सत्यमेव जयते

Years of Service to the Nation
राष्ट्र सेवा के 150 वर्ष

Invitation to Indian Startups for providing support in the development of various Meteorological Applications and Services

BACKGROUND

IMD is the nodal agency of the Government of India, with its Headquarter at New Delhi, under the Union Ministry of Earth Sciences for all aspects related to operational weather and climate services in the country. This includes collection and archival of meteorological data, its utilization in operational weather & climate monitoring and forecasting and generation of various weather and climate services products. IMD has a network of observatories covering the entire landmass of the country and surrounding sea areas from where ground-based, airborne and satellite observations are routinely taken.

BACKGROUND

IMD has six Regional Meteorological Centres located at Mumbai, Chennai, New Delhi, Kolkata, Nagpur & Guwahati and 26 Meteorological Centres, mostly in the state capitals. Another important office of IMD is the office of Climate Research & Services (CRS), Pune for carrying out many India specific climate related activities like Climate Monitoring & Analysis, Climate Data Management, Climate Research, Seasonal Forecasts etc. It also has different types of operational units such as Forecasting Offices, Agro-meteorological Advisory Service Centres, Flood Meteorological Offices, Meteorological Watch Offices, Aerodrome Meteorological Offices, Aeronautical Meteorological Stations, Area Cyclone Warning Centres and Cyclone Warning Centres. In addition, IMD has specialized Divisions/sub-offices for Upper Air Instruments, Surface Instruments, Aviation, Agro-meteorological, Hydro-meteorological, Cyclone Warning, Climate, Environment Monitoring & Air Quality forecasting, Training, Marine, Positional Astronomy and several other services.

SCOPE OF WORK

Targeted research is required to deliver efficient meteorological services to various sectors of socio-economic activities. Start-ups can support in development of met instruments / sensors and software and provide useful outputs for enhancing precipitation forecasting, validation of weather forecasting models, and dissemination of information and products. The support could revolve around following sectors:

a) Autonomous development of low-cost sensors for Surface/ Upper air Meteorological Observation System, Air quality monitoring sensors and Aviation Meteorological Instruments

b) Development of robust digital technologies for exchange of meteorological data from public and stakeholders to IMD

c) Development of ICT for dissemination of weather information to end users

d) Precision farming by combining meteorology and data science to develop customized weather services for farmers and agronomists.

SCOPE OF WORK

e) Development of ICT for pulling of information by farmers
f) Development of Artificial intelligence and Machine learning - based high resolution Agromet Advisory Services and crop/ livestock specific advisory generation
g) Use of Artificial intelligence and Machine learning for Automation and Dissemination of Nowcast (forecast up to 3-6 hours)
h) Development of Decision Support System in weather forecasting
i) Sectoral Applications: Development of user friendly data and production of application software for weather and climate application in different sectors viz., Urban, Power & energy, Hydrology, Health, Agriculture and Transport (Aviation, Marine, Surface transport (Road, Rail)), Tourism and hospitality sector, Retail sector and Industrial workplace.
j) Development of tools for low cost user friendly weather forecast & warning dissemination.

SCOPE OF WORK

k) The Internet of Things (IoT) application in weather and climate services.

l) Extension of Extreme Weather monitoring and forecast services of IMD to different users including general public, stakeholders and disaster managers for DRR and Natural resource management.

m) Application of air quality observations and forecast for different sectors, especially for health sector

n) Big data analysis & Info graphics: Development of new observed & forecast products using large data available in IMD and with data analytics & info graphics.

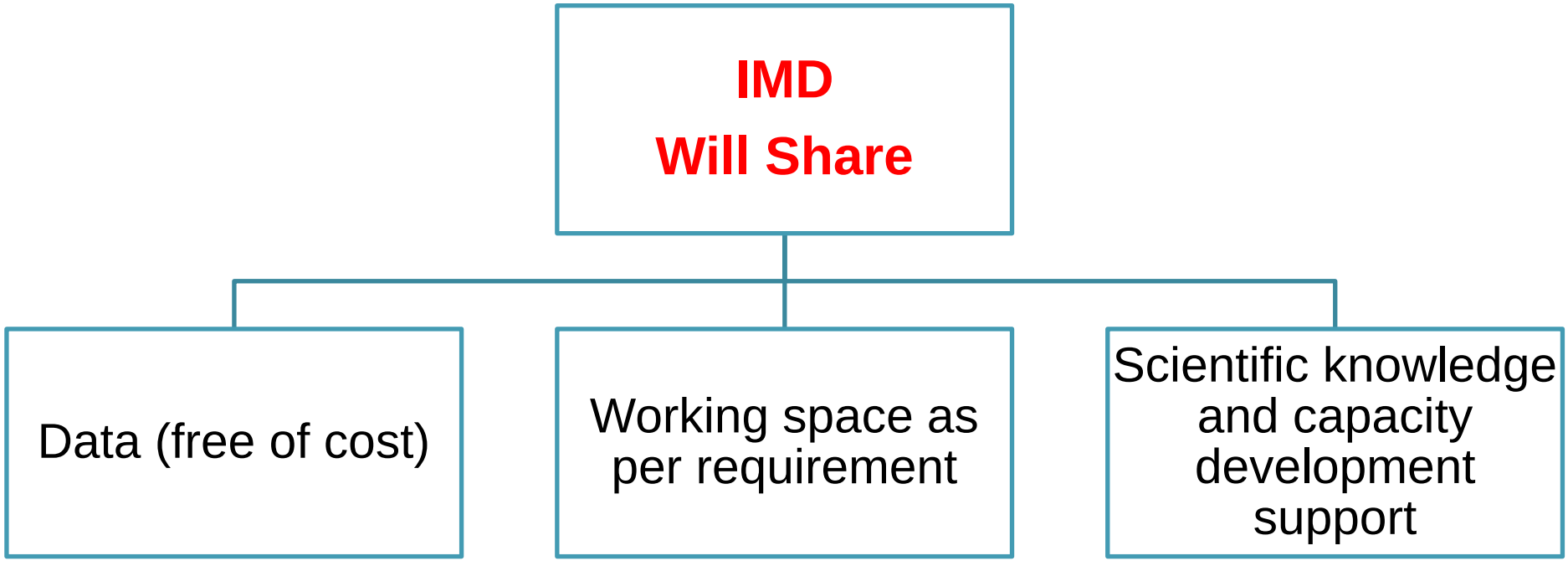
RESOURCES AVAILABLE FROM IMD

1. **Observational Data**
   - i. Surface & Upper Air data (Point Data since 1901)
   - ii. Gridded data: Rainfall: 0.25°, Temperature: 0.5°
   - iii. Satellite Data (1983 onwards)
   - iv. Radar Data (2002 onwards)
   - v. Environmental data (2010 onwards)
   - vi. Agrometeorological data (1945 onwards)
   - vii. Aviation Met. Data
   - viii. Marine Meteorological Data
   - ix. Astronomical data
2. **Model Data: Real-time NWP model data from GFS, WRF, HRRR, E-WRF etc.**
3. **Operational Forecast Data since 1881**

RESOURCES AVAILABLE FROM IMD

4. **Climatological data from different 30 years period (latest one is based on 1991-2020)**
   - i. Surface & Upper Air Climatology
   - ii. Severe Weather Hazards
   - iii. Disaster Weather Events, Vulnerability Atlas
   - iv. Derived parameters (Hydrological, Aviation Met. Etc.)
   - v. Marine Climatology

5. **Publications**
   - i. Reports: Indian Daily Weather Report, Weekly Weather Report, Monthly Weather Report, Seasonal Weather Report
   - ii. Monographs
   - iii. Special Reports
   - iv. Climatological Tables & Reports
   - v. Positional Astronomy
   - vi. Marine Climatology
   - vii. Aviation Climatology


IMD
Will Share
Data (free of cost)
Working space as per requirement
Scientific knowledge and capacity development support

THANK YOU