



IIT Ropar – Technology and
Innovation Foundation for the
Agriculture and Water
Technology Development Hub
(AWaDH)

A Technology Innovation Hub established by the
Department of Science & Technology (DST),
Government of India, in the framework of National
Mission on Interdisciplinary Cyber Physical
Systems (NM – ICPS)

e-mail: awadh@iitrpr.ac.in

IIT – Ropar / March 04, 2021 / TIF – AWaDH / PEC-DIR 01

To,
The Director,
PEC (Deemed to be University), Chandigarh

Regarding: Introducing IIT Ropar – Technology and Innovation Foundation, a section – 8 company, for the Agriculture and Water Technology Development Hub (AWaDH), and request for a space in PEC to setup AWaDH – Incubator.

Through: The Chairperson, Hub Governing Board (HGB of TIF – AWaDH)

Dear Sir,

This is in continuation with the meeting held in PEC on March 03, 2021 forenoon regarding the subject matter; we thank you for the time and courtesy extended to us.

TIF – AWaDH is a Technology Innovation Hub established by the DST – Government of India at IIT Ropar in the framework of National Mission on Interdisciplinary Cyber-Physical Systems (NM - ICPS) to improve the overall ecosystem of agriculture in line with the developed countries. The Hub's first sanctioned budget is Rs. 110 crores for five years with timebound pre-defined deliverables. As nominated by the President of India, the Mission has entered into an agreement on December 02, 2020, with IIT Ropar and the Hub.

The R & D domains of AWaDH to deploy CPS are:

- Water/industry discharge assessment, treatment, and management,
- Advancement of land resources and farm preparation,
- Agriculture automation and precision farming,
- CPS in harvesting and post-harvesting, and
- The application of the Internet of Things (IoT) in the domain of Agriculture and Water.

The scientific knowledge and technology advancements achieved at AWaDH will be deployed in (i) Food Processing Industries, (ii) Rural Development, (iii) Fisheries, (iv) Skill Development and Entrepreneurship, (v) Textiles industry for discharge management, (vi) Electronics and IT Industry for the development of IoT devices, (vii) Fertilizer industry for the optimized combinations of nutrients, (viii) Food and Public Distribution, (ix) Atomic Energy, (x) NITI Aayog for implementing different government schemes, (xi) implementation of farming practices in terms of preparation of farmland, pre/post-harvesting, delivery of the agricultural commodities to the consumers, preservation, and storage without affecting the environment.

Some of the technologies that are being developed at AWaDH are: (i) Design and development of IoT enabled nano-bubble technology/oxygen generators for water treatment for remediation of rural domestic and industrial wastewater, (ii) IoT based CPS for the water quality assessment and management, (iii)



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Technology for the generation and application of crop-residue derived Biochar, (iv) CPS for mapping the naturally occurring and artificially infused radioisotopes in soil and water, and AI-based CPS for optimized fertilizer application, (v) Design and development of IoT enabled Harvester-cum-Bailer machine for Stubble Management, and Extra-ordinary and diversified applications of stubble for better environment and new livelihoods opportunities, (vi) urban farming, (vii) Automation in agriculture for the precision farming in Rural and Urban settings, and (viii) IoT in the Domain of AgriTech Livestock Monitoring in the food processing industry.

One of the deliverables of AWaDH is setting up a Technology Business Incubator (TBI) to support the startups and spin-off companies in the domain of AgriTech, and extend the TBI to an accelerator. As you are aware that IIT Ropar already has a TBI that caters to students' needs in diverse areas. Apart from being a part of the already existing TBI at the institute, we plan to start an AWaDH – Incubator in Chandigarh to give locational advantage to the young startups, and AWaDH – Accelerator to bridge the gap between prototype and market-ready products. PEC is a historic academic institute with high intellectual capital and world-class R & D resources. Due to its complementarity in product design and optimization, we understand that the recently established Siemens Center at PEC makes PEC an ideal location for such an initiative. We are confident that AWaDH – Incubator at PEC will substantially add to the assets available at the institute for the students. PEC students and faculty members will be able to use the Hub resources and be treated the same as the IIT Ropar fraternity.

Given the above, we request you to consider our proposal to set up AWaDH – Incubator at PEC, for which a buildup area of around 2500 sq. feet is required. We want to bring in your kind notice that the Hub will pay off the upkeep of the place, electricity bills, rent, etc. If you may kindly agree, we can formulate a formal agreement of association with the specific terms and conditions in line with the discussion held in your office on March 03.

This is submitted for your kind consideration and necessary action, please.

Sincerely,

Pushpendra P. Singh, PhD
(Project Director, TIF – AWaDH)



Chairperson, Hub Governing Board / Director, IIT Ropar

Director, PEC – Chandigarh

MEMORANDUM OF ACADEMIC COOPERATION

Between



Punjab Engineering College

(Deemed to be University)

Sector-12

Chandigarh 160012, India

and



DST-TIH – A WaDH, Indian Institute of Technology Ropar

Rupnagar, Punjab – 140 001

March 27th 2021



Memorandum of Academic Cooperation

BETWEEN

DST TIH – AWaDH (Agriculture and Water Technology Development Hub) established at the Indian Institute of Technology (IIT) Ropar by the Department of Science & Technology, Government of India in the framework of National Mission on Interdisciplinary Cyber-Physical Systems (NM – ICPS)

AND

The Punjab Engineering College (Deemed to be University), Chandigarh (UT)

This Memorandum of Understanding (MoU) is entered into on **March 27th, 2021** by and between the Agriculture and Water Technology Development Hub established by the Department of Science & Technology, Government of India, in the framework of National Mission on Interdisciplinary Cyber-Physical Systems (NM – ICPS) at the Indian Institute of Technology (IIT) Ropar established by the Ministry of Human Resource Development (MHRD), Government of India under the Institutes of Technology (Amendment) Act, 2011, having its office at Rupnagar – 140 001, Punjab (hereinafter referred to as “AWaDH”) an Institute of national importance, and the “Punjab Engineering College (Deemed to be University), Chandigarh, a public university founded in 1953 its office at Chandigarh (hereinafter referred to as “PEC”).

1. OBJECTIVES OF THE MOU

The objectives of this MoU are:

- To promote and enhance scientific and academic interaction between AWaDH and PEC in mutually beneficial areas.
- To provide formal basis for initiating interaction between AWaDH and PEC.

2. TECHNICAL AREAS OF COLLABORATION

Principal technical area of collaboration between AWaDH and PEC will be R & D in the domain of Agriculture & Water.


Director – IIT Ropar


Director – PEC


Project Director, TIH – AWaDH


Dean Alumni, C&IR – PEC

3. PROPOSED MODES OF COLLABORATION

AWaDH and PEC propose to collaborate through the following:

- a. Co-operation and promotion of R & D and education in areas of mutual interests,
- b. Facilitation of joint research programmes/proposals,
- c. Exchange of academic personnel between AWaDH and PEC, and
- d. Any other appropriate mode of interaction agreed upon between AWaDH and PEC.

(i) Role and Responsibilities of AWaDH:

- a. Provide R & D resources and start-up opportunities to the PEC students and faculty members in line with IIT Ropar students and faculty members.
- b. Provide 5 UG fellowships 2 PG fellowships along with the R & D grant to the PEC students every year.
- c. Give a course on "cyber-physical systems" to 50 students every year.
- d. Organize one workshop every year for PEC students on IoT systems.

(ii) Role and Responsibilities of PEC:

- a. Provide a 2500 square feet build-up area preferably at one place to run the AWaDH – incubator.
- b. Provide R & D resources and start-up opportunities to the PEC students and faculty members in case they are working on AWaDH projects.
- c. Provide possibility to implement HRD component proposed by the AWaDH at PEC, e.g., 5 UG fellowships 2 PG fellowships along with the R & D grant to the PEC students every year.
- d. Provide necessary resources and support, e.g., a conference room, linkage with the students through the academic office, etc., to run a course on "cyber-physical systems" to 50 students every year.
- e. Provide necessary resources and support, e.g., a conference room, linkage with the students through the academic office, etc., to organize one workshop every year for PEC students on IoT systems.

4. CONFIDENTIALITY

- a. Individual faculty involved at AWaDH and PEC agree to hold in confidence all information/data designated by the parties as being confidential which is obtained from either party or created during the performance of the MoU and will not disclose the same to any third party without written consent of the other party.
- b. The above confidential clause under this MoU excludes information/data possessed by either party before entering into this MoU or independently developed and/or information already available through public domain, or information which is required to be disclosed by any law or disclosure of such information is directed by a court, tribunal or any competent authority.


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Director - PEC


Project Director, TIH - AWaDH

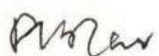

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
5. TERM AND TERMINATIONS

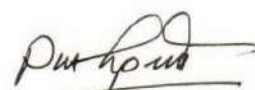
- a. This MoU shall be valid for five (5) years unless extended by mutual consent of both the Parties. A Party willing to extend the MoU shall give a written notice of its intention to extend, at least 60 days prior to the expiry of this MoU, which may be accepted by the other Party within a period of 30 days from the receipt of such notice.
- b. This MoU may be amended or terminated by mutual written agreement of the parties at any time.
- c. Either party shall have the right to terminate this MoU with 60 days prior written notice to other party.
- d. The termination of the MoU whether mutual or unilateral, shall not affect obligations as of the participant under any Research Agreement. Confidentiality clause obligation as referenced in clause 5 shall survive such termination.

6. MISCELLANEOUS

- a. All intellectual properties including any patent, copyright, design, etc. (hereinafter referred to as the "IPs") which are developed jointly or which arise out of activities undertaken jointly by the Parties under this Agreement will be owned on the basis of extent of contribution made by each party (hereinafter referred to as "Joint IPs"). A Party shall own all the rights in the IPs arising solely out of its own activities carried out using its own resources under this Agreement (hereinafter referred to as "Sole Party IPs"). Each Party shall be entitled to file applications for protection of its Sole Party IPs. In respect of joint IPs, applications can be filed for protection by joint consent only, and the expense incurred on patent filing will be borne by both parties.
- b. Sharing of authorship in publications arising out of or in connection with joint activities shall be authored jointly by the Parties in accordance with their respective contributions to the publication. Publications arising out of or in connection with the activities undertaken under this Agreement solely by a Party using its own resources, shall be authored by the said Party. Each Party before publishing its Sole Publication shall provide the other Party a draft of manuscript before submitting for publication and the other Party shall inform within Forty Five (45) days from the date of receipt of the draft, if it wishes to protect any IPs and in case such other Party decides to pursue protection of IPs, the Party proposing publication shall not submit said manuscript for publication, for a further period of three (3) months to allow the other Party to protect its Sole Party IPs. This period may be extended by mutual consent of both the Parties.
- c. The signed MOU signifies only a strong intent and commitment towards the goals specified in the document. Both the institutes will have to follow all the rules/regulations and obtain appropriate sanctions for implementing all the joint activities.


Director - IIT Ropar

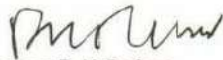

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Project Director, TIH - AWaDH

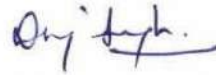

Dean Alumni, C&IR - PEC

7. SIGNED IN DUPLICATE

This MoU is executed in duplicate with each copy being an official version and having equal legal validity. By signing below, the parties, acting by their duly authorised officers, have caused this Memorandum of Understanding (MoU) to be executed, effective as of the day and year first above written.



Professor P.K Raina
Director,
Indian Institute of Technology Ropar
Rupnagar, Punjab - 140001
Director
Indian Institute of Technology Ropar
Nangal Road, Rupnagar
Punjab-140 001

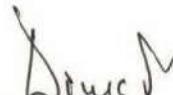


Professor Dheeraj Sanghi
Director,
Punjab Engineering College,
Chandigarh - 160012

Director
Punjab Engineering College
(Deemed to be University)
Chandigarh



Pushpendra P. Singh, PhD
Project Director, DST TIH - AWaDH
Indian Institute of Technology Ropar
Rupnagar, Punjab - 140001



Professor Divya Bansal
Dean Alumni, Corporate & International
Relations
Punjab Engineering College,
Chandigarh - 160012

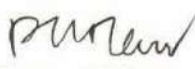
Dean Alumni Corporate
& International Relations
Punjab Engineering College,
Deemed to be University
Chandigarh



Date: 27.03.2021

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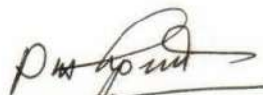
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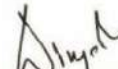
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