

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Officiating Director  
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Pune-411005.



महाराष्ट्र MAHARASHTRA

2021

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ज्या कारणासाठी ज्यांनी मुद्रांक खरेदी केला आहे त्यांनी त्याच कारणासाठी  
 तो स्टॅम्प ६ महिन्यांच्या आत वापर करावयाचा आहे. प्रतिज्ञापत्रासाठी  
 दस्तावेजाप्रकार/ अनुच्छेद क्रमांक : .....  
 दस्त नोंदणी करणार आहेत का : .....  
 नोंदणी होणार असल्यास दुय्यम निबंधक कार्यालयाचे नाव : .....  
 पिल्लकतीचे वर्णन : .....  
 भोंवदला रकम : .....  
 मुद्रांक विकत घेणाऱ्याचे नाव व पत्ता : Director College  
 दुसऱ्या पक्षकाराचे नाव : .....  
 हस्ते असल्यास नाव व पत्ता : Sadanand Garavi  
 मुद्रांक शुल्क रकम : 10558  
 मुद्रांक विक्री नोंद वही अनु. क्रमांक : 11.0 AUG 2021  
 मुद्रांक विकत घेणाऱ्याची सही : .....  
 परवानाधारक मुद्रांक विक्रेत्याची सही/पत्ता/ परवाना क्रमांक : .....



AND

COLLEGE OF ENGINEERING, PUNE (COEP) an autonomous institute of the Government of Maharashtra, having its campus at Pune with its registered office at College of Engineering, Wellesly Road, Shivajinagar, Pune 411005, India, (herein after referred to as "Institute").

Institute and TCS shall be collectively referred to as "Parties" and individually as 'Party' and shall mean and include their respective successors-in-interest and permitted assigns.

WHEREAS:

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TCS is a leader in the global marketplace and among the top ten technology firms in the world providing various information technology services, business solutions, consultancy and outsourcing services worldwide and also encourages and facilitates the creation, discovery, dissemination and application of new knowledge through its Co-innovation Network (COIN) led by its global network of technology labs, domain labs and academic alliance initiatives ("TCS Innovation Labs");

Institute, founded in 1854, is an autonomous institute for teaching and research in the field of engineering and sciences.

TCS and Institute intend to enter into a mutually beneficial relationship to collaborate on research projects in various research areas, including but not limited to, Data and Decision Sciences and Artificial Intelligence ("Objective")

Institute represents that it has infrastructure, facilities, manpower and expertise necessary to facilitate and help TCS in its above said Objective;

TCS and Institute are interested in performance of various research projects at the Institute, which researches TCS is willing to sponsor (each a "Project" and collectively "Projects") in exchange for access to the Results of the researches subject to the terms of this Agreement.

**NOW, THEREFORE, for and in consideration of the foregoing and of the promises and mutual representations, terms and conditions contained herein, receipt of which is hereby acknowledged, and intending to be bound, TCS and Institute agree as follows:**

**1. DEFINITIONS:**

- 1.1 **Affiliate** shall mean any legal entity which controls, is controlled by, or is under common control with a Party hereto (and for the purpose of this definition "control" in relation to any entity means the power to direct the activities, management and policies of such entity, directly or indirectly, through the ownership of a majority of voting rights or the appointment of the majority of the directors and the terms "controlling" or "controlled" shall be construed accordingly).
- 1.2 **Background** shall mean any information, techniques, technology, design, work, invention, Know-how, software, data and materials (regardless of the form or medium in which they are disclosed or stored) that are contributed by a Party to a Project and/or provided by one Party to another for use in a Project (whether before or after the date of this Agreement), except any Result.
- 1.3 **Confidential Information** shall mean any Background disclosed by a Party to the other Party for use in a Project; and any Results in which that Party owns the Intellectual Property.
- 1.4 **Intellectual Property** shall mean patents, trademarks, service marks, registered designs, copyrights, database rights, design rights, applications for any of the foregoing, Know-how, Confidential Information, and any similar right recognised from time to time in any jurisdiction, together with all rights of action in relation to the infringement of any of the above.
- 1.5 **Know-how** shall mean unpatented technical information (including, without limitation, information relating to inventions, discoveries, concepts, methodologies, models, research, development and testing procedures, the results of experiments, tests and trials, processes, techniques and specifications, data, analyses, reports, compilations, interpretations and submissions) that is not in the public domain.
- 1.6 **Results** shall mean all data, information, database, Know-how, results, inventions, software and other Intellectual Property identified, conceived, collected, generated or first reduced to practice or writing in the course of the Project(s).

**2. THE PROJECTS:**

- 2.1 TCS and Institute may from time to time engage in one or more Projects under this Agreement. Before commencement of any Project, the Parties will execute a sponsored research project agreement ("Project Agreement") substantially in the form attached as **Schedule 1** to this Agreement. All provisions of this Agreement shall apply *mutatis mutandis* and shall be automatically incorporated by reference into the Project Agreement. Each Project will have its start date and will continue until the end date mentioned in



  
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the relevant Project Agreement which may be extended to any later date agreed in writing between the Parties, or until the relevant Project Agreement is terminated in accordance with clause 14.2.

- 2.2 Each of the Parties will carry out the tasks allotted to it in the Project Agreement(s), and will provide the human resources, materials, facilities and equipment that are designated as its responsibility in respective Project Agreements. The Projects will be carried out at the Location mentioned in the respective Project Agreements.
- 2.3 During the course of any Project, TCS and/or Institute may find it advantageous to modify the allotted tasks and/or scope of any tasks or the methodology being employed. Any modifications shall be mutually agreed, documented and formalized in a written amendment to scope of the contribution of each Party to such Project Agreement. Any such amendment shall become effective only if approved by Governance Committee (as defined under clause 3.1 below) and signed by both TCS and Institute.
- 2.4 Parties agree that Institute shall obtain all permissions, authorizations, approvals and consents, licenses and registrations, which may be required under the laws and rules/regulation applicable from time to time, necessary to allow it to carry out various Projects and its obligations under this Agreement and ensure that the same are kept valid and subsisting throughout the period of the Project(s).
- 2.5 Each of the Parties will ensure that its employees, faculty, students, interns and contractors (if any) involved in the Projects: observe the conditions attaching to any permissions, authorizations, approvals and consents, licenses and registrations; generate data and keep complete and accurate records of all research, development and other work carried out in connection with the Projects and of all Results and observations in accordance with sound scientific techniques, processes and good practices.
- 2.6 Although each of the Parties will use reasonable endeavours to carry out the Project(s) in accordance with relevant Project Agreement, neither Party undertakes that the researchers will lead to any particular Result, nor does it guarantee a successful outcome to any Project.

### 3. PROJECT MANAGEMENT:

- 3.1 The relationship of the Parties under this Agreement shall be governed by a Governance Committee consisting representatives from each Party and shall be in accordance with **Schedule 2**. The Governance Committee will be responsible for the overall guidance and management of the various approved Projects and for reviewing their progress at a time interval as may be agreed between the Parties under individual Sponsored Research Project Agreements. Either Party may change its representative(s) up to ten (10) days notice to the other Party. Any decision of Governance Committee must be unanimous. The Governance Committee shall meet periodically at mutually convenient venue to be agreed, and at default of agreement at TRDDC, Pune office or at any other time at the request of any of the Parties. Any member of the Governance Committee may participate in meetings of the Governance Committee by tele-conference, videoconference or any other technology that enables everyone participating in the meeting to communicate interactively and simultaneously with each other. The members of the Governance Committee shall agree as to the individual who will chair meetings of the Governance Committee from time to time.
- 3.2 Each Party shall also appoint a qualified staff member or other representative to act as principal investigator (each, a "PI") and if required, a co-principal investigator (each, a "Co-PI") for the tasks to be performed under each Project. Each PI shall act as the single point of contact for the Party appointing such PI in connection with the performance of its responsibilities under respective Projects.
- 3.3 The PIs and Co-PIs of individual Projects will be responsible to the Governance Committee for the day-to-day management of their Projects; be responsible for implementing decisions taken by the Governance Committee; prepare progress reports as required; and monitor the progress of their Projects. The PIs and Co-PIs of each Project shall report to the Governance Committee on completion of tasks defined in the Project. The PI of each Project from the Institute will be responsible for submission of the Statement of Expenditure (S/E) and consolidated Utilisation Certificate (UC) to TCS through Governance Committee in respect of the research funds provided for the respective period of their Projects, in a form as may be mutually agreed to between the Parties, showing utilization of monies in each Project, and an annual audited report (as per the Institute's process) for the monies paid by TCS under various Projects. The



Governance Committee shall, after examination of the documentation, accounts and records, and such other investigations as it deems fit, approve the closure of the Project(s), or recommend continuance on specific terms stipulated by it. Any additional responsibilities of PIs and Co-PIs may be mentioned in individual Sponsored Research Project Agreements.

- 3.4 Each Party will staff positions necessary for the implementation of the Projects in a timely manner and with individuals of appropriate skill, experience, character and comport. If either Party believes that the other Party has staffed a position with someone lacking requisite qualifications required for any Project, that Party can request a joint review of the Governance Committee. This paragraph or the foregoing procedures will not apply to the members of the Governance Committee.
- 3.5 For effective Project Management, Institute PI and/or Co-PI (if any) or other Institute personnel (as TCS may deem fit in consultation with Institute PI) may be provided with access to TCS systems for which Institute PI and/or Co-PI or other such Institute personnel may be issued with a TCS ID and a TCS Email ID. Institute acknowledges and agrees that issuance of such TCS ID or Email ID does not imply or create a relationship of employer and employee between TCS and such Institute PI and/or Co-PI and/or such Institute personnel. The Institute PI and/or Co-PI (if any) or other Institute personnel who are issued such TCS ID or Email ID agree to abide by and be bound by any and all policies, documents, guidelines and processes including IP, Security and Confidentiality of TCS in force from time to time whether expressly endorsed or not; shall keep any such credentials confidential, not share the same with anyone else and use the same only for the purpose of this Agreement or the relevant Project(s).


#### 4. RESOURCES TO BE PROVIDED:

- 4.1 For use by the Parties for or in connection with the Projects:
- 4.1.1 each Party shall provide sufficient resources, shall make available executive officers and employees, and may make assets available for use by the Parties ("Assets"), in all cases as it considers appropriate, reasonable and proportionate to implement the Projects and any Assets may be identified and listed separately in the Project Agreements;
- 4.1.2 each Party shall make available such information as the Parties consider appropriate; and
- 4.1.3 each Party shall participate in discussions and meetings.
- 4.2 Any Assets which are made available by one Party to the other pursuant to clause 4.1.1 shall be provided on 'as-is' basis without any representations or warranties, subject to the receiving Party:
- 4.2.1 not mortgaging, pledging or otherwise securing credit on such Assets or creating any encumbrances which may interfere with the owning Party's title.
- 4.2.2 taking such care as the receiving Party would in respect of its own assets.
- 4.2.3 not disposing of or selling or using it for any purpose not agreed to between the Parties without the prior written consent of the contributing Party; and
- 4.2.4 compensating for loss arising out of loss/misplacement/destruction of the Asset due to gross negligence of the receiving Party.

#### 5. RESEARCH FUNDING:

- 5.1 In consideration of Institute agreeing to perform its obligations and providing TCS with the Results under various Projects in accordance with the terms and conditions of this Agreement, TCS will fund the Projects subject to all terms and conditions of this Agreement, and as may be agreed in individual Project Agreements. Details of various items of expenditure for which the research funds are being provided by TCS to the Institute under various Projects will be made available in the respective Project Agreements.
- 5.2 Institutes shall raise invoice(s) for availing research funds under each Project as may be agreed to in this Agreement and the relevant Project Agreement. After TCS has approved the invoice, payment will be due within thirty (30) days thereafter. In addition and accompanying each invoice, Institute agrees to submit such details relating to the Projects, as may be agreed to or requested by TCS from time to time. Where the compensation is being claimed against costs and expenses incurred by Institute, each invoice must be accompanied by a statement certified by an authorised officer of Institute.
- 5.3 Taxes: Unless otherwise mentioned in individual Project Agreements, research funds payable to the Institute for various Projects under this Agreement shall be exclusive of taxes or any such levy as applicable. Institute shall charge such tax separately in the "tax invoice" pertaining to individual Project Agreement. Parties agree that payments will be subject to withholding taxes as per the provisions of the



  
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Indian Income Tax Act, 1961 and also as per the provisions of GST Legislation, as amended from time to time. TCS will provide withholding tax certificates to Institute as per the provisions of the Income Tax Act, 1961 and GST Legislation as the case may be. In case any GST credit, refund or other benefit is denied or delayed to TCS due to any non-compliance by Institute, including but not limited to, failure to upload details of supply on GSTN portal, or failure to pay Tax to the Government, or non-furnishing or furnishing of incorrect or incomplete returns/documents/details/ information; TCS shall deduct the appropriate amount of loss incurred by TCS (including but not limited to, tax loss, interest and penalty) from any payments due to Institute. In a situation where there is no payment due by TCS to Institute, Institute shall reimburse TCS any loss incurred by TCS.

**6. CONFIDENTIAL INFORMATION:**

- 6.1 During the course of the interactions under the Agreement for engaging in various Projects and during the course of the Projects, it may be necessary for one Party (**Receiving Party**) to receive, acquire, or be exposed to information that is proprietary or confidential to the other Party (**Disclosing Party**). All such information which the Receiving Party receives, acquires or is exposed to, whether orally, or in any tangible form, whether marked as confidential or not, shall be considered Confidential Information and kept in strict confidence.
- 6.2 Except as otherwise provided herein, the Receiving Party agrees
- to hold all such information in strictest confidence.
  - not to disclose such information either in whole or in part to any person other than those of its directors, officers, employees, agents and representatives ('Representatives') who need to know the Confidential Information for the purpose authorized hereunder provided that each such Representative has agreed in writing to maintain the confidentiality of the Confidential Information in accordance with the terms hereof;
  - not to use such information for any purpose whatsoever save as may be strictly necessary for the performance of Project(s) under this Agreement.
- 6.3 Each Party (defaulting Party) shall indemnify and hold harmless the other Party(ies) and their Representatives from and against all or any claims, damages, losses, liabilities or expenses (including, but not limited to, reasonable attorneys' fee and disbursements), arising out of a breach of confidentiality obligations by the said defaulting Party or their Representatives but only in proportion to and to the extent such claims, damages, losses, liabilities or expenses are caused by or result from the negligence or intentional acts or omissions of the said defaulting Party, or its Representatives.
- 6.4 The Parties agree that money damages would not be a sufficient remedy for any breach of this Agreement, and that in addition to the remedies provided in this Agreement and any other remedies available under the law, the aggrieved Party shall be entitled to seek specific performance and injunctive or other equitable relief as a remedy for any such breach.
- 6.5 However, nothing in this clause shall prevent Receiving Party from treating Confidential Information as non-confidential, if such information is:
- is in the public domain at the time of disclosure or later becomes part of the public domain through no fault of the Receiving Party; or
  - in the possession of, or was known to, the Receiving Party prior to its receipt, without an obligation to maintain its confidentiality or was independently developed by the Receiving Party, provided there is adequate documentation to confirm such prior knowledge or independent development; or
  - obtained by the Receiving Party from a third party (i) who the Receiving Party does not know to have violated, or to have obtained such information in violation of any obligation to the Disclosing Party with respect to such information, (ii) who does not require the Receiving Party to refrain from disclosing such information, or (iii) who has the right to disclose it, without the obligation to keep such information confidential; or
  - was independently developed by the Receiving Party without the use of Confidential Information, provided there is adequate documentation to confirm such prior knowledge or independent development.
  - is required to be disclosed by the Receiving Party under the compulsion of law, or by order of any court or government or regulatory body to whose supervisory authority the Receiving Party is subject; provided that, in any such event, the Receiving Party shall give the Disclosing Party a notice in writing



as soon as practicable (which shall be prior notice where possible and not later than 30 days after the disclosure) and the Receiving Party shall use its best effort to obtain assurance that the disclosed information will be accorded confidential treatment.

6.6 The obligation to hold Confidential Information in confidence will continue after the termination or expiration of this Agreement.

**7. INTELLECTUAL PROPERTY RIGHTS:**

- 7.1 This Agreement does not affect the ownership of any Intellectual Property in any Background that are not Results. The Intellectual Property in them (including any and all modifications, improvements, adaptations and/or derivatives thereof) will remain the property of the Party that contributes them to the Project(s) (or its licensors). No license to use any Intellectual Property in any Background is granted or implied by this Agreement except the rights explicitly granted in this Agreement or any Project Agreement. Background IP brought into any Project may only be used with the prior written consent of the other Party for the purposes and duration of the Project but for no other purpose. If use of this Intellectual Property is necessary for the execution of the Project, consent will not be unreasonably withheld. None of the Parties may grant any sub-license to use any other party's Background IP except that any Party may allow its Affiliates, and any person working for it or any Affiliate, or on its behalf or that of any Affiliate, to use any party's Background IP for the purpose of carrying out the Project(s), but for no other purpose.
- 7.2 Institute agrees that TCS will be the sole owner of all Results including without limitation, of all modifications, enhancements, derivative works and adaptations to the Results and/or to any TCS's Background, and any and all Intellectual Property conceived, invented, generated, developed or created in the course of, or as a result of, the Projects undertaken under this Agreement unconditionally and immediately on their creation, without any further consideration. Institute hereby irrevocably assigns to TCS all right, title, ownership and interest worldwide in and to the Results and all applicable Intellectual Property in or related thereto. TCS will take such steps as it may decide from time to time, at its expense and sole discretion, to register and maintain any protection for such Results, including filing and prosecuting patent, copyright or other intellectual property applications for any Results, and taking any action in respect of any alleged or actual infringement of that IPR. All the true-and-first inventors from TCS and Institute will be listed in the relevant patent applications. Institute also agrees to assign all of its right, title and interest in and to any Results and any and all Intellectual Property rights therein to any other third party if and as expressly directed in writing by TCS. All Results and any other deliverables hereunder, shall be made by Institute in such format and manner as shall allow TCS to fully use and/or assume further development, modification, enhancement, support and maintenance of such Results and deliverables on its own. As and when requested by the TCS, Institute shall provide adequate documentation to enable the foregoing and shall be available for training and handover sessions to assist TCS with the foregoing.
- 7.3 Institute agrees to disclose promptly in writing to TCS, or any person designated by TCS, all Results and Intellectual Property which are solely or jointly conceived, invented, collected, generated, created, made, reduced to practice, or learned by Institute in the course of, or as a result of, any work performed under this Agreement. If under any applicable law, Institute has any rights to such Results that cannot be assigned to TCS, Institute hereby unconditionally and irrevocably waives the enforcement of such rights, and all claims and causes of action of any kind against TCS with respect to such rights, and agrees, at TCS's request and expense, to consent to and join in any action to enforce such rights. Institute undertakes to ensure that all Institute personnel participating in the Projects, as a result of their attachment to Institute, shall execute all the necessary documents required by law including but not limited to assignments deeds, forms, Powers of Attorney in order to vest the intellectual property rights and/or other ownership rights or title with respect to all Results generated under this Agreement in favour of TCS. Institute undertakes to ensure that it will extend to TCS such reasonable assistance (all expenses to be borne by TCS) that TCS may reasonably request in connection with the protection, enforcement, registration and maintenance of any and all the developed Results and associated Intellectual Property or to carry out the purpose of this Agreement. Institute agrees and confirms that any such execution of documents by Institute and/or its personnel shall constitute a valid and binding assignment or transfer of right, title and interest in and to all such Intellectual Property in favour of TCS without any further authorization or approval or consideration. TCS and its Affiliates will have all rights to commercially exploit any and all research, outcomes and deliverables (including the Results) of the Projects for its own purpose and for any third party. TCS will not be sharing any commercialization benefit in such cases with Institute.



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- 7.4 Institute agrees that except with prior written consent of TCS, neither Institute's nor any third party (including open source) Background are incorporated or embedded/included in the Results. A list of Institute and third party Background Intellectual Property likely to be used by Institute in the Projects shall be mentioned in the Project Agreement. In the event that Institute's Background is incorporated into or are necessary for the use or exploitation of any Results, Institute shall notify the same in writing to TCS and hereby grants to TCS, an irrevocable, worldwide, fully transferable, perpetual and royalty free license to use, operate, copy, display, execute, distribute, maintain, adapt, modify, enhance, sublicense and create derivative works of the same to the extent necessary for implementation and exploitation of the Results. Any third party Background IP shall be used by Institute only if Parties mutually agree to incorporate or embed or use any third party Background in the Results or consider necessary for the exploitation of the Results. In such a case, the Parties shall negotiate in good faith and set forth the applicable terms and conditions in a separate license agreement.
- 7.5 With regard to use of Open Source Software (as hereinafter defined), each Party shall keep the other Party informed regarding the use or incorporation of any Open Source Software in a Project. Institute shall ensure not to incorporate, link, distribute or use any Open Source Software in, to or along with any Background IP or any Result in such a way that could cause or could be interpreted or asserted to cause the Background IP or any Result to become subject to any encumbrance or terms and conditions of any open source license (including, without limitation, any open source licenses listed on <http://www.opensource.org/licenses/alphabatical> or Free Software Foundation or any other similar open source licenses). For the purposes of this Agreement, Open Source Software means any software having license terms that require as a condition of use, modification or distribution of the software or other software combined or distributed with such software be (i) disclosed or distributed in source code form, (ii) licensed for the purposes of making derivative works, and (iii) redistributable at no charge. Institute shall comply with the terms of the open source licenses when using the same, including without limitation, to cause any modified files to carry prominent notices that files have been changed and add copyright statement to modifications.
- 7.6 TCS hereby grants to Institute a royalty free, revocable, non-exclusive, non-transferable, non-sub-licensable, non-commercial license on 'as is' basis during the term of Agreement to use, operate, copy, display, execute, maintain, adapt, modify, enhance and create derivative works of the Results only to the extent necessary in order to provide the services to TCS and perform the its obligations under the Agreement. Any modifications, enhancements, add-ons, adaptations, translations or other derivative works, comments, suggestions or feedback that Institute provides to or regarding the Results shall become TCS and its licensors' exclusive property which TCS and its licensors may use without restriction, payment or accounting to Institute. Further, despite the assignment or agreement to assign under this clause 7, Institute and each employee and student of the Institute contributing to the Projects will have the royalty-free right to use the Results for the purposes of personal, academic/non-commercial research, educational and teaching purposes, provided such Results shall exclude any material that is Confidential Information of TCS and subject to clause 8 (Publication) below. Institute undertakes not to use the Intellectual Property generated under this Agreement for any other purpose than stated hereinabove and in accordance with applicable laws and regulations. All use of Results or TCS Background shall inure to the exclusive benefit of TCS.
- 7.7 Where TCS grants to Institute a license to use TCS Background for the purpose and duration of any Project, such license shall be non-exclusive, non-transferable, non-sub-licensable, non-commercial license, revocable to use and operate the TCS Background on 'as is' basis without any warranties, express or implied, for the purposes and during the term of the Project. Unless otherwise agreed to, such right of use does not comprise the right to reverse engineer, disassemble, de-compile, tamper, recreate, enhance, modify or further develop of such TCS Background or any part thereof without the written consent of TCS. Institute shall not and shall not permit others to remove, alter or otherwise render illegible any of TCS's logo, trademark, copyright notice or other proprietary or confidentiality markings that may be placed on the licensed TCS Background or any component thereof. TCS may terminate the right of use of TCS Background or Results if Institute uses the TCS Background or Results in a manner contrary to the provisions herein and fails to cure such breach within a period of fifteen (15) days from the date of notice of breach. Such license grant of TCS Background or Results shall expire without further notice no later than upon expiry or termination of this Agreement, regardless of the reason for this. TCS Background and



  
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Results shall in that case be returned to TCS. Institute shall, notwithstanding any contrary or limiting provisions elsewhere in this Agreement, indemnify TCS and its subsidiaries, affiliates, officers, agents, employees or other partners, and licensors from any damage or loss caused due to or arising out of Institute/Research Advisor's use of the Results or TCS Background in a manner contrary to the provisions of this Agreement or any matters connected therewith. In no event shall TCS or its licensors be liable for any direct, indirect, incidental, special, exemplary or consequential damages, use or loss of use; loss or damage of data, lost profits, business, revenue, goodwill, reputation or anticipated savings; business interruption; procurement of substitute goods or services) suffered by Institute or any third party, however caused and on any theory of liability, whether in contract, strict liability, or tort (including negligence or otherwise) arising from or as a result of using the TCS Background, even if advised of the possibility of such damage.

- 7.8 Institute represents and warrants that: (a) it has the right to convey title in or to the deliverables/Results and related Intellectual Property rights and that the Intellectual Property in the Results is free from all charges and encumbrances and rights of any third party; (b) to the best of its knowledge and belief (but not having made any search of any public register) the deliverables/Results do not infringe upon any third party rights; and (c) the creators of the deliverables/Results, including faculty, workers, employees, and students have waived in writing their moral, intellectual property and ownership in the deliverables/Results pursuant to this Agreement.
- 7.9 The Parties agree that neither will use the name or trademarks of the other Party or its employees in any advertisement, press release or publicity with reference to this Agreement or any product or service or other outcome resulting from the Projects, without prior written approval of the other Party. The Parties may, however, mention the name of the other Party and areas of research under collaboration on their official websites or for reporting/submissions made under any rules, regulations, or include the existence of this Agreement in its regular list of collaborations for research.
- 7.10 Institute will intimate in writing to TCS of any further Intellectual Property or enhancements or derivative works to the Results conceived and/or created after the expiry or termination of the Agreement, before disclosing it to or collaborating with any third party or before publication. Institute hereby grants, and TCS accepts, that TCS will have the first right of refusal to commercialize the same on terms and conditions to be mutually agreed to between the Parties. In the event TCS selects to commercialize such derivative works, the Parties will negotiate and enter into a separate license on fair and reasonable commercial terms that allow TCS to commercialize such derivative works.
- 7.11 The provisions and obligations under this Intellectual Property Rights clause shall survive the expiry or early termination of this Agreement or any renewals/extensions hereof.

**8. PUBLICATIONS:**

It is contemplated that Results of the Projects hereunder may be jointly presented or published; however, Institute will not publish any information in regard to the work performed hereunder and Results without prior written consent of TCS, which consent will not be unreasonably withheld. Institute will submit a copy of any draft report, paper, thesis or other draft presentation or publication shall be provided to TCS for review at least sixty (60) days before submission or any other diffusion/dissemination/publication/disclosure for review and comment. Authorship of Results of the Projects shall be determined in accordance with academic standards and custom and with author's affiliation to their respective organizations attributed / acknowledged. Proper acknowledgment shall be made for the contributions of each Party to the research results being presented or published. TCS will arrange to protect the Intellectual Property generated during the course of, or resulting from, the Projects and shall be the copyright owner of any such works to be published or presented. In such a case any publication or other dissemination shall be delayed up to additional sixty (60) days in order to allow time for filing such patent or other IP application. Institute and/or its faculty/students or other agents or representatives will not publish or act or omit to act in any manner so as cause any loss or damage to the Intellectual Property so generated or disclosure of Confidential Information received from or relating to TCS (including Results generated in the course of the Projects).

**9. DATA PROTECTION:**



Institute acknowledges and agrees that in the course of, and for the purposes of, the Project(s), it may have to access, collect, obtain or come across personal data or information, including without limitation sensitive personal data or information of data subjects (collectively "Personal Data and Information") within the meaning of the Indian Information Technology Act, 2000, Aadhar Act, 2016 and their respective applicable Rules and Regulation and Guidelines issued by MeitY vide D.O. Letter No. 10(13)/2017EG-II dated 4<sup>th</sup> May 2017. In respect of such Personal Data and Information, if any, accessed, collected, obtained, acquired, analyzed or processed by the Institute pursuant to this Agreement, Institute shall ensure that such data is collected, processed and transferred in accordance with the applicable laws and regulations, including without limitation, consent covering the intended use has been obtained from the relevant data subjects. Protocol for collection, processing and transfer of Personal Data and Information may be agreed to by the Parties in the individual Project Agreement(s) and put up for necessary approvals by the Institute. Institute represents and warrants that it will (i) comply at all times with the applicable data protection legislation and regulatory requirements; (ii) process the Personal Data and Information only to the extent strictly necessary to perform its obligations under this Agreement and then only in accordance with this Agreement, applicable law; and where TCS is the data controller, on instructions received from TCS from time to time; (iii) take and/or abide by such technical and organizational measures necessary to prevent the accidental or unlawful destruction or accidental loss, alteration, unauthorized publication, disclosure or access to the Personal Data and Information and which comply with good industry practice from time to time in order to ensure that only authorized personnel have access to the Personal Data and Information; (iv) promptly (and in any event within 24 hours of awareness) give notice to TCS of any actual or suspected incident of unauthorized or accidental disclosure of, or access to, the Personal Data and Information or other breach of this clause 10 (a "Security Breach"); (v) promptly provide TCS with all information in Institute's possession or control concerning any Security Breach and not make any public announcement regarding a Security Breach without the TCS's prior written consent except as may be required under the applicable law or regulation; (vi) not do, or omit to do, anything, which would cause the TCS or any of its employees, officers or agents to be in breach of its obligations under the data protection legislation; (vii) anonymize and/or masked and/or redacted and/or suitably de-identified to prevent tracing or identifying the identity of any data subjects who provided the Personal Data and Information before providing or transferring such data to TCS under this Agreement or publishing or disclosing such data; (viii) store the Personal Data and Information in accordance with its retention policy and for research purposes only in relation to this Agreement and certify to TCS that it has done so on request; (ix) remain responsible for safety, security, use handling and management of the Personal Data and Information; (x) give notice to TCS (within five (5) days) of any request received of any communication relating to the access, use or processing of any Personal Data and Information (including any notice from the regulatory body) and fully co-operate and assist TCS in relation to any such request or communication; (xi) shall provide all reasonable assistance necessary to enable TCS to respond to complaints to investigate any breach or alleged breach of the applicable data protection legislation; and (xii) shall not, without the prior written consent of TCS, transfer any such data to a country or territory outside India. This clause shall survive the expiry or termination of the Agreement and any renewal/extensions thereof and continue to apply. Institute will not publish any Personal Data and Information that, when used alone or combined with other data, may be used to identify individuals, such as an individual's name, birth date, gender, occupation, mailing address, email address, phone number, account information, or other information that is unique to or permits identification of that individual, without the individual's written consent, or that enables any individual's or de-identified and anonymized human subjects data's association with any organization or demographic details including without limitation, region, caste, religion, etc. Institute agrees that TCS may use the de-identified and anonymized data provided under this Agreement for further studies and research either alone or along with third parties and for TCS' internal use. Institute shall determine approvals, if any, required for TCS' aforesaid use from the Institute's ethics committee / Institutional Review Board and shall take the same at the time of seeking approval of design / experiment protocol at the beginning of any Project. TCS reserves the right to not continue with a Project if such rights in de-identified / anonymized data are not granted to TCS. Institute will promptly from the end of data collection for each cohort/phase scrub and de-sensitize / de-identify and anonymize the data as per prevailing standards which standards will be defined during the protocol design phase and approved by the IRB of the Institute so that the timelines according to the work plan agreed are adhered.

**10. SIMILAR PROJECTS:**

Nothing in this Agreement shall be construed to limit the freedom of each Party, from engaging in similar research made under other grants, contracts, or research agreements with other third party(s). However,



A handwritten signature in blue ink, consisting of stylized letters.

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College of Engineering Pune  
Pune-411005.

Institute and Institute personnel (including Institute faculty, staff and students) engaged in Project(s) and/or providing services to TCS under this Agreement shall ensure that their engagement in research or other internship with third parties does not have any conflict of interest with their obligations under this Agreement and do not have any adverse or detrimental effect on the Projects undertaken hereunder and provided that they do not disclose or use any Confidential Information obtained pursuant to their participation in the Projects and their such other engagement / participation does not jeopardize Intellectual Property of TCS.

**11. INDEMNIFICATION:**

Each Party is responsible for its own acts and omissions relating to this Agreement and any materials or equipment or services provided in connection with this Agreement, including without limitation, acts or omissions of its employees, faculty, staff, students, sub-contractors or consultants or the like. Each Party (in the capacity as Indemnifying Party) agrees to indemnify, defend and hold the other Party, its directors, officers and employees (in the capacity of Indemnified Party) harmless, from and against any claims, demands, suits, proceedings, damages, costs, losses, liabilities, fines, penalties and expenses therewith to the extent such demand, claim or action relates to or is based on: violation of any applicable law or rules (including without limitation, and liability arising out of breach of clause 9 under this Agreement); or breach of confidentiality; or any violation or misappropriation or infringement of third party intellectual property rights or moral/privacy rights of the other Party; or violation or misappropriation of TCS' Intellectual Property (including in or to TCS Background and Results) by Institute or employees, faculty, staff, students, agents, contractors or consultants; or breach by a Party or its representatives of express representations and warranties under this Agreement; or any personal injury, death or damage to property caused by the negligence or willful misconduct of Institute or its agents, employees, officers and representatives. This clause shall survive the term, any renewals/extensions thereof, expiry and termination of this Agreement.

**12. LIMITATION OF LIABILITY:**

In no event shall either Party be liable to the other, either for or under this contract, tort or any other legal theory, for any indirect, incidental, special, consequential, reliance or cover damages, loss of profits, revenue, data or use, incurred by the other Party under this Agreement even if advised of the possibility of the same and arising out of either the performance or non-performance of its obligations under this Agreement. TCS' entire liability for direct damages to the Institute arising out of or relating to this Agreement shall be limited to the total amount of undisputed unpaid research funds remaining unpaid by TCS to Institute under this Agreement. Provided, however, that limitation of liability in this clause shall not apply to any liability for damages arising from indemnification obligations under this Agreement. This clause shall survive the term, any renewals/extensions thereof, expiry and termination of this Agreement.

**13. FORCE MAJEURE**

If the performance of this Agreement by either Party is delayed, hindered or prevented or is otherwise frustrated by the reason of force majeure, which shall mean war, civil commotion or disturbance, fire, flood, action by government or any event beyond the reasonable control of the performing Party, then it shall promptly notify the other Party in writing specifying the nature of the force majeure event and of the anticipated delay in the performance of this Agreement, and as of the date of that notification, the Party affected may suspend the performance of this Agreement until the cause of the delay ends. If the period of the suspension exceeds three (3) months, then at any time after three (3) months of suspension, the affected Party may terminate this Agreement by and upon giving notice to performing Party. Neither Party shall have any liability to the other in respect of the termination of this Agreement as a result of an event of Force Majeure.

**14. TERM AND TERMINATION**

- 14.1 This Agreement shall be valid from the Effective Date and shall remain in force for a duration of **5 (Five)** years from the Effective Date i.e. till **31<sup>st</sup> July 2025** unless terminated earlier as provided herein below.
- 14.2 In the event of a material breach of the provisions of this Agreement or any Project Agreement executed hereunder, the non-breaching Party may terminate this Agreement or relevant Project Agreement upon written notice to the breaching party if the breaching party fails to cure such breach within 30 days following written notice thereof to the breaching party, or giving notice effective immediately following a material breach by the other Party that is not susceptible to cure.




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- 14.3 This Agreement or any Project Agreement executed hereunder may be terminated at any time by mutual consent of the Parties, or TCS may terminate this Agreement or any Project Agreement at any time by giving a thirty (30) days prior written notice to the Institute. The Parties will proceed in an orderly fashion to terminate any outstanding commitments and to stop the work as soon as it is practicable to do so within the 30-day time period. In the event of termination pursuant to this sub-clause Institute's sole remedy shall be a claim for actual, necessary, reasonable and verifiable costs incurred by the Institute prior to notice of termination but which have not yet been reimbursed or paid, commitments existing at the time the notice of termination is received which cannot be cancelled, or in connection with discontinuing the work hereunder, less previous amounts, if any, paid and any claim(s) which TCS has against Institute. In no event shall such costs include unabsorbed overhead or anticipatory profit. If previous amounts, if any paid to Institute, exceed the amount due to Institute under this sub-clause, Institute shall pay any excess to TCS upon demand after withholding amounts necessary to discharge obligations that cannot be cancelled. On termination or expiry of this Agreement or relevant Project Agreement, TCS shall be entitled to remove and take back all equipment and items purchased related to Project(s) or owned or licensed by TCS and loaned at its sole discretion to Institute to serve the purposes of Project under this Agreement; Institute shall not have any right, lien, or claim of any nature whatsoever in respect of such equipment or items. For Projects which Parties mutually agree to continue in writing, the provisions of this Agreement shall continue to apply only to such Project Agreement(s) and only with respect to commitments thereunder.
- 14.4 Termination of this Agreement will not affect or prejudice any rights of one Party against the other, accruing up to and including, the date of termination, under those provisions of this Agreement which, by their nature, survive termination.
- 14.5 Upon the termination/expiry of this Agreement, each Party undertakes (a) to return any physical or tangible property belonging to the other Party and (b) not to use the proprietary or Confidential Information of the other Party in any manner whatsoever without seeking the prior written consent of the other Party.

## 15. GENERAL

- 15.1 Any addition, deletion and / or alteration to this Agreement/any activities undertaken hereunder may be effected with a written agreement of the Parties to this Agreement concerning the amendments. A document containing the additions, deletions and/or alterations, and signed by the Parties hereto, shall form an amendment to and be deemed to be a part of this Agreement.
- 15.2 In the event that any term, condition or provision of this Agreement is held to be in violation of any applicable law, statute or regulation the same shall be mutually amended so as to be in compliance therewith with the legislation or law. If such term, condition or provision, or part thereof, cannot be amended so as to be in compliance with the legislation or law, it shall be deemed to be severable from the other provisions of this Agreement and this Agreement shall be construed as if such term, condition or provision had not been contained in this Agreement.
- 15.3 Financial records, supporting documents, and other record pertaining to this Agreement shall be maintained and retained by Institute for a period of five years from the termination/expiry date of this Agreement.
- 15.4 It is understood by the Parties herein this Agreement is based on the professional competence and expertise of each Party and hence neither Party shall transfer or assign this Agreement, or rights or obligations arising hereunder, either wholly or in part, to any third party without the prior written consent of the other. Any merger or amalgamation or other form of strategic reorganization of a Party's activities and the resultant transfer or assignment of this Agreement shall not be considered as transfer or assignment restricted by this clause.
- 15.5 All notices, requests, demands and other communications under this Agreement shall be given to or made upon the respective Parties as follows:  
To TCS:  
Tata Consultancy Services Limited.  
Attention: K Ananth Krishnan, Executive Vice-President & CTO  
Address: Tata Consultancy Services Limited, 2nd floor, Block "A" - Phase - II IIT Madras Research Park Kanagam Road Taramani, Chennai - 600 113, India



  
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Pune-411005.

With a copy to General Counsel, Tata Consultancy Services Limited, TCS House, Raveline Street, Fort, Mumbai - 400 001 (India).

**To Institute:**

Attention: Prof. and Dr.B.B. Ahuja  
Address: Director and Professor, College of Engineering, Wellesely Road, Shivajinagar, Pune-411005

Or to such other person or addresses as any of the Parties shall have notified to the other Party. All notices, requests, demands and other communications given or made in accordance with the provisions of this Agreement shall be in writing by letter, fax, or telegram.

- 15.6 The headings of various clauses herein are inserted for convenience of reference and are not deemed to affect the meaning or construction of relative provisions.
- 15.7 No waiver of any provision of this Agreement shall be effective unless executed in writing. No waiver shall be deemed to be, or shall constitute, a waiver of a breach of any other provision of this Agreement, whether or not similar, nor shall such waiver constitute a continuing waiver of such breach unless otherwise expressly provided in such waiver.
- 15.8 This Agreement and its Schedules constitute the entire agreement among the Parties with respect to the subject matter and supersede all other representations, understandings or communication whether written or verbal, with respect to the subject matter hereof. In the event of any conflict between the provisions of this Agreement and the Schedules, the provisions of this Agreement shall prevail.
- 15.9 Nothing contained in this Agreement or any actions taken by or arrangements entered into between the Parties shall be construed as or deemed to create any partnership, agency or joint venture between the parties. Neither Party shall have authority to commit on behalf of the other party contractually or otherwise, to any obligations to third parties.
- 15.10 Each Party will be completely responsible for ensuring compliance towards all statutory provisions applicable to and governing the employment/engagement of its employees and representatives (including without limitation, those of any sub-contractors or consultants or the like), deployed and would ensure compliance to provisions of statutes, as amended and applicable from time to time for such employees and representatives. Under no circumstances shall employees, agents and representatives of a Party, represent as or be construed as employees/agents and representatives of the other Party. Each Party shall indemnify and keep the other Party, its directors and officers indemnified against all claims, compensation, damages, losses, costs, liabilities, fines, penalties or disputes that may be raised by any of its employee, personnel, agents and representatives (including without limitation, any sub-contractors or consultants or the like and their employees or workers), engaged directly or indirectly by them and deployed for delivering the obligations under this Agreement, including without limitation, on account of any injury or accident or death. All the costs and consequences of such litigation or dispute shall be exclusive liability of the Indemnifying Party.
- 15.11 This Agreement shall be governed by and construed in accordance with the laws of India. Any disagreement/ difference of opinion/ dispute between the Parties regarding the interpretation of the provisions of this Agreement or otherwise arising from this Agreement and the activities undertaken under this Agreement shall be resolved by mutual consultation by the Parties. For any dispute unresolved for a period not exceeding ninety (90) days, reference shall be made under the provisions of the Arbitration and Conciliation Act, 1996 or any statutory modification / re-enactment thereof and rules made there under. The place of arbitration shall be Pune and the proceedings shall be conducted in English language. The award of the arbitrator shall be binding on both the Parties. Nothing herein shall prohibit either Party from seeking a temporary restraining order, preliminary injunction or other provisional relief. If, in its judgment, such action is necessary to avoid irreparable damage, to preserve the status quo or to prevent the dissemination of Confidential Information or protection of its intellectual property rights or from bringing and pursuing legal action to specifically enforce the provisions of this Section.
- 15.12 The business activities of TCS are self-regulated by the "Tata Code of Conduct"(currently available at: <https://www.tcs.com/tata-code-of-conduct>). If the Institute comes to know of any violation of the code of conduct, the Institute shall report the violations to TCS. TCS, in turn, undertakes that it will maintain confidentiality of all communication received.



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15.13 Each signatory to this Agreement represents and warrants that he/she is duly authorized by the Party for and on whose behalf he/she is signing this Agreement to execute the same in a manner binding upon said Party and that all corporate approvals and procedures necessary for vesting such authority in him/her have been duly complied with.

15.14 The other clauses of this Agreement, which by their very nature ought to survive termination of this Agreement, shall so survive.

15.15 This Agreement is being executed in two counterparts, each of which shall be deemed to be an original, but both of which, taken together, shall constitute one and the same agreement and it shall not be necessary in making proof of this Agreement to produce or account for more than one counterpart hereof.

IN WITNESS WHEREOF, each of the parties hereto have caused this Agreement to be duly executed by a duly authorized representative of such party as of the date first above written

FOR TATA CONSULTANCY SERVICES LIMITED FOR COLLEGE OF ENGINEERING, PUNE

Sign:  Date: 9/sep/2021 Sign:  Date: \_\_\_\_\_  
Name: K Ananth Krishnan Name: Dr. B.B. Ahuja  
Title: Executive Vice President and CTO Title: Director



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Pune-411005.



  
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**SCHEDULE 1**  
*Form of Project Agreement*

**SPONSORED RESEARCH PROJECT AGREEMENT**  
Under

Sponsored Research Master Agreement dated \_\_\_\_ day of \_\_\_\_\_, 2020 ("Master Agreement")  
By And Between

\_\_\_\_\_ ("Institute")

And  
Tata Consultancy Services Limited ("TCS")

This Sponsored Research Project Agreement ("Project Agreement") is made on the date of last signature below and shall be effective from \_\_\_\_ day of \_\_\_\_\_, 20\_\_ ("Effective Date").

TCS and Institute are hereinafter referred to individually as the "Party" and collectively as the "Parties" and shall mean and include their respective successors-in-interest and permitted assigns.

Upon execution by the Parties, the Project specified herein shall be awarded and performed in accordance with the Master Agreement. The terms of the Master Agreement will prevail over this Project Agreement except to the limited extent specified herein. The applicable terms of the Master Agreement are incorporated herein by reference and will apply mutatis mutandis to this Project Agreement between the Parties.

**THE PROJECT**

**PROJECT TITLE:**

**AIM OF THE PROJECT**

**PROJECT DETAILS: REFER ATTACHED PROJECT PROPOSAL EXHIBIT A**

**PERIOD OF PROJECT**

**Start date:**

**End date:**

**PROJECT MANAGEMENT (PROJECT MANAGERS / PRINCIPAL INVESTIGATORS / TEAM MEMBERS)**

TCS:

Institute:

Governance Committee Review Schedule: Once in \_\_\_\_ months

Before involving any team member(s) for execution of the Project, Institute PI shall ensure that each individual team member signs declaration form(s) ("Declaration Form") in the manner prescribed in Exhibit B to this Project Agreement and shall also provide a copy of the duly executed Declaration Form(s) to TCS within five (5) days from the date of such execution.



  
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**NON LIMITING LIST OF BACKGROUND MATERIAL / IPR OF THE PARTIES**

Background Material/IPR should include only patents, patent applications, designs and any tangible or code-based assets. Research publications not protected by patents, designs or code-based assets should not be mentioned in the below table.

| Material/IPR | Owner |
|--------------|-------|
|              |       |
|              |       |
|              |       |
|              |       |

Any third party Background intellectual property (including materials) that Parties have mutually agreed to use:

| Tool | Description | License URL | Copyright |
|------|-------------|-------------|-----------|
|      |             |             |           |
|      |             |             |           |

Whether all Background intellectual property is to be kept Confidential or which Pre-existing intellectual property is to be kept confidential, for instance:

TCS EQUIPMENT LOANS OR GIFTS (IF ANY): Yes / No (Please mention details of the asset)

**PURCHASE OF EQUIPMENTS (IF ANY):**  
(Please mention details of the asset to be purchased)

*In case of funding for purchase of hardware, which is to be done by Institute, TCS will require a Tax Invoice from Institute with confirmation of hardware installation and a TCS pre-Approval for Specification and Cost. It should be also supported by Original Vendor Invoice from where purchase is made. TCS will also require a Delivery Challan Copy and Vendor Installation Report of the said Hardware.*

*In case of funding for purchase of hardware which is to be done by Institute via online procurement, TCS may release Advance Payment to Institute based on Payment Release Letter supported by Procurement Item listing with Online Price and Quantity along with TCS Pre Approval for Specification with Cost. Post online procurement within 7 Days Institute to submit a Tax Invoice supported by hardware installation report, Online Payment Invoice and Receipt for settlement of Advance.*

**ANTICIPATED OUTPUTS OR RESULTS**  
**Deliverables**

**Publications**

The Project involves close collaboration between Institute and TCS personnel. It is expected to have publications to disseminate the research outcomes of the Project.

**PROJECT LOCATION:**

**FINAL PROJECT REPORT:** Institute shall cause the Principal Investigator to provide TCS, within thirty (30) days after the end of the Project period, with a detailed written report summarizing the Results obtained during the Project period. Where any of the Results are software, the source code of the same shall be provided to TCS.



  
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**RESEARCH FUNDING:**

TCS will provide, to the Institute, research funds for the Project to the extent of Rs. XXXXXX (Rupees XXXX XXXX and XXX XXXX only) over the period of the Project from the date of commencement of the Project.

For details of Research Funding (where applicable), invoicing, payment milestones, Institute bank details, etc. please refer to **EXHIBIT C**.

**RESEARCH PROJECT AUTHORIZATION:**

**TATA CONSULTANCY SERVICES LIMITED** \_\_\_\_\_ **INSTITUTE**

Sign. \_\_\_\_\_ Date: \_\_\_\_\_ Sign. \_\_\_\_\_ Date: \_\_\_\_\_  
Name: K Ananth Krishnan Name:  
Title: Executive Vice President and CTO Title:

**PRINCIPAL INVESTIGATOR'S ACKNOWLEDGEMENT**

I confirm that I've read and understand the terms and conditions of the Master Agreement signed between Institute and TCS and agree to comply with the terms of that Master Agreement as they relate to my activities under this Project.

\_\_\_\_\_ Date: \_\_\_\_\_ \_\_\_\_\_ Date: \_\_\_\_\_  
Institute Principal Investigator TCS Principal Investigator  
Prof. \_\_\_\_\_, Dept. \_\_\_\_\_ \_\_\_\_\_ TCS Innovation Lab,  
\_\_\_\_\_




  
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EXHIBIT A: DETAILED PROJECT PROPOSAL



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Pune-411005.

EXHIBIT B: DECLARATION FORM

PROJECT TITLE:

PROJECT JOINING DATE:

PROJECT PI:

INSTITUTE TEAM MEMBER REPRESENTATIONS:


I, the undersigned, a member of the Institute Project Team, represent that:

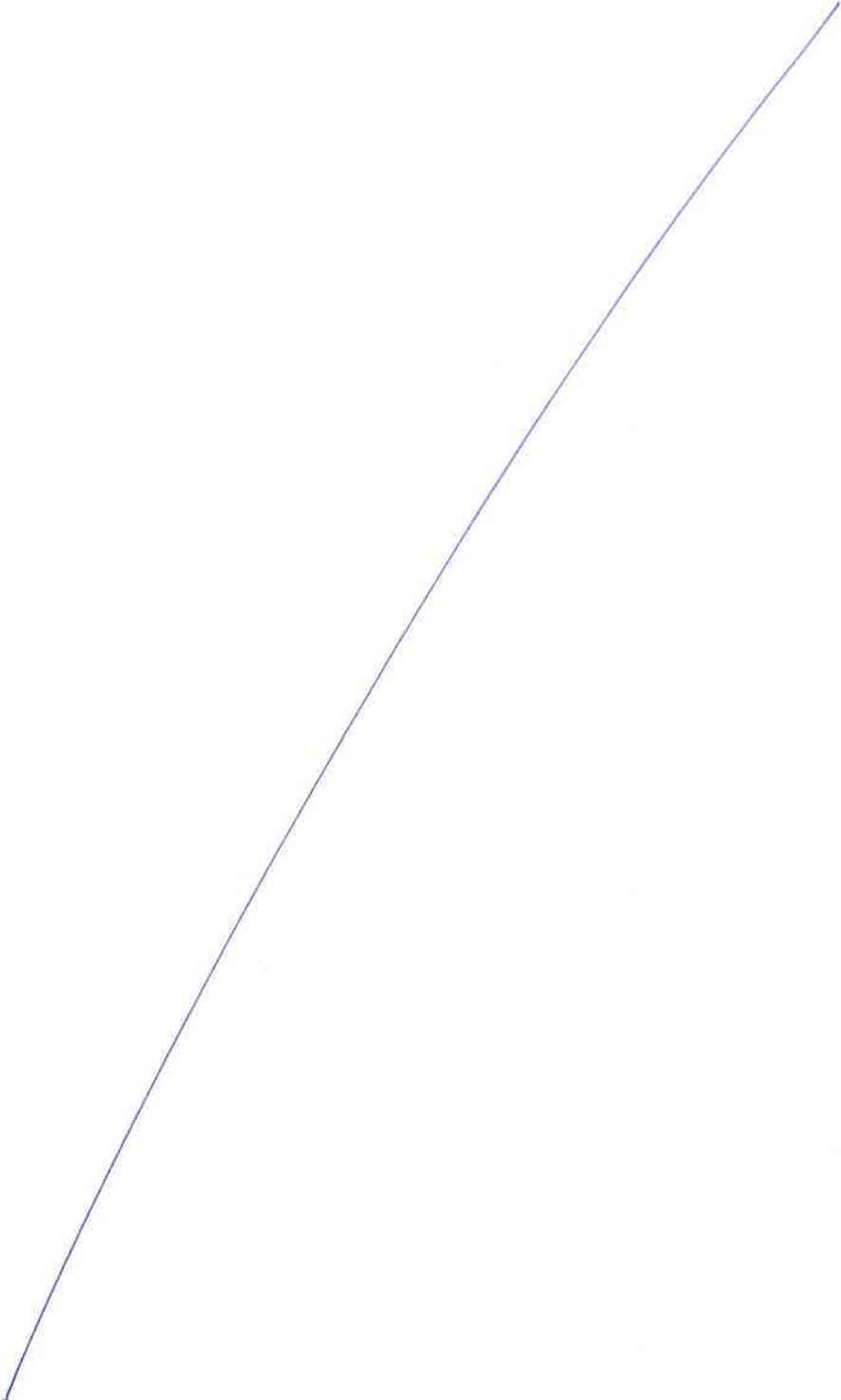
1. I will not, in the performance of the Project, knowingly infringe upon or misappropriate any third party intellectual property rights, confidential information or trade secrets.
2. I agree that TCS will be the sole owner of all Results including without limitation, of all modifications, enhancements, derivative works and adaptations to the Results and/or to any TCS's Background, and any and all Intellectual Property conceived, invented, generated, developed or created in the course of, or as a result of, the Project undertaken under this Project Agreement unconditionally and immediately on their creation, without any further consideration. I hereby irrevocably assign to TCS all right, title, ownership and interest worldwide in and to the Results and all applicable Intellectual Property in or related thereto. Accordingly, I will execute all the necessary documents required by law including but not limited to assignments deeds and forms in order to vest the intellectual property rights and/or other ownership rights or title with respect to all Results generated under this Project Agreement in favour of TCS.
3. I will not publish or act or omit to act in any manner so as to cause any loss or damage to the Intellectual Property so generated or disclosure of Confidential Information received from or relating to TCS and Project (including Results generated in the course of the Project) without prior written permission of Institute PI and TCS PI.
4. My engagement in research with third parties during the Project period does not have any conflict of interest with my obligations under this Project Agreement and do not have any adverse or detrimental effect on the Project undertaken hereunder.
5. I will adhere to highest fiduciary standards, ethical practices and standards of care and competence while performing my obligations under this Project Agreement.
6. Under no circumstances shall my engagement/participation in this Project be construed as an employment with TCS.
7. I voluntarily assume and understand any and all risks associated with my engagement/participation in the Project and I hereby, agree that TCS shall not be held liable for any losses that I may sustain due to my engagement/participation in the Project. Accordingly, I hereby waive any and all right or claim for losses.
8. If I'm issued a TCS ID or Email ID, I agree to abide by and be bound by any and all policies, documents, guidelines and processes including IP, Security and Confidentiality of TCS in force from time to time whether expressly endorsed or not and shall keep any such credentials confidential, not share the same with anyone else and use the same only for the purpose of the Project. I acknowledge and agree that issuance of such TCS ID or Email ID does not imply or create a relationship of employer and employee between TCS and me and shall not make any such claim against TCS and/or for any benefits available to an employee.

Sincerely,

Name: \_\_\_\_\_ ID no. \_\_\_\_\_ Sign/Date: \_\_\_\_\_



  
Officiating Director  
College of Engineering Pune  
Pune-411005.



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**Officiating Director**  
College of Engineering Pune  
Pune-411 005

**EXHIBIT C: RESEARCH FUNDING AND INVOICING DETAILS**

Research Project Funding:

Institute Overheads (if any):

GST:

**TOTAL:**

Item wise split of the Research Funding (*mention only if applicable*):

Payment Milestones and Provisions:

The invoices will be tentatively raised as per the following schedule subject to review of the Project progress as per the Milestones and furnishing of the Fund Utilization Certificate for the previous payment. Invoicing amount at Milestones may vary and may be switched from one Milestone to other Milestone fully or partially with prior written consent or request of TCS.

| Invoicing Schedule       |   | Milestones  |  | Budget (INR) |
|--------------------------|---|-------------|--|--------------|
| 1 <sup>st</sup> Invoice  | Upon execution of the Project Agreement | Milestone 1 |  |              |
| 2 <sup>nd</sup> Invoice* | On or before DD/MM/YYYY                 | Milestone 2 |  |              |
| 3 <sup>rd</sup> Invoice* | On or before DD/MM/YYYY                 | Milestone 3 |  |              |

\* Subject to review of preceding milestone

**Invoices need to be sent on the address mentioned below –**

Tata Consultancy Services Limited  
Phase - 2, Block A, Second Floor,  
IIT-Madras Research Park,  
Kanagam Road, Taramani,  
Chennai - 600113,  
Tamil Nadu, India  
TCS GST - 33AAACR4849R2ZR  
Kind Attention: Mr. K Ananth Krishnan

Soft copy of the invoice can reach [cto.fincoin@tcs.com](mailto:cto.fincoin@tcs.com)

Mode of Payment- Monthly by Bank Transfer, the bank account details for wire transfer are:

|                       |  |
|-----------------------|--|
| Bank Name             |  |
| Branch                |  |
| IFSC Code             |  |
| MICR Code             |  |
| SWIFT Code            |  |
| Account Name          |  |
| Account Number        |  |
| CGST / SGST No.       |  |
| GST Registration Name |  |



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Pune-411005

**SCHEDULE 2**  
**GOVERNANCE COMMITTEE**

**Institute Representatives –**

| Sr. No. | Name               | Designation                      |
|---------|--------------------|----------------------------------|
| 1       | Dr. B.B.Ahuja      | Director, COEP                   |
| 2       | Dr. Archana Thosar | Dean R&D, COEP                   |
| 3       | Dr. JIbi Abraham   | Dean Academics, COEP             |
| 4       | Dr. Vahida Attar   | Head of Department, CS &IT, COEP |

**TCS Representatives –**

1. Head of Research, TCS, currently Dr. Gautam Shroff or his nominee
2. Head of TCS COIN, currently Raju Goteti, Vice-President
3. Head(s) of Research Area(s) in which Project(s) is/are carried out.
4. TCS Acad COIN Representative(s)

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SPONSORED RESEARCH PROJECT AGREEMENT (Project 1)  
Under

Sponsored Research Master Agreement effective dated 1<sup>st</sup> day of August, 2020 ("Master Agreement")  
By And Between

College of Engineering Pune COEP ("Institute")

And  
Tata Consultancy Services Limited ("TCS")

This Sponsored Research Project Agreement ("Project Agreement") is made on the date of last signature below and shall be effective from 1st day of August, 2020 ("Effective Date").

TCS and Institute are hereinafter referred to individually as the "Party" and collectively as the "Parties" and shall mean and include their respective successors-in-interest and permitted assigns.

Upon execution by the Parties, the Project specified herein shall be awarded and performed in accordance with the Master Agreement. The terms of the Master Agreement will prevail over this Project Agreement except to the limited extent specified herein. The applicable terms of the Master Agreement are incorporated herein by reference and will apply mutatis mutandis to this Project Agreement between the Parties.

**THE PROJECT**

**PROJECT TITLE: Extracting Purposes from an Application to Enable Purpose Based Processing**

**AIM OF THE PROJECT**

Develop a set of tools to extract the purposes from an application.

**PROJECT DETAILS: REFER ATTACHED PROJECT PROPOSAL EXHIBIT A**

**PERIOD OF PROJECT**

Start date: 1<sup>st</sup> Aug 2020

End date: 31<sup>st</sup> May 2021

| Project Activity   | Initiation Data | End Date   |
|--|-----------------|------------|
| Research work regarding privacy by design  | 01-08-2020      | 10-08-2020 |
| Research work related to Privacy policy enforcement  | 11-08-2020      | 09-09-2020 |
| Research work regarding data masking   | 10-09-2020      | 30-09-2020 |
| Research and implementation of some data masking tools                                     | 01-10-2020      | 20-10-2020 |
| Studied some web technologies and implementation   | 21-10-2020      | 28-10-2020 |
| Research related to problem statement  | 29-10-2020      | 04-11-2020 |
| Find different methodologies or tools for Inference Engine and Application Navigator       | 05-11-2020      | 15-01-2021 |
| Validate existing state-of-art tools for Inference Engine for the purpose extraction task  | 16-01-2021      | 31-01-2021 |
| Figure out technical problem to address purpose problem extraction from application screen | 01-02-2021      | 15-02-2021 |
| Find and building purpose repository   | 16-02-2021      | 20-02-2021 |



  
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College of Engineering Pune  
Pune-411005.

|  |            |            |
|--|------------|------------|
| Implement our proposed solution  | 21-02-2021 | 31-03-2021 |
| Validate our proposal on different applications and report the results vs state-of-art tools | 01-04-2021 | 20-04-2021 |
| Develop swing-based User Interface   | 21-04-2021 | 30-04-2021 |
| Start writing paper  | 01-05-2021 | 31-05-2021 |

**PROJECT MANAGEMENT (PROJECT MANAGERS / PRINCIPAL INVESTIGATORS / TEAM MEMBERS)**

|  |                             |
|--|-----------------------------|
| Project Manager / Industry (TCS) Guide | Kumar Vidhani               |
| Principle Investigator from Institute  | Dr. Sunil B. Mane           |
| Team Members                           | Amruta Jain (MTech Student) |

Governance Committee Review Schedule: Once in 3 months  
 Research Area Head: Dr. Sachin Lodha

Before involving any team member(s) for execution of the Project, Institute PI shall ensure that each individual team member signs declaration form(s) ("Declaration Form") in the manner prescribed in Exhibit B to this Project Agreement and shall also provide a copy of the duly executed Declaration Form(s) to TCS within five (5) days from the date of such execution.

**NON LIMITING LIST OF BACKGROUND MATERIAL / IPR OF THE PARTIES**

Background Material/IPR should include only patents, patent applications, designs and any tangible or code based assets. Research publications not protected by patents, designs or code based assets should not be mentioned in the below table

| Material/IPR | Owner |
|--------------|-------|
| NA           |       |

Any third party Background intellectual property (including materials) that Parties have mutually agreed to use:

| Tool | Description | License URL | Copyright |
|------|-------------|-------------|-----------|
| NA   |             |             |           |

Whether all Background intellectual property is to be kept Confidential or which Pre-existing intellectual property is to be kept confidential, for instance: NA

TCS EQUIPMENT LOANS OR GIFTS (IF ANY): No

**PURCHASE OF EQUIPMENTS (IF ANY): None**  
 (Please mention details of the asset to be purchased)

*In case of funding for purchase of hardware which is to be done by Institute, TCS will require a Tax Invoice from Institute with confirmation of hardware installation and a TCS pre Approval for Specification and Cost. It should be also supported by Original Vendor Invoice from where purchase is made. TCS will also require a Delivery Challan Copy and Vendor Installation Report of the said Hardware.*

*In case of funding for purchase of hardware which is to be done by Institute via online procurement, TCS may release Advance Payment to Institute based on Payment Release Letter supported by Procurement Item listing with Online Price and Quantity along with TCS Pre Approval for Specification with Cost. Post online procurement within 7 Days Institute to submit a Tax Invoice supported by hardware installation report, Online Payment Invoice and Receipt for settlement of Advance.*

**ANTICIPATED OUTPUTS OR RESULTS**

**Deliverables**

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- Application Navigator Component: A component that can scan any Java based web application.
- Inference Engine: A component that can infer a reasonable purpose/purposes for a given screen.
- UI: Swing based UI to enable an end user to operate the tool.

**Publications**

The Project involves close collaboration between Institute and TCS personnel. It is expected to have publications to disseminate the research outcomes of the Project.

**PROJECT LOCATION: COEP**

**FINAL PROJECT REPORT:** Institute shall cause the Principal Investigator to provide TCS, within thirty (30) days after the end of the Project period, with a detailed written report summarizing the Results obtained during the Project period. Where any of the Results are software, the source code of the same shall be provided to TCS.

**RESEARCH FUNDING:**

TCS will provide, to the Institute, research funds for the Project to the extent of Rs. 2.5 lakhs (Rupees Two Lakh and Fifty Thousand only) over the period of the Project from the date of commencement of the Project.

For details of Research Funding (where applicable), invoicing, payment milestones, Institute bank details, etc. please refer to **EXHIBIT C**.

**RESEARCH PROJECT AUTHORIZATION:**

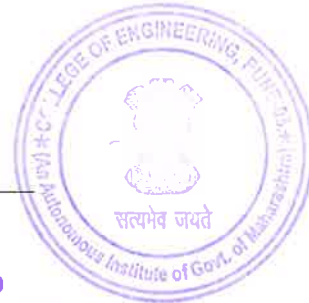
**TATA CONSULTANCY SERVICES LIMITED**

**COLLEGE OF ENGINEERING PUNE**

Sign: [Signature] Date: 09/08/2021  
 Name: K Ananth Krishnan  
 Title: Executive Vice President and CTO

Sign: [Signature] Date: \_\_\_\_\_  
 Name: Dr. B.B. Ahuja  
 Title: Director

**Officiating Director**  
**College of Engineering Pune**  
**Pune-411005.**



**PRINCIPAL INVESTIGATOR'S ACKNOWLEDGEMENT**

I confirm that I've read and understand the terms and conditions of the Master Agreement signed between Institute and TCS and agree to comply with the terms of that Master Agreement as they relate to my activities under this Project.

[Signature] Date: \_\_\_\_\_  
 Prof. Sunil B. Mane, Institute Principal Investigator  
 Associate Professor, Dept. of Computer Engineering

[Signature] Date: \_\_\_\_\_  
 Kumar Vidhani, TCS Principal Investigator  
 TCS Innovation Lab, Pune



## EXHIBIT A: DETAILED PROJECT PROPOSAL

### PROJECT: Extracting Purposes from an Application to Enable Purpose Based Processing

#### OBJECTIVE OF THE PROJECT

Develop a set of tools to extract the purposes from an application.

Application is built to serve certain business purposes. For example, a bank invests into an application development to offer its customers online services such as online shopping, FD services, utility bill payments, etc. Within the application, every screen has its own purpose. For example, the login page is used to authenticate a customer. Dashboard screen gives a high-level view of activities done by a customer. Similarly, every field appearing on the screen has purpose too. The username field of login screen enables customer to supply a username given to the customer by the bank.

Every screen of a given enterprise application is not developed keeping the exact purposes in mind. Many a times, a screen may serve multiple purposes. There are several reasons for that. Chief among them is, it reduces the development time (by creating a multi-purpose screen) and hence, the subsequent resources required for the testing and maintenance for the application.

While an application screen may serve different purposes and an application with less number of screens suits an enterprise in terms of reduced expenditure for the development and subsequent maintenance activities, it is at loggerhead with privacy laws which are demanding purpose based processing. Therefore, it is necessary to first build a repository of purposes that a given application can serve. And, then subsequent refactoring of application can be done (if required) to comply with privacy laws.

#### SCOPE OF THE PROJECT

The following set of components will be required to extract purposes from an application: -

Repository of purposes of a field: It is first necessary to build a repository of purposes for a given field. A field may assume different purposes in different domains.

Application Navigator: A component that scans and navigates through an application will be required to extract the screens.

Inferring purposes for a given screen: An inference engine that infers purposes from a screen will be required.

Inferring purposes for a workflow: Inference engine should be able to scale to multiple screens for the purpose inferring task in case of workflow (that spans multiple screens).

Open stack tools are to be explored and used for the project:

A Java based tool that can scan entire application. e.g., JMeter

A Java based parser that can parse different types of screens. e.g., HTML, XML, JSON

An inference engine that can infer purposes from a set of words/keywords.

Swing library of Java for UI development.



EXHIBIT B: DECLARATION FORM

PROJECT TITLE: Extracting Purposes from an Application to Enable Purpose Based Processing

PROJECT JOINING DATE: 1st August 2020 to 31st May 2021

PROJECT PI: Dr. Sunil B. Mane

INSTITUTE TEAM MEMBER REPRESENTATIONS:

I, the undersigned, a member of the Institute Project Team, represent that:

1. I will not, in the performance of the Project, knowingly infringe upon or misappropriate any third party intellectual property rights, confidential information or trade secrets.
2. I agree that TCS will be the sole owner of all Results including without limitation, of all modifications, enhancements, derivative works and adaptations to the Results and/or to any TCS's Background, and any and all Intellectual Property conceived, invented, generated, developed or created in the course of, or as a result of, the Project undertaken under this Project Agreement unconditionally and immediately on their creation, without any further consideration. I hereby irrevocably assign to TCS all right, title, ownership and interest worldwide in and to the Results and all applicable Intellectual Property in or related thereto. Accordingly, I will execute all the necessary documents required by law including but not limited to assignments deeds and forms in order to vest the intellectual property rights and/or other ownership rights or title with respect to all Results generated under this Project Agreement in favour of TCS.
3. I will not publish or act or omit to act in any manner so as to cause any loss or damage to the Intellectual Property so generated or disclosure of Confidential Information received from or relating to TCS and Project (including Results generated in the course of the Project) without prior written permission of Institute PI and TCS PI.
4. My engagement in research with third parties during the Project period does not have any conflict of interest with my obligations under this Project Agreement and do not have any adverse or detrimental effect on the Project undertaken hereunder.
5. I will adhere to highest fiduciary standards, ethical practices and standards of care and competence while performing my obligations under this Project Agreement.
6. Under no circumstances shall my engagement/participation in this Project be construed as an employment with TCS.
7. I voluntarily assume and understand any and all risks associated with my engagement/participation in the Project and I hereby, agree that TCS shall not be held liable for any losses that I may sustain due to my engagement/participation in the Project. Accordingly, I hereby waive any and all right or claim for losses.
8. If I'm issued a TCS ID or Email ID, I agree to abide by and be bound by any and all policies, documents, guidelines and processes including IP, Security and Confidentiality of TCS in force from time to time whether expressly endorsed or not and shall keep any such credentials confidential, not share the same with anyone else and use the same only for the purpose of the Project. I acknowledge and agree that issuance of such TCS ID or Email ID does not imply or create a relationship of employer and employee between TCS and me and shall not make any such claim against TCS and/or for any benefits available to an employee.

Sincerely,

Name: Amruta Jain


ID no. 121942008

Sign/Date: Amruta Jain

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Page 27 of 37



  
**Officiating Director**  
College of Engineering Pune  
Pune-411005.

**EXHIBIT C: RESEARCH FUNDING AND INVOICING DETAILS**

**Research Project Funding: Rs. 2,50,000/- (Rupees Two Lakh Fifty Thousand only)**

**Institute Overheads (if any): Nil**

**GST: Rs. 45,000/- (Rupees Forty Five Thousand only) (18 % GST)**

**TOTAL: Rs.2,95,000 /- (Rupees Two Lakh Ninety Five Thousand only)**

Item wise split of the Research Funding (*mention only if applicable*):

Payment Milestones and Provisions:

The invoices will be tentatively raised as per the following schedule subject to review of the Project progress as per the Milestones.

| Invoicing Schedule   | Milestones   | Budget (INR)       |
|--|--|--------------------|
| Upon execution of the Project Agreement                                | <ul style="list-style-type: none"><li>Literature Review and study of different tools and techniques used in project</li><li>Design and implementation of proposed solution</li></ul> | 2,50,000/-         |
| GST (18%)  |  | 45,000 /-          |
| <b>Invoice Total</b><br>(In Words: Two Lakh Ninety Five Thousand only) |  | <b>2,95,000 /-</b> |

**Invoice need to be sent on the address mentioned below –**

Tata Consultancy Services Limited  
Phase - 2, Block A, Second Floor,  
IIT-Madras Research Park,  
Kanagam Road, Taramani,  
Chennai - 600113,  
Tamil Nadu, India  
TCS GST - 33AAACR4849R2ZR  
Kind Attention: Mr. K Ananth Krishnan


Soft copy of the invoice can reach [cto.fincoin@tcs.com](mailto:cto.fincoin@tcs.com)

Mode of Payment- Monthly by Bank Transfer, the bank account details for wire transfer are:

|                       |  |
|-----------------------|--|
| Bank Name             | State Bank of India  |
| Branch                | College of Engineering Pune  |
| IFSC Code             | SBIN0010431  |
| MICR Code             | 411002060  |
| SWIFT Code            | SBININBB238  |
| Account Name          | Director, College of Engineering, Pune Society   |
| Account Number        | 37373624613  |
| CGST / SGST No.       | 27AAATC8276E1ZN  |
| GST Registration Name | Legal Name: PUNE INSTITUTE OF ENGINEERING AND TECHNOLOGY PUNE<br><br>Trade Name: COLLEGE OF ENGINEERING PUNE (SOCIETY) |

**-End of doc for Project1-**



  
**Officiating Director**  
College of Engineering Pune  
Pune-411005.

SPONSORED RESEARCH PROJECT AGREEMENT (Project 2)

Under

Sponsored Research Master Agreement effective dated 1<sup>st</sup> day of August, 2020 ("Master Agreement")

By And Between

College of Engineering Pune COEP ("Institute")

And

Tata Consultancy Services Limited ("TCS")

This Sponsored Research Project Agreement ("Project Agreement") is made on the date of last signature below and shall be effective from 1<sup>st</sup> day of August, 2020 ("Effective Date").

TCS and Institute are hereinafter referred to individually as the "Party" and collectively as the "Parties" and shall mean and include their respective successors-in-interest and permitted assigns.

Upon execution by the Parties, the Project specified herein shall be awarded and performed in accordance with the Master Agreement. The terms of the Master Agreement will prevail over this Project Agreement except to the limited extent specified herein. The applicable terms of the Master Agreement are incorporated herein by reference and will apply mutatis mutandis to this Project Agreement between the Parties.

THE PROJECT

**PROJECT TITLE: Adverse Drug Reaction identification and Extraction from Free Text or Natural Language**

**OBJECTIVES:**

1. Using unsupervised learning approach to identify and extract Adverse Drug Reaction (ADR) from free text.
2. Using Machine Learning Approach assign medical codes (ICD-9) from given free text or natural language phrase.

**PROJECT DETAILS: REFER ATTACHED PROJECT PROPOSAL EXHIBIT A**

**PERIOD OF PROJECT**

**Start date: 1<sup>st</sup> Aug. 2020**

**End date: 31 Jul. 2021**

| Milestone   | Duration   |
|---|------------|
| Domain understanding  | Aug 20     |
| Literature Survey Report  | Sep 20     |
| Finalizing approach, data collection and preparation  | Oct-Dec 20 |
| Implementing deep learning-based model and comparative analysis with the existing state of the art. | Jan-May 21 |
| Enhancing and tuning existing model for required accuracy   | Jun -Jul21 |

**PROJECT MANAGEMENT (PROJECT MANAGERS / PRINCIPAL INVESTIGATORS / TEAM MEMBERS)**

|  |                                      |
|--|--------------------------------------|
| Project Manager / Industry (TCS) Guide | Aparna Joshi,                        |
| Institute PI and Co-PI                 | Prof. Vahida Attar, Shrida Kalamkar, |



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**Officiating Director**  
College of Engineering Pune  
Pune-411005.

|                     |   |
|---------------------|---|
| <b>Team Members</b> | Chaitali Joshi (MTech Student)<br>Neha Nawalkar (MTech Student) |
|---------------------|---|

Governance Committee Review Schedule: Once in 3 months  
Head: Mr. Mahesh Kshirsagar

Before involving any team member(s) for execution of the Project, Institute PI shall ensure that each individual team member signs declaration form(s) ("Declaration Form") in the manner prescribed in Exhibit B to this Project Agreement and shall also provide a copy of the duly executed Declaration Form(s) to TCS within five (5) days from the date of such execution.

**NON LIMITING LIST OF BACKGROUND MATERIAL / IPR OF THE PARTIES**

Background Material/IPR should include only patents, patent applications, designs and any tangible or code based assets. Research publications not protected by patents, designs or code based assets should not be mentioned in the below table.

| Material/IPR | Owner |
|--------------|-------|
| NA           |       |

Any third party Background intellectual property (including materials) that Parties have mutually agreed to use:

| Tool   | Description  | License URL   | Copyright  |
|--|--|---|--|
| MIMIC-III<br>Clinical<br>Database<br>Published: Sept<br>4, 2016.<br>Version: 1.5.0 | MIMIC-III consists of deidentified health-related data associated with over forty thousand patients who stayed in critical care units of the Beth Israel Deaconess Medical Center between 2001 and 2012. | <a href="https://physionet.org/content/mimiciii/view-license/1.4/">https://physionet.org/content/mimiciii/view-license/1.4/</a><br><br><b>The PhysioNet Credentialed Health Data License</b><br>Version 1.5.0<br><br>License Terms:<br><ol style="list-style-type: none"> <li>1. The LICENSEE will not attempt to identify any individual or institution referenced in PhysioNet restricted data</li> <li>2. The LICENSEE will exercise all reasonable and prudent care to avoid disclosure of the identity of any individual or institution referenced in PhysioNet restricted data in any publication or other communication</li> <li>3. The LICENSEE will not share access to PhysioNet restricted data with anyone else</li> <li>4. The LICENSEE will exercise all reasonable and prudent care to maintain the physical and electronic security of PhysioNet restricted data</li> <li>5. If the LICENSEE finds information within PhysioNet restricted data that he or she believes might permit identification of any individual or institution, the LICENSEE will report the location of this information promptly by email to PHI-report@physionet.org, citing the location of the specific information in question</li> <li>6. The LICENSEE will use the data for the sole purpose of lawful use in scientific research and no other</li> <li>7. The LICENSEE will be responsible for ensuring that he or she maintains up to date certification in human research subject protection and HIPAA regulations</li> <li>8. The LICENSEE agrees to contribute code associated with publications arising from this data to a repository that is open to the research community</li> <li>9. This agreement may be terminated by either party at any time, but the LICENSEE's obligations with respect to PhysioNet data shall continue after termination</li> </ol> | Copyright (c)<br>2021 MIT<br>Laboratory for<br>Computational<br>Physiology |

Whether all Background intellectual property is to be kept Confidential or which Pre-existing intellectual property is to be kept confidential, for instance: NA



*NW*  
**Officiating Director**  
College of Engineering Pune  
Pune-411005.

TCS EQUIPMENT LOANS OR GIFTS (IF ANY): No

**PURCHASE OF EQUIPMENTS (IF ANY): None**  
(Please mention details of the asset to be purchased)

*In case of funding for purchase of hardware which is to be done by Institute, TCS will require a Tax Invoice from Institute with confirmation of hardware installation and a TCS pre Approval for Specification and Cost. It should be also supported by Original Vendor Invoice from where purchase is made. TCS will also require a Delivery Challan Copy and Vendor Installation Report of the said Hardware.*

*In case of funding for purchase of hardware which is to be done by Institute via online procurement, TCS may release Advance Payment to Institute based on Payment Release Letter supported by Procurement Item listing with Online Price and Quantity along with TCS Pre Approval for Specification with Cost. Post online procurement within 7 Days Institute to submit a Tax Invoice supported by hardware installation report, Online Payment Invoice and Receipt for settlement of Advance.*

**ANTICIPATED OUTPUTS OR RESULTS**  
**Deliverables**

1. A Document detailing:
  - a. Comparative analysis of rule based, machine learning and deep learning approaches for ADR extraction.
  - b. Detailing deep learning approach(s) that have been tried, report explaining the reason for acceptance/rejection of approach(s).
  - c. Prototype guide – detailing the steps to use the prototype, code modules in the prototype and explanation of the model code.
2. A working prototype which is scalable and usable of the proposed model for identifying and extracting ADR from social media text.
3. UI to ingest train/test data, configure model, execute model, and to provide expert inputs.
4. Technical note leading to potential publication.

**Publications**

The Project involves close collaboration between Institute and TCS personnel. It is expected to have publications to disseminate the research outcomes of the Project.

**PROJECT LOCATION: COEP**

**FINAL PROJECT REPORT:** Institute shall cause the Principal Investigator to provide TCS, within thirty (30) days after the end of the Project period, with a detailed written report summarizing the Results obtained during the Project period. Where any of the Results are software, the source code of the same shall be provided to TCS.

**RESEARCH FUNDING:**

TCS will provide, to the Institute, research funds for the Project to the extent of Rs. 6 lakhs (Rupees Six Lakh only) over the period of the Project from the date of commencement of the Project.


For details of Research Funding (where applicable), invoicing, payment milestones, Institute bank details, etc. please refer to **EXHIBIT C**.

**RESEARCH PROJECT AUTHORIZATION:**

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Page 31 of 37

  
**Officiating Director**  
**College of Engineering Pune**  
**Pune-411005.**

TATA CONSULTANCY SERVICES LIMITED

COLLEGE OF ENGINEERING PUNE

Sign:  Date:   
Name: K Ananth Krishnan  
Title: Executive Vice President and CTO




Sign:  Date: \_\_\_\_\_  
Name: Dr. B.B. Ahuja  
Title: Director

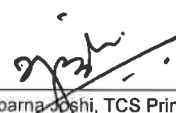


**Officiating Director**  
**College of Engineering Pune**  
**Pune-411005.**

**PRINCIPAL INVESTIGATOR'S ACKNOWLEDGEMENT**

I confirm that I've read and understand the terms and conditions of the Master Agreement signed between Institute and TCS and agree to comply with the terms of that Master Agreement as they relate to my activities under this Project.

 Date: \_\_\_\_\_  
Prof. Vahida Attar, Institute Principal Investigator  
Dept. of Computer Engineering

 Date: \_\_\_\_\_  
Aparna Joshi, TCS Principal Investigator  
TCS Sahyadri Park, Pune

 Date: \_\_\_\_\_  
Ms. Shriya Kalamkar, Institute Co-PI  
Dept. of Computer Engineering

  
**Officiating Director**  
**College of Engineering Pune**  
**Pune-411005.**



## EXHIBIT A: DETAILED PROJECT PROPOSAL

**PROJECT: Adverse Drug Reaction Identification and Extraction from given Natural Language or Free Text**

### OBJECTIVE OF THE PROJECT

Using unsupervised learning approach to identify and extract Adverse Drug Reaction (ADR) from give free text.

Adverse reactions caused by drugs following their release into the market is a major public health problem: with deaths and hospitalizations numbering in millions [1]. Post-marketing surveillance of drugs is of utmost importance for drug manufacturers, national bodies and international organizations such as the World Health Organization (WHO). It is mandatory for Drug Manufacturers to report Adverse reactions, though its voluntary for Health professionals and patients.

When different patients that suffer from a common disease, or use a specific medication, they used to share information about their symptoms, treatments or drug outcomes on social media and health forums. A large population of patients are actively involved in sharing and posting health related information in social media and particularly health social networks This information can provide valuable clinical insights for both patients and health-related industries that go beyond traditional communication methods [2].

### Sample post:

*Patient:* "Took atenolol while ago and now feeling very dizzy, pls help."

Extracted-Adverse-Reaction: Dizziness

Extracted-Drug: Atenolol

Following are examples of social media platform and special groups/communities:

- <https://patient.info/forums>
- <https://www.medhelp.org/>
- <https://www.patientslikeme.com/>
- <https://www.facebook.com/groups/Essureproblems/>
- <https://www.facebook.com/Essure-problems-178631888835781/>

### SCOPE OF THE PROJECT

Project is focused on extracting ADR from patient provided medical information about the event, condition, symptoms, reactions etc. only. Project is aimed at developing preprocessors and models that will be used to detect and extract ADRs from the patient posted data on social platforms.

Scope of the project includes the following:

- Building pre-processors to remove misspellings and stop-words, identifying and replacing colloquial terms, co-reference resolution etc.
- Studying existing rule based and machine learning based approaches used for ADR extraction from social media text, including but not limited to: MetaMap, Maximum Entropy classifier, Hidden Markov Model, Conditional random fields (CRF), SVM and Naïve Bayes classifiers and Lexicon-based /knowledge-base approaches.
- Understanding different deep learning approaches that can be leveraged to process social media text in order to identify and extract Medical event mentions in the text. Including but not limited to approaches like - BCPNN, RNN, LSTM, Bi-LSTM,
- Developing unsupervised model that can train using minimal labeled data, to identify and extract ADR from social media text with more than 90% accuracy.
- Creating Gold Annotated data and providing ways to enhance the existing data.
- UI facilitating parameter tuning and other human interventions to provide feedback to the model.



Open stack tools are to be explored and used for the project:

- Python 3.7, Node.js, Java
- Python modules (Apache/MIT/BSD license only) : Scikit-learn, Scipy, Keras, Tensorflow, NLTK, Numpy, Pandas.

#### References

1. Utilizing social media data for pharmacovigilance: A review.  
<https://www.sciencedirect.com/science/article/pii/S1532046415000362#b0090>
2. Sarasohn-Kahn J. The wisdom of patients: health care meets online social media.  
<http://www.chcf.org/media/MEDIA%20LIBRARY%20Files/%20PDF/H/PDF%20HealthCareSocialMedia.pdf>



*NLW*  
**Officiating Director**  
College of Engineering Pune  
Pune-411005.

EXHIBIT B: DECLARATION FORM

PROJECT TITLE: Adverse Drug Reaction identification and Extraction from given free Text

PROJECT JOINING DATE: 1 AUGUST 2020

PROJECT PI: Prof. Vahida Attar (PI), Ms. Shrida Kalamkar (Co-PI)

INSTITUTE TEAM MEMBER REPRESENTATIONS:

I, the undersigned, a member of the Institute Project Team, represent that:

1. I will not, in the performance of the Project, knowingly infringe upon or misappropriate any third party intellectual property rights, confidential information or trade secrets.
2. I agree that TCS will be the sole owner of all Results including without limitation, of all modifications, enhancements, derivative works and adaptations to the Results and/or to any TCS's Background, and any and all Intellectual Property conceived, invented, generated, developed or created in the course of, or as a result of, the Project undertaken under this Project Agreement unconditionally and immediately on their creation, without any further consideration. I hereby irrevocably assign to TCS all right, title, ownership and interest worldwide in and to the Results and all applicable Intellectual Property in or related thereto. Accordingly, I will execute all the necessary documents required by law including but not limited to assignments deeds and forms in order to vest the intellectual property rights and/or other ownership rights or title with respect to all Results generated under this Project Agreement in favour of TCS.
3. I will not publish or act or omit to act in any manner so as to cause any loss or damage to the Intellectual Property so generated or disclosure of Confidential Information received from or relating to TCS and Project (including Results generated in the course of the Project) without prior written permission of Institute PI and TCS PI.
4. My engagement in research with third parties during the Project period does not have any conflict of interest with my obligations under this Project Agreement and do not have any adverse or detrimental effect on the Project undertaken hereunder.
5. I will adhere to highest fiduciary standards, ethical practices and standards of care and competence while performing my obligations under this Project Agreement.
6. Under no circumstances shall my engagement/participation in this Project be construed as an employment with TCS.
7. I voluntarily assume and understand any and all risks associated with my engagement/participation in the Project and I hereby, agree that TCS shall not be held liable for any losses that I may sustain due to my engagement/participation in the Project. Accordingly, I hereby waive any and all right or claim for losses.
8. If I'm issued a TCS ID or Email ID, I agree to abide by and be bound by any and all policies, documents, guidelines and processes including IP, Security and Confidentiality of TCS in force from time to time whether expressly endorsed or not and shall keep any such credentials confidential, not share the same with anyone else and use the same only for the purpose of the Project. I acknowledge and agree that issuance of such TCS ID or Email ID does not imply or create a relationship of employer and employee between TCS and me and shall not make any such claim against TCS and/or for any benefits available to an employee.

Sincerely,

Name: Chaitali Joshi

ID no. 121922009

Sign/Date: 

Name: Neha Nawalkar

ID no. 121922011

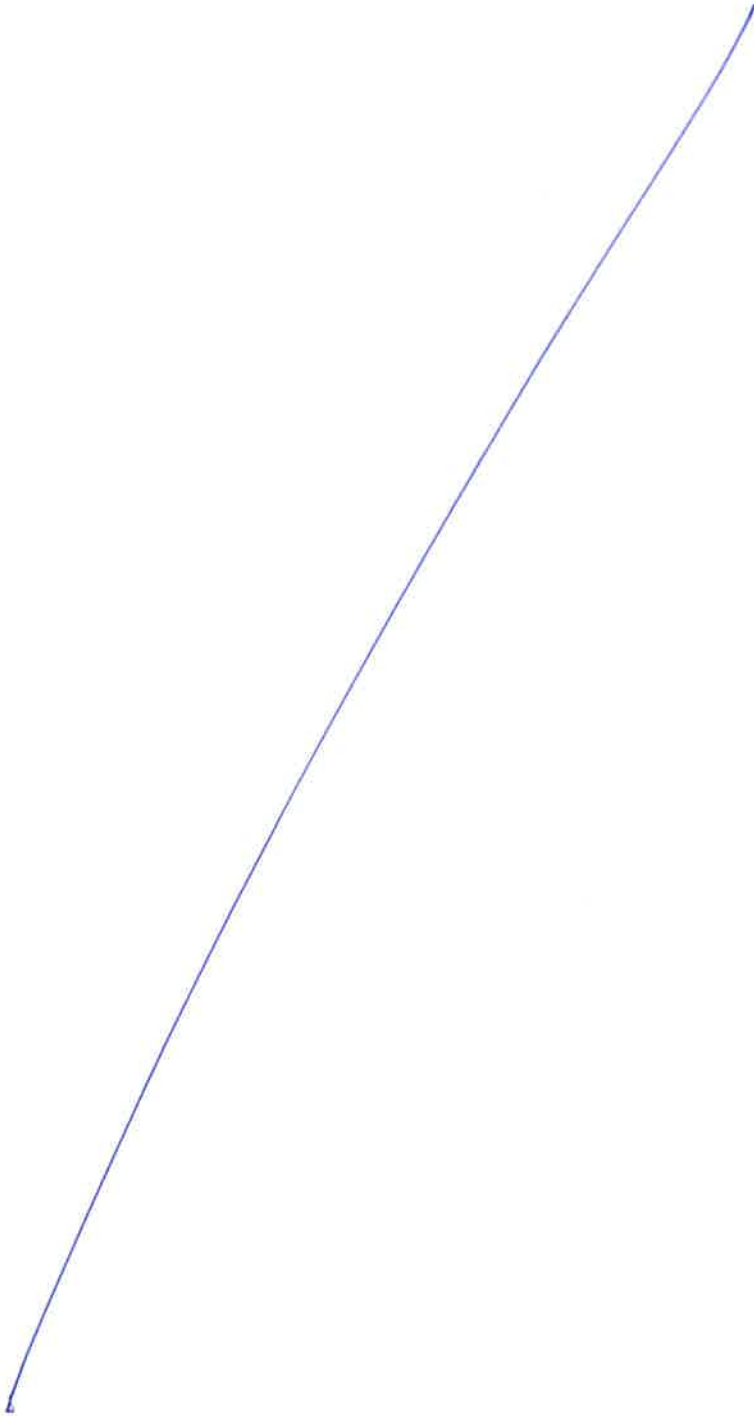
Sign/Date: 

TCS Confidential

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**Officiating Director**  
College of Engineering Pune  
Pune-411005.



  
**Officiating Director**  
College of Engineering Pune  
Pune-411005,

**EXHIBIT C: RESEARCH FUNDING AND INVOICING DETAILS**

**Research Project Funding: Rs. 6,00,000/- (Rupees Six Lakh only)**

**Institute Overheads (if any): Nil**

**GST: Rs. 1,08,000/- (Rupees One Lakh Eight Thousand only) (18% GST)**

**TOTAL: Rs. 7,08,000 /- (Rupees Seven Lakh Eight thousand only)**

Item wise split of the Research Funding (*mention only if applicable*):

Payment Milestones and Provisions:

The invoices will be tentatively raised as per the following schedule subject to review of the Project progress as per the Milestones.

| Invoicing Schedule  | Milestones  | Budget (INR)       |
|---|---|--------------------|
| Upon execution of the Project Agreement                                   | <ul style="list-style-type: none"><li>Literature Review and Problem Statement Formulation</li><li>Design and Development of Proposed Algorithms</li></ul> | 6,00,000/-         |
| GST (18%)   |   | 1,08,000 /-        |
| <b>Invoice Total</b><br><b>(In Words: Seven Lakh Eight Thousand only)</b> |   | <b>7,08,000 /-</b> |

**Invoice needs to be sent on the address mentioned below –**

Tata Consultancy Services Limited  
Phase - 2, Block A, Second Floor,  
IIT-Madras Research Park,  
Kanagam Road, Taramani,  
Chennai - 600113,  
Tamil Nadu, India  
TCS GST - 33AAACR4849R2ZR  
Kind Attention: Mr. K Ananth Krishnan

Soft copy of the invoice can reach [cto.fincoin@tcs.com](mailto:cto.fincoin@tcs.com)

Mode of Payment- Monthly by Bank Transfer, the bank account details for wire transfer are:

|                       |  |
|-----------------------|--|
| Bank Name             | State Bank of India  |
| Branch                | College of Engineering Pune  |
| IFSC Code             | SBIN0C10431  |
| MICR Code             | 411002060  |
| SWIFT Code            | SBININBB238  |
| Account Name          | Director, College of Engineering, Pune Society   |
| Account Number        | 37373624613  |
| CGST / SGST No.       | 27AAATC8276E1ZN  |
| GST Registration Name | Legal Name: PUNE INSTITUTE OF ENGINEERING AND TECHNOLOGY PUNE<br>Trade Name: COLLEGE OF ENGINEERING PUNE (SOCIETY) |

**-End of doc for Project2-**



*MLW*  
**Officiating Director**  
College of Engineering Pune  
Pune-411005.