



File No. – J-110158(25)/2/2019-S M Dte/ I/ 39929/2020

Date: 07.12.2020

**CIRCULAR**

To,  
All Directorates/ Organizations/ Divisions,  
Central Water Commission

**Sub: Smart India Hackathon' 2021- reg.**

Smart India Hackathons (SIH) is a nationwide initiative to provide students a platform to solve some of the pressing problems which can help to harness creativity & expertise of students, spark institute-level hackathons, build funnel for 'Startup India' campaign, crowd sourced solutions for improving governance and quality of life and to provide opportunity to citizens to provide innovative solutions to India's daunting problems.

Ministry of Education's Innovation Cell in coordination with All India Council for Technical Education (AICTE) is launching 'Smart India Hackathon (SIH) 2021' involving all major technical institutions across the country.

A DO letter dated 27.10.2020 on same subject from Secretary, D/o Higher Education, Ministry of Education is enclosed herewith. In accordance, D/o WR, RD& GR has requested to identify and submit 'Problem Statements' applicable to Ministry/Department which can be solved either using digital technologies (software) or through development of hardware prototypes.

It is requested that 'Problem Statement' may be provided to SM Dte at the earliest preferably by 10.12.2020, for taking further necessary action in this regard. It is expected that each of the CE office may provide at least one problem statement. The Problem Statements prepared by CWC for SIH' 2020 is also enclosed herewith for reference.

Encls: A/a

Yours faithfully,

(Dheeraj Singhal)  
Deputy Director



अमित खरे, भा.प्र.से.  
सचिव

AMIT KHARE, IAS  
Secretary

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सत्यमेव जयते

भारत सरकार  
Government of India  
शिक्षा मंत्रालय  
Ministry of Education  
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Department of Higher Education  
127 'सी' विंग, शास्त्री भवन, नई दिल्ली-110 001  
127 'C' Wing, Shastri Bhawan, New Delhi-110 001

D.O. No. 36-11/2020.TS-II  
27th October, 2020

Dear Madam/Sir,

Ministry of Education's Innovation Cell in coordination with All India Council for Technical Education (AICTE) is launching 'Smart India Hackathon (SIH) 2021' involving all major technical institutions across the country. In last 4 years, SIH has evolved into world's biggest Hackathon and largest open innovation model. Moreover, Hon'ble Prime Minister has applauded SIH initiative on multiple occasions which has helped kick-start Hackathon culture in India. Similar to earlier editions, SIH 2021 will have two editions; Software Edition of non-stop 36 Hrs and Hardware Edition of 5 days.

Through SIH 2021, we aim to throw challenges to the students to think out-of-the-box and offer innovative and disruptive digital solutions for some of the daunting problems faced by our nation. We plan to reach out to more than 30 Lakhs technology students and the Grand Finale will be organized at 50+ centers distributed all over the country.

**We are now in the process of finalizing the problem Statements for the Smart India Hackathon 2021. I will be grateful if your Ministry/Department identifies issues to be posted to the student community to come up with innovative (workable) solutions specific to the region. In this regard, the following may kindly be considered:**

- Identify a Joint Secretary level officer to coordinate SIH 2021 on behalf of your Ministry.
- Identify 10-15 'Problem Statements' applicable to your Ministry/Department and your allied organizations which can be solved either using digital technologies (software) or through development of hardware prototypes. These problem statements may be uploaded on [www.sih.gov.in](http://www.sih.gov.in) portal on or before **30<sup>th</sup> November, 2020**.
- Offer prize of Rs. 1 lakh per problem to the winning team. You may like to make arrangements for the prize money.
- A video message (approx. 10 mins) from the Secretary of the Ministry/Department highlighting the philosophy behind the problem statements. As this message will be seen by all students, the message should convey the primary requirements of your Ministry.
- Nominate Judges for competition and make arrangements for their travel and stay.
- Partnership fees: If you want to join us as a partner then Partner fee may be paid as mentioned here: Platinum Partner: Rs. 25 Lakh; Gold Partner: Rs. 15 Lakh & Silver Partner: Rs. 10 lakh.

Further co-ordination on behalf of this Ministry in the matter will be done by Dr. Abhay Jere, Chief Innovation Officer, MoE (9657723380; abhay.jere@gov.in) and Dr. Mohit Gambhir (9810341200; mohit.gambhir@gov.in).

Regards,

Yours sincerely,

27.10.2020  
(Amit Khare)

Secretary of Ministries & Departments (As per list attached)



## **Problems Statement for Smart India Hackathon 2020**

### **Central Water Commission**

#### **Problem Statement 1. Embankment Mapping and Crowdsourced Health Card for Preventive Structural Measures**

The inspection and monitoring of health of embankment for preventive maintenance is a massive and intensive exercise which has huge financial ramifications. The manpower requirements for effectively carrying out such an important exercise is very high keeping in view large number of embankment protection works across river networks which are not easily accessible at times. Therefore, preventive maintenance of embankments needs a technological solution involving participation of localsto safeguard the public property and life.

One such solution may be through the use of embankment mapping and crowdsourced health card. Embankment mapping involves the development of GIS application to analyse the existing river embankment network. The crowd sourced data with images, geo-location and time stamp can be used for the generation of health card of embankment and identifying the critical sections thereof for their preventive maintenance.

#### **Problem Statement 2. Water Availability based Crop-specific Farming Advisory**

Agriculture is the major source of livelihood for majority of our population. However, farming in India is often done in an unscientific manner owing to lack of awareness leading to lower productivity and over exploitation of the scarce water resources.

For example, rice cropping is started even before the onset of monsoon by extracting the ground water resulting in ill effects on the ground water table and quality, wasteful consumption of energy and water logging conditions.

A Government to Citizen (G2C) app may be developed for Water Availability based Crop-specific Farming Advisory integrating soil health card data, rainfall forecast data and information about local surface and ground water resources. This will advise the farmers to follow a particular cropping pattern based upon time of the year, geographical locationand keeping in view sustainable use of locally available water resources.

#### **Problem Statement 3. Water Accounting in Irrigation Commands through Crowd Sourced Crop Mapping**

Lack of dynamic crop maps and opacity in water utilisation data prevents proper water accounting at the level of irrigation commands. Information regarding area under various crops is generally available at an aggregate level e.g. district wise cultivated area under

individual crops. Non-availability of actual crop maps prevent spatial visualisation of water utilisation and therefore proper water accounting.

National Remote Sensing Centre (NRSC), Hyderabad generates yearly Land Use Land Cover (LULC) maps at a finer resolution of 56m containing land use classes of crop season and number of crops (single/multiple crop).

Crowdsourced information from farmers, agricultural extension service providers, local administration and local population may be used for generation of crop type maps for a particular irrigation season which in turn may be used for preparation of water accounts at various spatial scales ranging from command of a major to minor irrigation project. Water Accounting at various spatial and temporal scales in commands of irrigation projects will help in informed decision making during the ensuing crop season and leads to optimal utilisation of irrigation water.