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# Message from **Director General**

I am delighted to announce the release of the sixth issue of Techzine R&D Digest from C-DAC. Heartfelt congratulations to the Corporate R&D team on this significant achievement. I extend my warmest greetings to all C-DACians who have contributed in Techzine for sharing their expertise, passion for research, innovation, and the pursuit of knowledge.

This edition of Techzine spotlights the "Application of AI and ICT in Agriculture". Emerging technologies such as AI and IoT are playing a pivotal role in addressing some of agriculture's most pressing challenges, including food security, resource management, and climate change. The integration of these technologies has revolutionized farming practices, leading to increased productivity, sustainability, and efficiency.

C-DAC is proud to contribute to the development of innovative solutions in agriculture, spanning various domains such as climate-smart agriculture, precision farming, eQuality across, Agrobots, and autonomous tractors, among others. These innovations are helping to reshape the future of agriculture and drive transformative change.

Techzine has made a significant impact, not only within C-DAC but also among key stakeholders, including MeitY. I am immensely proud of our team's dedication to excellence and their remarkable work in advancing the boundaries of research and development.

Together, we are fostering a culture of innovation that celebrates collaboration, creativity, and the relentless pursuit of excellence. I hope this journey inspires others to join us in Techzine, to share their knowledge and expertise, and to contribute to the collective advancement of our research community.

I encourage the Techzine R&D Digest to continue leveraging multidisciplinary research initiatives and collaborations, with a shared focus on nation-building and impactful technological advancements.

**Magesh Ethirajan**

# Message from
# **Editorial Board**

The Editorial Board of Techzine is delighted to observe the impact that all five previous issues of Techzine have had in proliferating the research and development activities of C-DAC, as well as their successful deployment and usage across various ministries, including MeitY, academia, research institutions, industries, and other stakeholders.

We are proud to present the Sixth Issue of Techzine, which is dedicated to the "Application of AI and ICT in Agriculture." This edition features insightful articles on topics such as the SMARTFARM system which highlights the transformation driven by technology in farming and a look forward "Towards Agriculture 4.0."

Each issue of Techzine is a celebration of the incredible work being done by C-DACians across all centers. We extend our warmest greetings and deepest appreciation to our esteemed contributors and readers for their continued support.

We look forward to continuing this exciting journey with you and thank you for being a part of Techzine.

**Editorial Board**

- Shri Pramod P. J., Head – Corporate R&D, C-DAC
- Shri Manoj Gopinath, Head B&C, Associate Director, C-DAC Pune
- Shri Shripad Shriram Kalambkar, Scientist E, Corporate R&D, C-DAC
- Shri Anant Kelkar, Manager, Corporate R&D, C-DAC
- Shri Sanjay Chakane, Admin Officer, Corporate R&D, C-DAC


Release of Sixth issue of Techzine by Director General,C-DAC on November 06, 2024.


# INSPIRING INSIGHTS ON NEW FRONTIERS

# SMARTFARM SYSTEM: EMBRACING THE TECHNOLOGY DRIVEN FARMING TRANSFORMATION

**Shri Anish Sathyan**
**Scientist E**
**C-DAC, Thiruvananthapuram**

**"My grandfather used to say that once in your life you need a doctor, a lawyer, a policeman and a preacher, but every day, three times a day, you need a farmer." (Schoepp, 2012)**

Global food demand is rapidly increasing as the global population is expected to grow by almost 40% to 9.7 billion by 2050. The UN Food and Agriculture Organization (FAO) predicts that the agriculture industry must produce 70% more food. Addressing global food demand requires a multifaceted approach that includes improving agricultural productivity, adopting sustainable practices, and fostering technological innovation. As the global population grows, climate change intensifies, and resource constraints become more pronounced. However, the advent of digital agriculture, with its potential to revolutionize farming practices and fundamentally reshape every aspect of the agri-business value chain, is the most transformative and disruptive development.

India, a major agricultural nation with a rich history and diverse farming practices, is at a crucial juncture in its agriculture sector. Approximately 159 million hectares (ha) of agricultural land, accounting for about 53% of the country's total land area, and about 120 million farmers engaged in agriculture. Agriculture, which currently employs approximately 42% of India's workforce, is gradually decreasing as the economy diversifies. Agriculture remains vital to India's economy and food security, contributing roughly 18-20% to India's GDP. However, the potential for improvement is vast, with a focus on improving agricultural productivity through technology, innovation, and modernisation. Initiatives such as precision farming, digital agriculture, and the development of better infrastructure are being promoted, and it is our responsibility to enhance the sector's efficiency and output.


**C-DAC in Agriculture automation: SMARTFARM System**

Precision farming is generally defined as an information and technology-based farm management system that identifies, analyzes, and manages variability within fields for optimum profitability, sustainability, and protection of land resources. In the Indian context, precision farming is still in its infancy. The monotonous activities on the farm, the nonavailability of skilled workers, and low profit keep the young generation away from Farming. The SMARTFARM system is the solution to all these distressing situations.

SMARTFARM is an agriculture automation solution, designed and developed by C-DAC for precision agriculture. This system is designed to improve the socioeconomic status of farmers in developing countries. SMARTFARM system is a farmer-friendly (remotely controlled)

system that helps farmers plan irrigation and fertigation based on environmental and soil conditions, ensuring maximum return per crop. The system monitors and controls more than 20 field parameters and equipment. It works in AUTO/MANUAL/TIMER and REMOTE modes. SMARTFARM can intelligently operate pumps based on the data collected from the field, condition the metering to specific crops, and provide real-time monitoring, analysis, and control. Farmers can remotely control the system through mobile phones, and the 4G/5G connectivity allows cloud-based data analysis, alerts, and efficient farm management, ultimately leading to higher crop yield. Being indigenous, the SMARTFRAM system ensures adaption to Indian farming conditions and farming scenarios. Any customisation and tailoring level is ensured per the farmer's requirement for any specific crop. SMARTFRAM Application domains are Precision Farming, Agriculture Automation, Hydroponics, Aquaponics and Vertical farming.

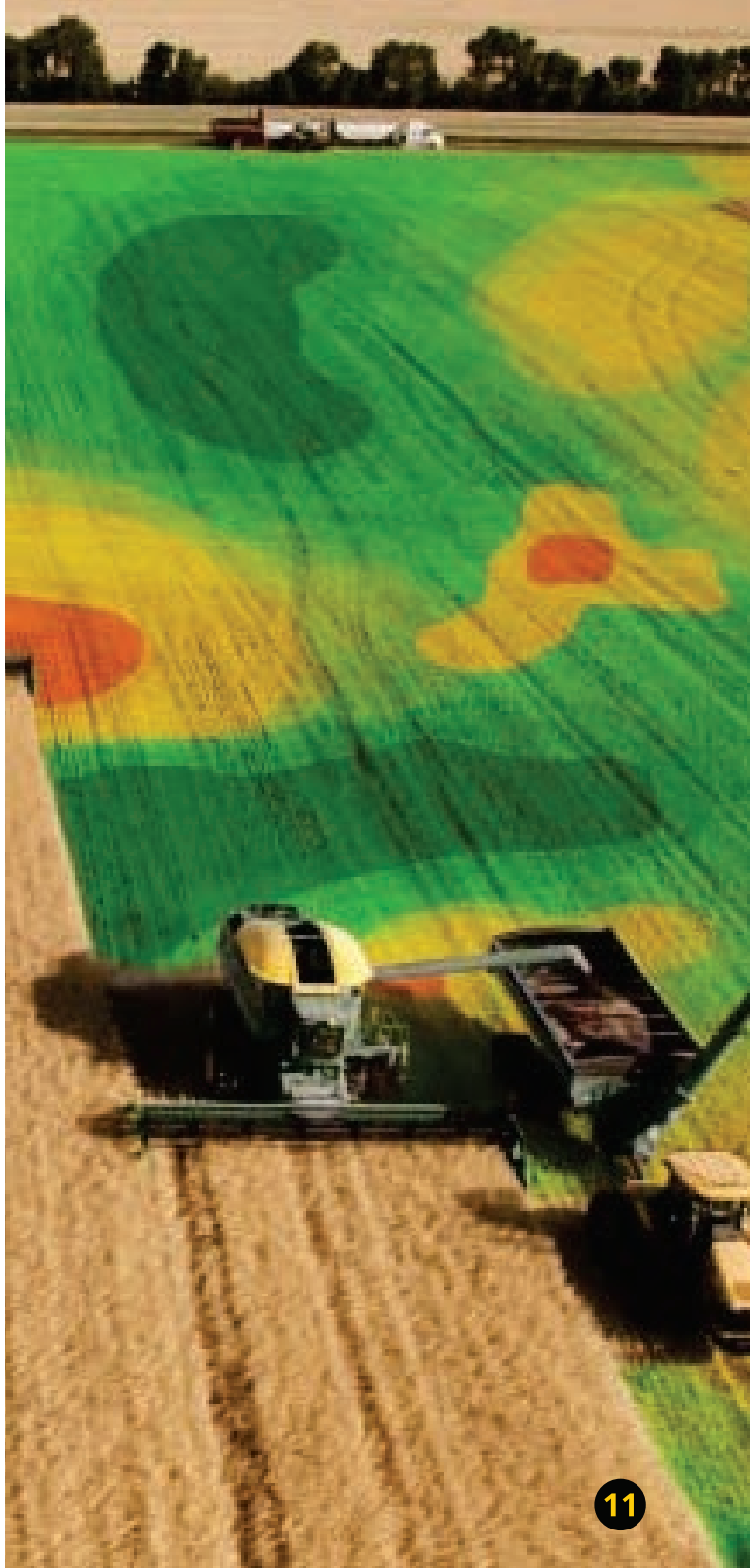
C-DAC is working on several enhancements to SMARTFARM. This article highlights opportunities for joint work in AI in agriculture, Agro-ecosystem modelling, Satellite image-based crop management, crop status and yield prediction.

- **Farming Transformation**

  Emerging technologies like data-driven agriculture, geospatial data, high-speed data processing, AI/ML-driven decision support systems, an Agro-Eco Digital twin system, Climate-resilient farming, and a technology-driven Terminal Market Complex are crucial in transforming digital agriculture. These innovations can help farmers build profitable agribusinesses by meeting increasingly discerning customer and regulatory demands. Farmers can make more informed and effective decisions by integrating these technologies into farming systems.

- **Data-driven Agriculture**

  Sensors are central to creating data-driven, efficient, and sustainable farming systems. Sensors gather data from the environment, and actuators control devices



remotely based on the data received from sensors. Intelligent systems and devices effectively automate and optimize farming activities. Their seamless integration drives the progression of IoT applications and many other engineering and technology fields. IoT environments allow distributed processing of data generated by a multitude of devices. This reduces the need to transmit all data to centralized servers, making data-driven agriculture systems more efficient and scalable.

- **Geospatial data**

  Satellite imagery in agriculture can provide farmers and land managers valuable information to optimise their operations, make informed decisions, and increase crop yields. When applied effectively, using satellite imagery in agriculture can significantly improve productivity, reduce resource use, and enhance sustainability. An agriculture hybrid platform that harnesses the power of data, technology, and analytics empowers farmers to track and monitor crop growth across different locations for Sowing Intelligence, Cropacreage, Crop Health Monitoring, Harvest Intelligence, CCE data validation, and Crop yield estimation.

- **High-speed data processing**

  A comprehensive, scalable, integrated hardware and software platform centred on the AI Accelerator, significantly simplifies the development and deployment of AI solutions for processing-intensive applications. Edge devices leverage the power of computing to run machine learning models efficiently. High-speed data processing solutions cater to vision-based crop assessment, AI/ML-driven data exploration, and non-destructive estimation of crop phenotypic data to execute the seeing and spraying applications. High-speed edge data processing, reduced dependence on cloud connectivity, enhanced privacy and security, and adaptability to diverse environments. These characteristics make them well-suited for applications that require low latency, real-time decision-making, and efficient use of resources in decentralized settings.

- **AI/ML-driven decision support systems**

  By focusing on these cutting-edge technologies and addressing the ethical challenges, we can leverage AI's immense potential to create intelligent computing devices for AI applications. Most nutrient deficiencies and pest infestations can be identified in advance by analysing plant leaves. Properly refined algorithms must be developed for real-time, non-destructive image capturing and image extraction for Insect recognition, Fruit detection, and Anomaly detection. Crop behaviour under different climatic conditions, seasonality, and modelling of crop requirements for farming in various growth stages will assist the farmers in obtaining maximum yield and profit from controlled cultivation. AI-driven technologies assist farmers in creating seasonal forecasting models to improve agricultural accuracy and increase productivity.

- **Agro-Eco Digital Twin system**

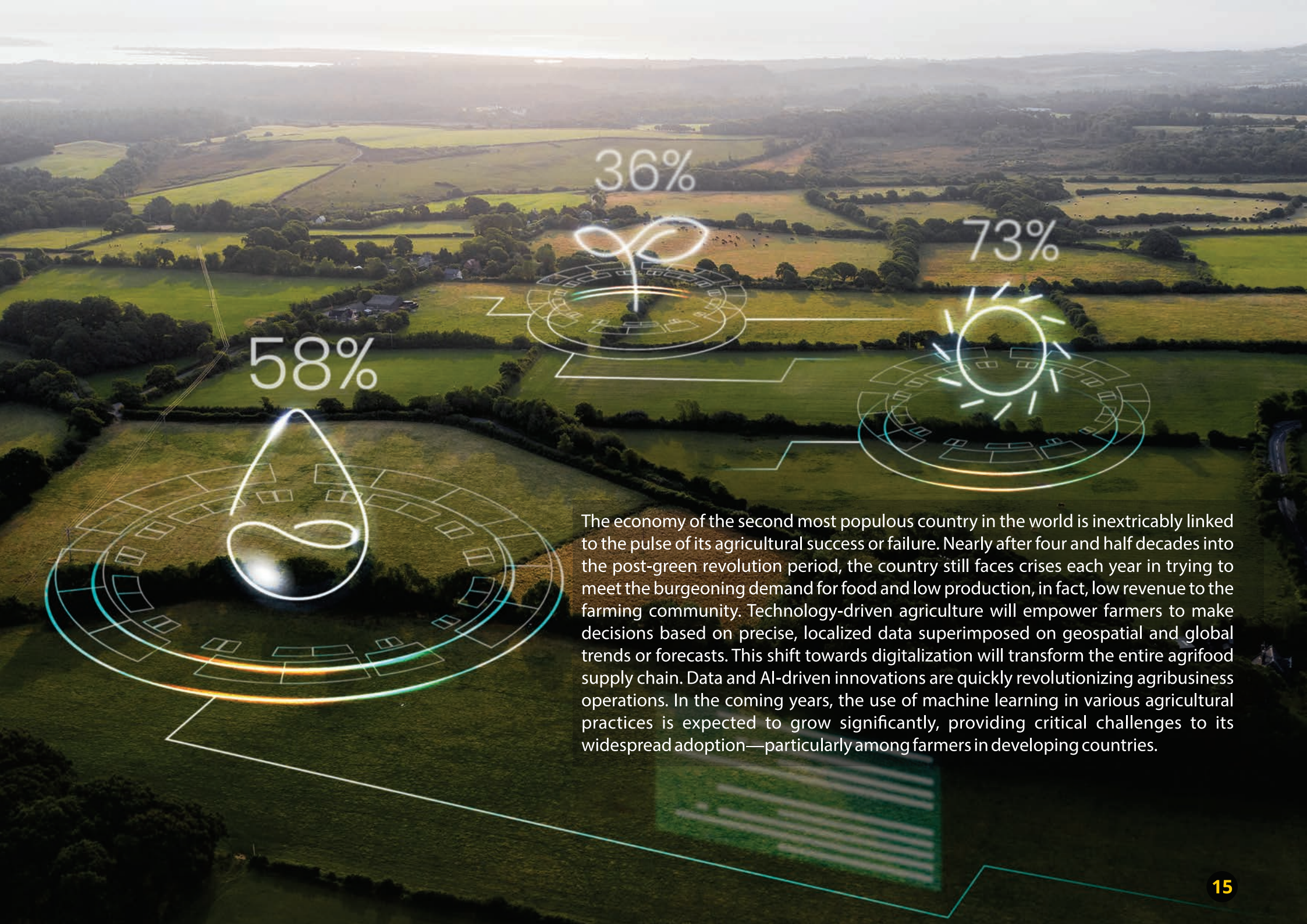
  Advanced Precision Farming System with a comprehensive Agro-Ecosystem model can be of significant use in many nontrivial scenarios like crop management improvement, yield analysis, the response of crop varieties to climate variability and change, and the environmental impact of crop production. This agro-ecosystem is composed of crops and greenhouse climates, which are based on the existence of two different timescales. A quantitative relationship model between crop growth and environment elements and the model of crop organogenesis and the resulting model can be used for growth assessment, understanding crop physiology and yield prediction. The neural network model is used to predict the inside environment, given the outside conditions and the operation of the control equipment. Secondly, to study the progress of crop ontogeny, a bootstrap resampling-based artificial neural network is to be developed with limited destructive measurements.

- **Climate-resilient farming**

  Recent climatic changes have made farming a big challenge with rising warm conditions and uneven seasons. Yields can be increased only under controlled conditions. Crop management uses image data, environmental factors, and predictive models to analyze, process, and take corrective measures promptly and at the exact location in a precise manner. The main advantage is that crops can be cultivated successfully throughout the year with high productivity and excellent quality. In short, the proposed system could reduce the use of water for irrigation and will help the farmers get a higher yield with the minimum use of fertilizers and little use of pesticides. Advanced sensor integration and AI/ML systems cannot reverse climate changes, still they are well suited to increase the adaptive capacity of the agricultural sector in developing nations.

- **Technology-driven Terminal Market Complex**

  Terminal Markets serve as a central hub in the agricultural value chain, connecting farmers with buyers, retailers, processors, and exporters while reducing the involvement of intermediaries. The Terminal Market Complex will operate on a Hub-and-Spoke format, ensuring efficient coordination between various stakeholders—farmers, buyers, and logistics providers—and requires continuous monitoring and management. Terminal Market Complexes are a transformative model in agricultural marketing designed to enhance transparency, reduce inefficiencies, and increase profitability for farmers. By leveraging technology, modern infrastructure, and direct market linkages, TMCs can significantly modernise India's agricultural supply chain and boost its global competitiveness. Digital technologies like IoT and Blockchain are revolutionizing food supply chains by enhancing traceability and enlightening buyer gratification.




The economy of the second most populous country in the world is inextricably linked to the pulse of its agricultural success or failure. Nearly after four and half decades into the post-green revolution period, the country still faces crises each year in trying to meet the burgeoning demand for food and low production, in fact, low revenue to the farming community. Technology-driven agriculture will empower farmers to make decisions based on precise, localized data superimposed on geospatial and global trends or forecasts. This shift towards digitalization will transform the entire agrifood supply chain. Data and AI-driven innovations are quickly revolutionizing agribusiness operations. In the coming years, the use of machine learning in various agricultural practices is expected to grow significantly, providing critical challenges to its widespread adoption—particularly among farmers in developing countries.

# ‘TOWARDS AGRICULTURE 4.0’

**Dr. Jaspal Singh**
**Scientist F, C-DAC Mohali**

Agriculture is probably the oldest profession of mankind and AI, the newest fad. The intersection of the two is bound to be fascinating. With about 50% of the Indian population still involved in agriculture related professions, AI and ICT promise a revolution of sorts.

Over the years, mechanisation and bio-engineering were considered as the top if the line technologies for agriculture. However, electronics and data driven technologies are now promising to leapfrog agriculture into unimaginable heights. This new farming paradigm is being referred to by various names like – ‘Smart farming, ‘Digital agriculture, ‘Agriculture 4.0’, etc. Let’s take a quick stock of emerging technology applications in agriculture.

**Precision farming for optimal resource utilisation:**

Precision farming is a sort of umbrella term used to indicate various practices which try to monitor increasingly smaller units of farm and optimise resource use as per the exact needs of the plants as against going by the thumb rules which were followed earlier. For example, instead of simply flooding the field with water, precision or smart irrigation advocates irrigating different patches of farm with different amounts of water depending on their needs as measured with say, soil moisture levels. Now, with weather data, sensor inputs, and AI, we are talking about fertigation as per the exact plant needs, based on moisture levels, crop growth patterns and other forecasts, together. This smart irrigation conserves water and helps improve crop yield too. According to a recent study published in ‘Computer and Electronics in Agriculture’, AI-driven irrigation systems have shown to reduce water usage by up to 40% while increasing yields by 15%. Such innovations are vital as India grapples with erratic monsoon patterns and increasing water scarcity.

Similarly, using the current status as measured with various sensors, drones or other methods, relevant weather and other forecasts and known growth behaviour patterns of the exact crop variety, trained AI models can be used to provide plant needs related to use of fertilisers, pesticides and other resources precisely. The ICT is undoubtedly making AI enabled precision farming technologies available to every single farmer out there.

C-DAC has been highly active in this domain. It developed a series of protected precision cultivation facilities for various govt. bodies. Projects in use of sensors for plant canopy measurements and smart irrigation were demonstrated. Recently, a versatile wireless unit has been developed that can be used for a variety of precision farming activities. It is configurable to receive inputs from a variety of sensors, analyse them and automatically actuate relevant systems based on defined logics and analysis.

**Ringing-in the doctor:**

AI and ICT is promising a plant doctor, virtually in every smartphone. Simple images taken by mobile phone are being used with AI for diagnosing plant health. Trained ML/DL models can easily diagnose the mineral deficiency or other infection of plants. Plant health along with weather patterns, can also be used to predict susceptibility to pest infestation. Off course data collection for accurate training of the DL models is a big exercise. Govt. of India, has launched several initiatives to collect isolated set of crop image data into a common repository for tech development.

**Eye in the sky**

Drones flying above the crops and satellite based 'remote sensing' can collect important data (primarily image data) of given crop field or large areas of farm lands. These images can be suitably processed and analysed with AI algorithms to deduce

several parameters like crop health, fruit yield, cropping patterns, land use patterns, and many more. Appropriate communication technologies can convey the information to farmer for action or to the agronomists for data collation and policy decisions. These aerial vehicles equipped with high-resolution cameras and sensors enable farmers to conduct crop health assessments, monitor pest infestations, and efficiently apply inputs. The use of drone technology has gained lot of traction in India with the launch of special financial schemes for subsidy in drone purchase. Recent advancements in AI have further enhanced drone functionality and therefore, utility. Drones are now being used not only for sensing or monitoring but also for intelligent on-field actions like precise spray of chemicals. In this direction CDAC successfully developed a drone based system for apple yield estimation in the hills of Himachal Pradesh.

**Robotics: multiplying the deft hands**

Another important intervention is automation and robotics in agriculture. Autonomous machines and Robots can not only take up endless volumes of work but also take up hazardous or high precision works like precise / optimal pesticide spray without any tea-breaks. Tractors and harvesters equipped with autonomous technologies can operate with minimal human input. These machines use GPS and advanced algorithms to navigate fields, perform tasks like ploughing, sowing, and harvesting with remarkable accuracy, thereby increasing efficiency and reducing labour costs. Autonomous robots can supplement manual labour, performing repetitive tasks such as weeding, planting, and harvesting.

In C-DAC, agriculture robots are being developed for intelligently identifying and plucking the ripe fruits. Another robot, referred as unmanned ground vehicle is also under development. It shall roam the field and intelligently spray pesticide for destroying weeds. A mega project has been initiated in collaboration with a leading

private player to develop an autonomous tractor for the fields. Many more such robots for high precision works like saffron harvesting and anthers separation are also being developed.

**ICT: Bridging the divide**

Information and communications technologies are plying a very crucial role. The vast amounts of data generated by electronic sensors and AI are transported for valuable insights into crop performance, market trends, and environmental conditions and allowing farmers to make informed decisions. It is the advancements in communication technologies and the hardware reaching every single hand in the field, which has made all this materialise. CDAC is highly active in this area; it is not only contributing in communication technologies but also enabling systems like e-NAM (national agriculture marketplace), real time farmer advisories in native language and several such initiatives. These are enabling Market access, support and intelligence for the farmers as well as policy makers in yield estimations, post-harvest loss minimisation and such activities.

**Frontiers in Alternative farming**

With increasing pressures on land and other resources for higher productivity, there is focus on alternative farming techniques also. AI and ICT is playing a big role in areas like vertical farming, soilless farming, aquaculture, animal husbandry, etc. and their integration with agriculture. CDAC has a strong presence in many alternative farming techniques (including hydroponics aquaponics, aquaculture, cattle farming, etc.). Efforts are on to develop sector specific solutions like solutions for entire range of crops that grow in hills J&K which are unique and distinct from rest of India.

Apart from the areas identified above, AI and ICT are also contributing to genetic engineering and Biotechnology, custom or designer crop development, 3D Printed food, etc. that are immensely contributing towards revolution in agriculture.

To summarise, AI and ICT is driving the next revolution in agriculture. The initiatives and interventions being undertaken by Govt. are tuned to usher in Digital agriculture earlier. The C-DAC with forays in autonomous robots and tractor, ICT solutions for post-harvest management, productivity improvement, quality inspection, niche crop applications and many more such areas, is looking forward to be an important contributor in this revolution.

No wonder, if we soon see the bountiful crops in sun kissed fields as well as fully automated protected farms with soilless techniques and other fruitful alternative farming and flourishing urban farming in India.

# INSPIRING INSIGHTS: APPLICATIONS OF AI AND ICT IN AGRICULTURE

**Shri Alokesh Ghosh**
**Scientist F, C-DAC, Kolkata**

In the heart of India, where tradition meets innovation, a new era of agriculture is dawning. The sun rises over lush tea gardens, golden rice fields, and vibrant spice markets, casting a warm glow on the land that has been the cradle of farming for centuries. But this is no ordinary day; it is a day when technology and nature dance together in perfect harmony. As the first light of dawn touches the fields, a network of sensors and drones springs to life, silently monitoring the health of crops and soil. These advanced tools, powered by Artificial Intelligence (AI) and Information and Communication Technology (ICT), are the new guardians of the land, ensuring that every plant receives the care it needs.

In a nearby control center, farmers and engineers work side by side, analyzing data streams that provide real-time insights into crop growth, weather patterns, and resource usage. This collaboration between human expertise and cutting-edge technology is transforming agriculture into a precise and efficient science. The challenges are many: rising food demand, the need for consistent quality control, efficient resource management, labor shortages, and the imperative to reduce environmental impact. Yet, with AI and ICT, these challenges are being met head-on. Automated systems optimize irrigation, fertilization, and pest control, ensuring sustainable practices that preserve the natural beauty of the land.

In the villages, the impact is profound. Farmers, who once relied on age-old techniques, now embrace digital tools that enhance their productivity and livelihoods. The integration of technology brings a sense of empowerment and hope, as they witness their fields flourish like never before. This is a story of transformation, where the ancient rhythms of agriculture harmonize with the pulse of modern innovation. It is a testament to the power of technology to not only solve problems but to elevate the very essence of farming, making it more resilient, sustainable, and prosperous for generations to come.

"Enovision" Intergrated Electronic Nose & Vision System

In the serene tea gardens of Assam, a gentle breeze carries the aroma of freshly plucked tea leaves. Here, ENOVISION, a revolutionary system, is at work. With the precision of a master craftsman, the E-Nose, a digital olfactory organ, sniffs out the subtle nuances of tea aroma, ensuring that every cup brewed is a masterpiece. The E-Vision, with its keen digital eye, scrutinizes the tea's appearance, making sure that only the finest leaves make it to the teapot. Tea lovers around the world rejoice, savoring the perfect blend of tradition and technology in every sip.

Meanwhile, in the rice paddies of Bengal, AnnadarpanSMART is transforming the lives of farmers. This technological marvel analyzes rice grains with meticulous precision, identifying defects that were once invisible to the human eye. Farmers, who have toiled under the scorching sun, now see their hard work rewarded with premium-quality rice. The fields are alive with the promise of prosperity, as AnnadarpanSMART elevates the standards of rice quality to new heights.


In the sprawling wheat and maize fields, GrainEX stands as a vigilant sentinel. Its AI-powered conveyor belt system scans grains, identifying imperfections and ensuring that only the finest quality reaches the market. The process of quality control has never been so efficient and reliable. Farmers and traders alike marvel at the ease with which GrainEX safeguards their harvests, bringing peace of mind and prosperity to the agricultural community.

In the bustling spice markets, CT-VIEU, a digital inspector, ensures that red chilies meet the highest standards. With pixel-perfect accuracy, it examines chili pods, identifying defects and maintaining the integrity of the spice trade. Farmers and traders, empowered by this technology, know that only the best chilies will make their way to consumers, preserving the rich flavors of Indian cuisine.

In the silk-producing regions, Pebrine-O-Scope, a digital microscope, is a game-changer. It detects pebrine spores with unparalleled accuracy, safeguarding silkworms and ensuring the production of high-quality silk. Resham Darshan, another technological marvel, revolutionizes silk sorting by accurately grading silk yarns based on color. The silk industry flourishes, producing exquisite fabrics that adorn people around the world.

T-Netra, a vigilant tea inspector, ensures that finished tea is free from external contaminants. Its AI-powered vision identifies impurities, safeguarding the reputation of Indian tea. RIGE-SENSE, another innovative system, determines the age of rice by analyzing the color variations, using a chemical process that streamlines inventory management and ensures the quality of stored rice.

In the livestock farms, Go-Paryavekshak and MAST-D monitor cattle health and detect mastitis, respectively. GEMS, a smart environment monitoring system,

revolutionizes poultry farming by identifying one-day old chick gender and monitoring bird health. These innovations improve animal welfare and productivity, bringing a new level of care to livestock farming.

Robotics also play a crucial role in this agricultural renaissance. TULIP, an automated tea leaf cutting machine, and the automated apple harvesting system showcase the potential of robotics in agriculture. Sama-Dhaan, an autonomous robotic platform, demonstrates the power of AI in precision farming. These robotic marvels promise to transform agriculture, making it more efficient and sustainable.

AquaSURAKSHA, a biosensor, stands guard against water pollution, detecting harmful endocrine-disrupting chemicals in fisheries. This technology is a crucial tool in safeguarding water resources and protecting public health.

In conclusion, AI and ICT-driven innovations are reshaping agriculture by addressing critical challenges, from enhancing quality control and resource management to automating labor-intensive tasks and reducing environmental impact. These advancements not only make agriculture more efficient and productive but also pave the way for a sustainable future, meeting the growing demands of global food security. Looking ahead, the future of agriculture lies in the seamless integration of AI and ICT technologies. As these technologies continue to evolve, we can expect even more sophisticated solutions that will further enhance agricultural productivity and sustainability. Precision agriculture, driven by AI data analytics and IoT sensors, will enable farmers to optimize resource use, increasing crop yields while minimizing environmental impact. Advances in robotics will lead to more efficient agricultural machinery, reducing the need for manual labor and increasing operational efficiency. AI models will play a crucial role in predicting and mitigating the effects of climate change on agriculture, helping farmers adapt to changing environmental conditions. ICT solutions will streamline the agricultural supply chain, reducing waste and ensuring that produce reaches consumers in the freshest possible condition, with



blockchain technology enhancing transparency and traceability. The integration of AI and ICT will also promote sustainable farming practices, such as precision irrigation and organic farming, protecting the environment and ensuring the long-term viability of agricultural ecosystems. Increased global collaboration between researchers, farmers, and technology providers will facilitate the sharing of knowledge and best practices, accelerating the adoption of innovative solutions in agriculture. In summary, the future of agriculture is bright, with AI and ICT at the forefront of this transformation, creating a more efficient, sustainable, and resilient agricultural sector that meets the needs of a growing global population.

# **IDEAS** TO ACTION

NEW MEITY PROJECTS

# IDEAS TO ACTION

1

**Name of Project:** Development of Quantum Machine Learning Usecases and Application

**CI:** Shri Anoop Kumar, Scientist F, C-DAC Hyderabad.

**Co-**CI: Shri Jitesh Choudhary, Centre Head, C-DAC Silchar

Dr. Gurmohan Singh, Scientist E, C-DAC Mohali

Shri Abhishek Tiwari, Scientist E, C-DAC Noida

Dr. Priyanka Jain, Scientist F, C-DAC Delhi

**Collaborators:** IIT Roorkee, IIT Ropar, IIT Gandhinagar and IIIT Hyderabad

**Brief Description:** The objective of project includes developing Indigenous quantum machine learning based solutions for Early Disease Detection, Mineral Prospectivity Analysis, Image and Video Compression, Weather Forecast and Climate Modelling, Entity and Anomaly Detection, Escape/Evacuation Routing, Brain Activities Analysis, Malware/Ransomware Analysis, Analysis of Satellite Images, Algorithms for Behavioral Pattern Analysis, Simulation of Molecular Dynamic, Learning Physical Systems and Quantum States.

This project also aims to enhance capacity building in India in quantum computing and its associated areas.

NEW MEITY PROJECTS

# IDEAS TO ACTION

2

**Name of Project:** Development of best practices to counter Cyber Security Threats and Challenges arising due to Emerging Technologies – AI, Cloud Computing and IOT

**CI:** Dr. Lakshmi Kalyani, Scientist F, C-DAC Noida

**Co-CI:** Shri Tushar Patnaik, Scientist F, C-DAC Noida

Smt. Rekha Saraswat, Scientist E, C-DAC Noida

**Brief Description:** The project will identify the inherent cyber threats, issues and challenges arising due to emerging Technologies-Artificial Intelligence (AI), Cloud Computing and Internet of Things [IOT], in line with Indian and International scenarios and will prepare countermeasures comprising of guidelines & best practices to safeguard from them. These video based best practices, would be disseminated, to the Government (Central/State) and Government organizations, across the country

NEW MEITY PROJECTS

# IDEAS TO ACTION

3

**Name of Project:** Integrated Surgical Platform with Navigation, Robot, Simulation & Training for Total Knee Arthroplasty

**CI:** Shri Subodh P S, Scientist G,
C-DAC, Thiruvananthapuram

**Co-CI:** Shri Sibi S, Scientist E,
C-DAC, Thiruvananthapuram

**Collaborators:** IIT Madras & AIIMS Delhi

**Brief Description:** To develop an integrated total Knee arthroplasty suite for knee-joint replacement surgery assisted through Navigation and Robotic in surgical environment and VR/AR for surgical simulation & training.

NEW MEITY PROJECTS

# IDEAS TO ACTION

4

**Name of Project:** Finishing School Program on 3D Printing & Additive Manufacturing Technology for Engineering Students of West-Bengal and Bihar

**CI:** Shri Asit Kumar Singh, Project Manager, C-DAC, Kolkata

**Co-CI:** Shri Pranab Ranjan Chakraborty, Project Assistant C-DAC, Kolkata

**Brief Description:** Under this project, total seven high end ICT Labs equipped with 3D Printing Machineries and requisite Computing Hardware, Software and accessories will be developed at 4 (Four) Engineering Colleges at Nadia, Purba Medinipur, Paschim Bardhaman and Jalpaiguri district of West Bengal and 3 (Three) Centre at Bihar. Total number of 14000 Engineering student will be trained under this project through full time course and another 3500 Engineering students will be trained over the Bootcamp Program under this project on 3D Printing & Additive Manufacturing Technology. Under this project another Multimedia based Educational Content along with Project Repository for 3D Printing and Additive Manufacturing Technology will be developed. Through this technical skill development training program remarkable Job Opportunity/ Placement, Entrepreneurship development will be created and a pool of professionally skilled manpower with the knowledge of 3D Printing and Additive Manufacturing Technology will get ready as per the need of industries.

**Name of Project:** Central Monitoring System for DVDMS (e-Aushadhi)

**CI:** Shri Jitendra Singh, Scientist F, C-DAC Noida

**Co-CI:** Shri Abhishek Verma, Scientist D, C-DAC Noida

**Funding Agency:** Ministry of Health and Family Welfare, Government of India

**Brief Description:** Central Monitoring System (CMS) for DVDMS (e-Aushadhi) consolidates drug-related data across states using ETL (Extract, Transform, Load) processes and offers key performance indicators (KPIs) for monitoring stock availability, procurement, and usage patterns. This system provides valuable insights to both MoHFW and state administrations, aiding in the evaluation of FDSI performance. Launched on World Health Day 2017, the project started with limited KPIs and coverage but has expanded to on-board 28 states and Union Territories.

This project focusses on enhancement of the CMS, leading to the development of additional KPIs and increased coverage. The system aids in demand forecasting, rate finalization, and performance monitoring, while also supporting policy formulation for more than 1.5 Lakhs health facilities across nation, Niti Aayog, and other Health administrative bodies through comprehensive data and monthly rankings of states based on drug availability, wastage, and other critical metrics, etc.

5

New R&D Projects

# IDEAS TO ACTION

(External Funding)

**Name of Project:** Design, Development and Supply of PRAN_V2 CPU board

**CI:** Shri Libin T T, Scientist F, C-DAC, Thiruvananthapuram

**Co-CI:** Smt. Sherin M A, Scientist E, C-DAC, Thiruvananthapuram

**Funding Agency:** Nuclear Power Corp. of India Ltd.

**Brief Description:** Project aims at the development of an indigenous CPU Board for Computer Based Systems of Indian Nuclear Power Plants. This module will function as central processing module in Computer Based Systems. The function of Computer Based Systems is real time scan of the input signals, process them, generate output and communicate with upper layer system. The CPU board can be used as master or as slave and Main or Standby in computer based system. It will communicate to Input and Output hardware modules, which are based on NPCIL proprietary IO bus.

The module will have limited data acquisition capability such as contact input anddigital output. It shall have communication features such as isolated 10/100/1000Mbps Ethernet ports, isolated serial RS232/ RS485 ports and SD card interface



6

New R&D Projects

# IDEAS TO ACTION

(External Funding)

**Name of Project:** "Sight - Beyond-Sight": ICT-based Revolutionary Empowerment for the Visually Challenged Population of Odisha

**CI:** Shri Kunal Chanda, Scientist E, C-DAC Kolkata

**Co-CI:** Smt. Soma Khan, Scientist E, C-DAC Kolkata

Shri Ritesh Mukherjee, Scientist F, C-DAC Kolkata

**Funding Agency:** Department of Social Security & Empowerment of Persons with Disabilities, Government of Odisha

**Brief Description:** The project involves implementation of an ICT-based comprehensive communication solution (with a set of tools) to act as a Man Machine Interface (MMI) with computers and set up special computer labs to facilitate education and training and thereby support the visually challenged population of Odisha.

7

New R&D Projects

# IDEAS TO ACTION

(External Funding)

**Name of Project:** : Design, Development and Deployment of Pilot indigenous Glacial Lake Outburst Floods Early Warning System (GLOF-EWS) for Himalayan States & Uts

**CI:** Dr. Binay Kumar, Scientist F, C-DAC, Pune

**Co-CI:** Shri Anish Sathyan, Scientist E, C-DAC, Thiruvananthapuram

**Funding Agency:** National Disaster Management Authority (NDMA), Govt. of India

**Collaborating Agency:** ISRO, State Disaster Management Authorities (SDMAs), other central and State line departments

**Brief Description:** Scope of project includes GIS based Spatial Decision Support System (SDSS), installation of indigenously designed and developed Buoy based Water Level Monitoring Sensors, Automatic Weather Station (AWS system), Glacial Lake Vision Unit (GVU), establishing both narrow-band and wide-band Satellite Communication for Sensor Data Transmission and Reception, GLOF Simulation Module on HPC systems, Bathymetry Survey for Glacial Lake Profiling and volume calculation, Web application for visualization of sensor data, alert dissemination module for GLOF risk assessment & mitigation planning.



8

New R&D Projects

# IDEAS TO ACTION

(External Funding)



**Name of Project:** Enhancing the livelihood of tribal using Traditional, Scientific and Technological interventions in North-West Maharashtra

**CI:** Shri Satish Pardeshi, Senior Project Engineer, C-DAC Pune

**Co-CI:** Dr. Yogesh Kumar Singh, Scientist F, C-DAC Pune

Dr. Manoj Chavan, Senior Project Engineer, C-DAC Pune

**Funding Agency:** DST

**Collaborating Agency:** Symbiosis Institute of Geomatics, Pune and Adiwasi Samaj Kruti Samitee, Pune

**Brief Description:** This project focuses on creating a comprehensive digital library that combines indigenous knowledge and medical formulations related to potential medicinal plants. It aims to categorize these plants based on their medicinal potential-low, medium, or high—using a systematic approach. Additionally, the project includes the use of spatial data to assess site suitability for cultivating these medicinal plants. By leveraging geospatial technology, the research identifies optimal areas for cultivation, which helps in preserving indigenous knowledge while promoting sustainable agricultural practices for medicinal plants. This digital repository could serve as a valuable resource for healthcare, research, and conservation efforts.

9

New R&D Projects

# IDEAS TO ACTION

(External Funding)

# PROGRESS PULSE:

## A PERFORMANCE DASHBOARD

# IPR PORTFOLIO

To create awareness and increase the Intellectual Property Rights (IPR) footprint across C-DAC, the Corporate IPR Cell has been established. Details of the IPR activities of C-DAC during this quarter are as below:

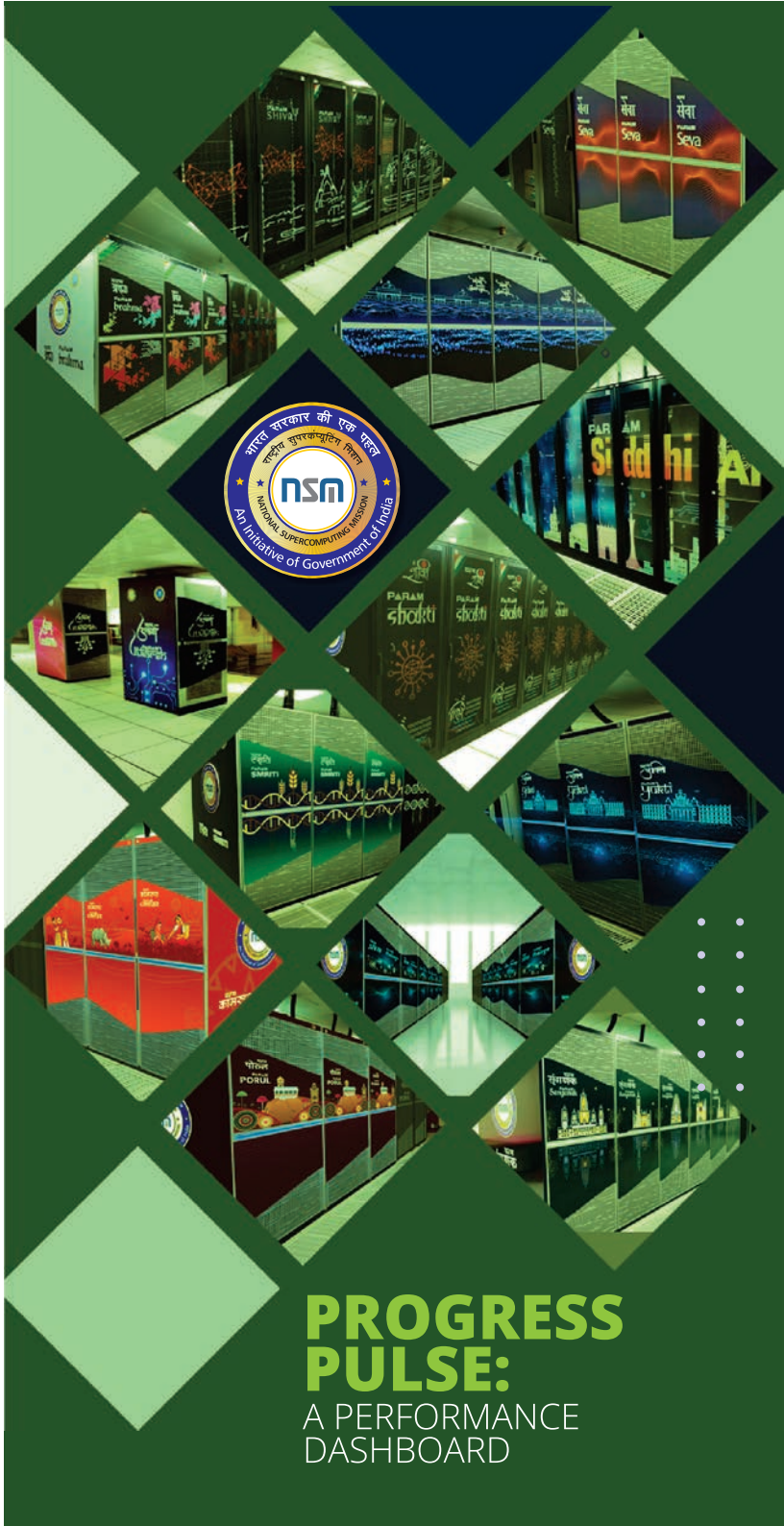
| | IPR portfolio of C -DAC (Year 2013 to September 2024) | | | | Quarterly IPR portfolio of C-DAC (July 2024 -September 2024) | | | |
|---|---|---|---|---|---|---|---|---|
| | Patents | Copyrights | Trade marks | Design | Patents | Copy rights | Trade marks | Design |
| **Applied/Filed (Pending)** | 59 | 13 | 26 | 2 | 4 | 11 | 12 | 2 |
| **Granted/ Registered** | 103 | 173 | 23 | 1 | 0 | 2 | 3 | 0 |
| **Total** | **162** | **186** | **49** | **3** | **4** | **13** | **15** | **2** |

# NATIONAL SUPER COMPUTING MISSION

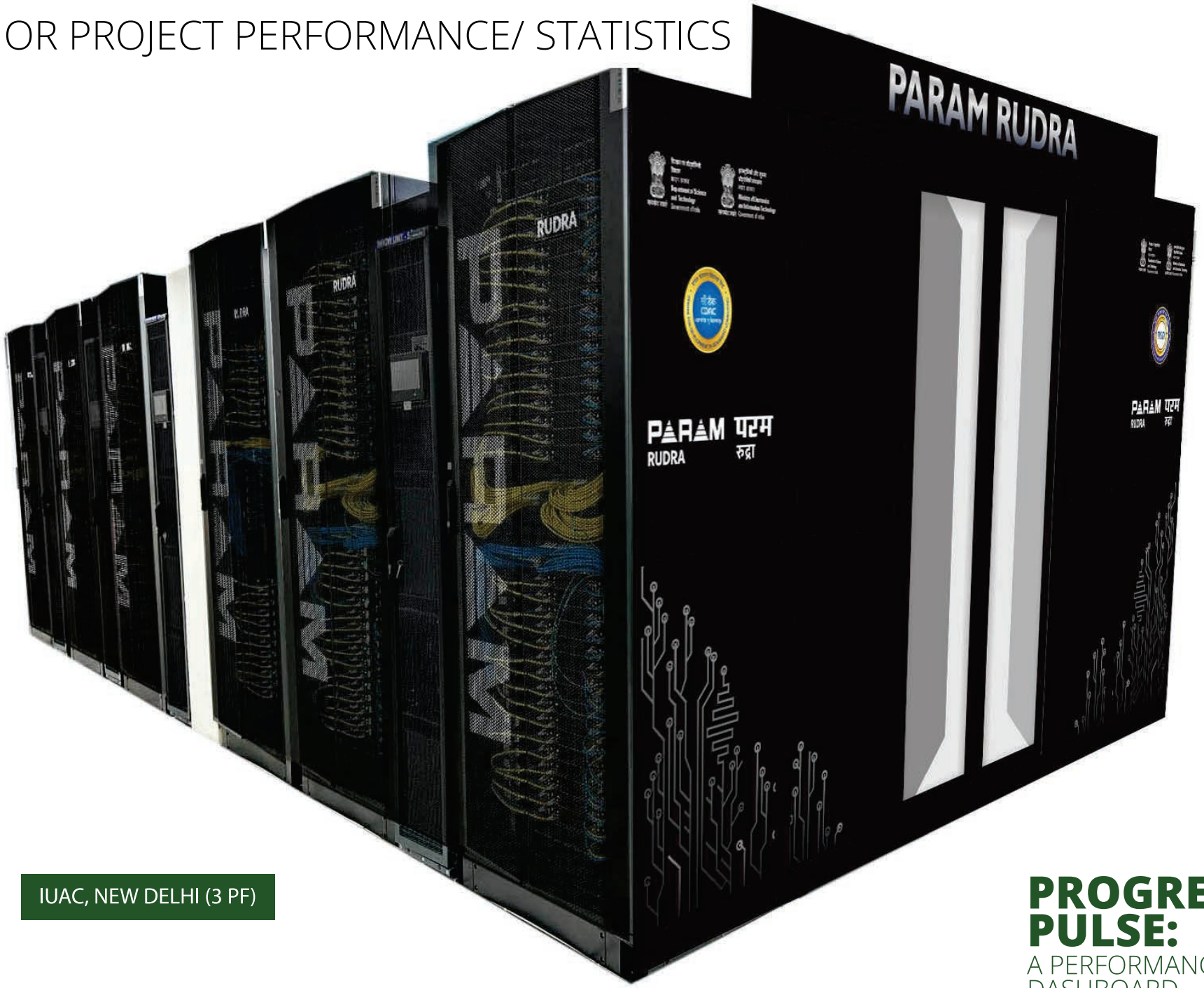
Hon'ble Prime Minister, Shri Narendra Modi virtually launched three PARAM Rudra supercomputers, developed indigenously under the National Supercomputing Mission on September 26, 2024

- 3 PetaFlops PARAM-RUDRA supercomputing facility at Inter-University Accelerator Centre (IUAC) in New Delhi
- 1 PetaFlop PARAM Rudra supercomputing facility at Giant Metrewave Radio Telescope (GMRT)-NCRA, Khodad, Narayangaon, Pune
- 838 Tera Flops PARAM-RUDRA supercomputing facility at S. N. Bose National Centre for Basic Sciences, Kolkata



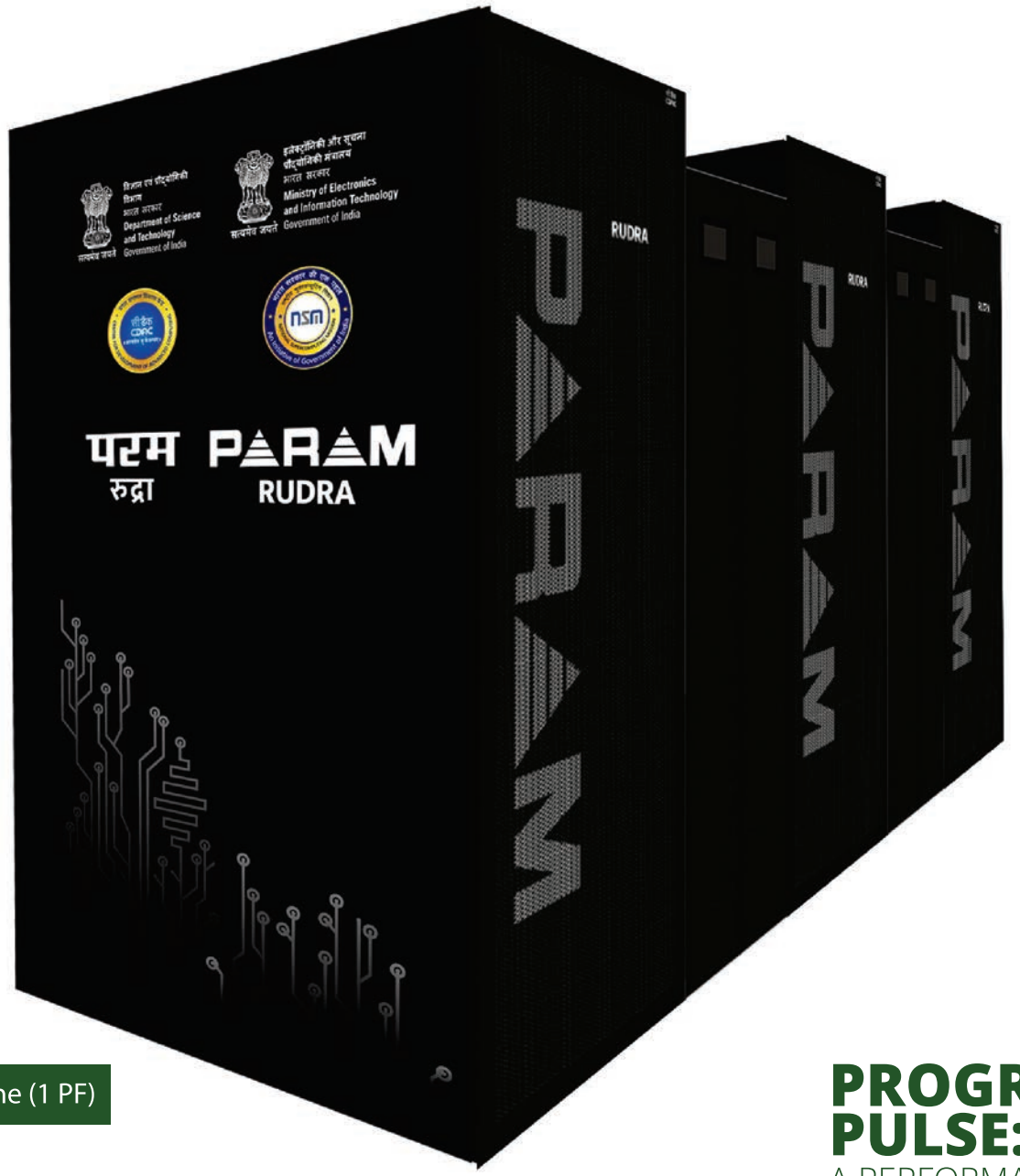



# MAJOR PROJECT PERFORMANCE/ STATISTICS




IUAC, NEW DELHI (3 PF)

# MAJOR PROJECT PERFORMANCE/ STATISTICS




GMRT/NCRA, Pune (1 PF)

**PROGRESS PULSE:**
A PERFORMANCE DASHBOARD

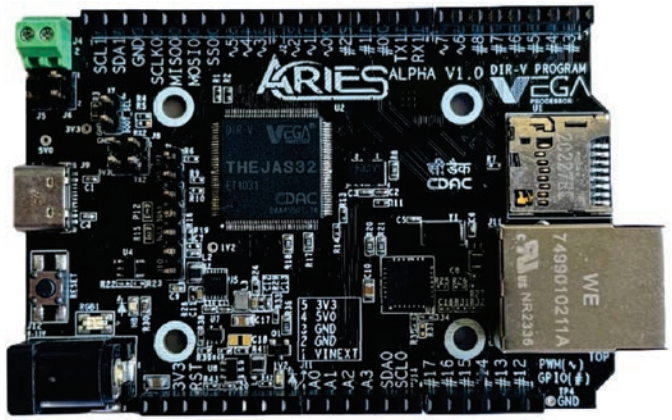
# MAJOR PROJECT PERFORMANCE/ STATISTICS


SNBNCBS, Kolkata (838 TF)

# MAJOR PROJECT PERFORMANCE/ STATISTICS

**Digital India RISC-V (DIR-V) Program**

As a part of DIR-V program, C-DAC, Thiruvananthapuram have indigenously developed hardware platforms named ARIES ALPHA and ARIES NOVA.




**ARIES ALPHA**

ARIES ALPHA v1.0 is a feature-rich indigenous hardware platform based on THEJAS32 SoC which includes VEGA ET1031 Microprocessor. This board is configured specifically for Ethernet, CAN and SDcard applications. ENC28J60 (Ethernet controller) adopts IEEE 802.3 compatible with ethernet or can be used as an ethernet controller. In other words, ENC28J60 is a micro (chip) with one function that is able to encapsulate data using internet or intranet network according to chip configuration which works at 20MHz-25MHz frequency and voltage between 3.14VDC-3.45VDC with SPI Interface. It provides a fast and reliable connectivity to IoT devices. Other peripherals available in this board include MCP2515 which is a stand-alone CAN controller developed to simplify applications that require interfacing with a CAN bus, Micro SD Memory Card Connector with SPI interface, LEDs etc.

**ARIES NOVA**

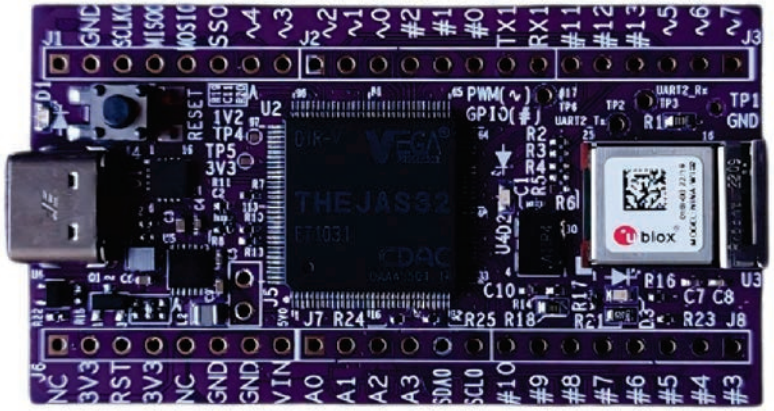
ARIES NOVA v1.0 is a comprehensive, robust indigenous hardware platform based on THEJAS32 SoC which includes VEGA ET1031 Microprocessor; is targeted to facilitate



# MAJOR PROJECT PERFORMANCE/ STATISTICS

learning and development of Internet of Things (IoT) applications. This board features a classic, breadboard-friendly design with a compact footprint, making it easy to attach to a breadboard. It comes with a USB Micro C connector and is ideal for wearable applications, affordable robotics and interactive projects that need a small, easy-to-use microcontroller. It is built upon a RISC-V ISA compliant VEGA Processor and can be used for any basic IoT and pico-network applications. Other peripherals/sensors available in this board include 3D accelerometer and 3D gyroscope, IC Authentication chip.

Around 150 ARIES development boards were sold to different sectors like Industries, Academic Institutions and Enthusiasts for developing a broad range of applications across professional, educational, and hobbyist environments driving innovation and skill development at multiple levels.




**PROGRESS PULSE:**
A PERFORMANCE DASHBOARD

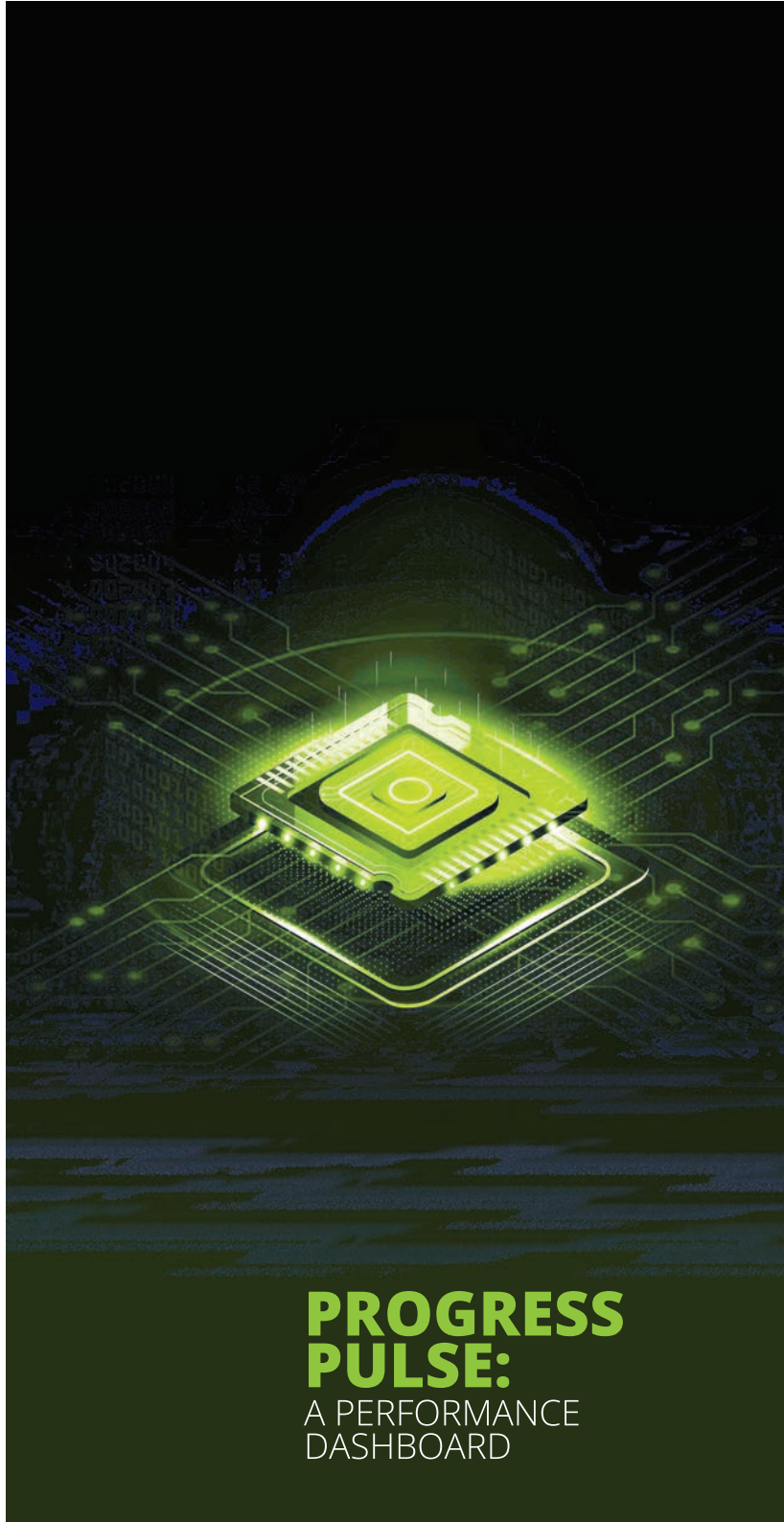
# MAJOR PROJECT PERFORMANCE/ STATISTICS

**Design Linked Incentive (DLI)**

The Design Linked Incentive (DLI) Scheme aims to provide financial incentives as well as design infrastructure support across various stages of development and deployment of semiconductor design for Integrated Circuits (Ics), Chipsets, System on Chips (SoCs), Systems & IP Cores and semiconductor linked design with an aim to achieving significant indigenization in semiconductor and electronic products and IPs deployed in the country, thereby facilitating import substitution and value addition in electronics sector in the next 5 years. As per the approval accorded by Cabinet, DLI Scheme is being implemented by C-DAC.

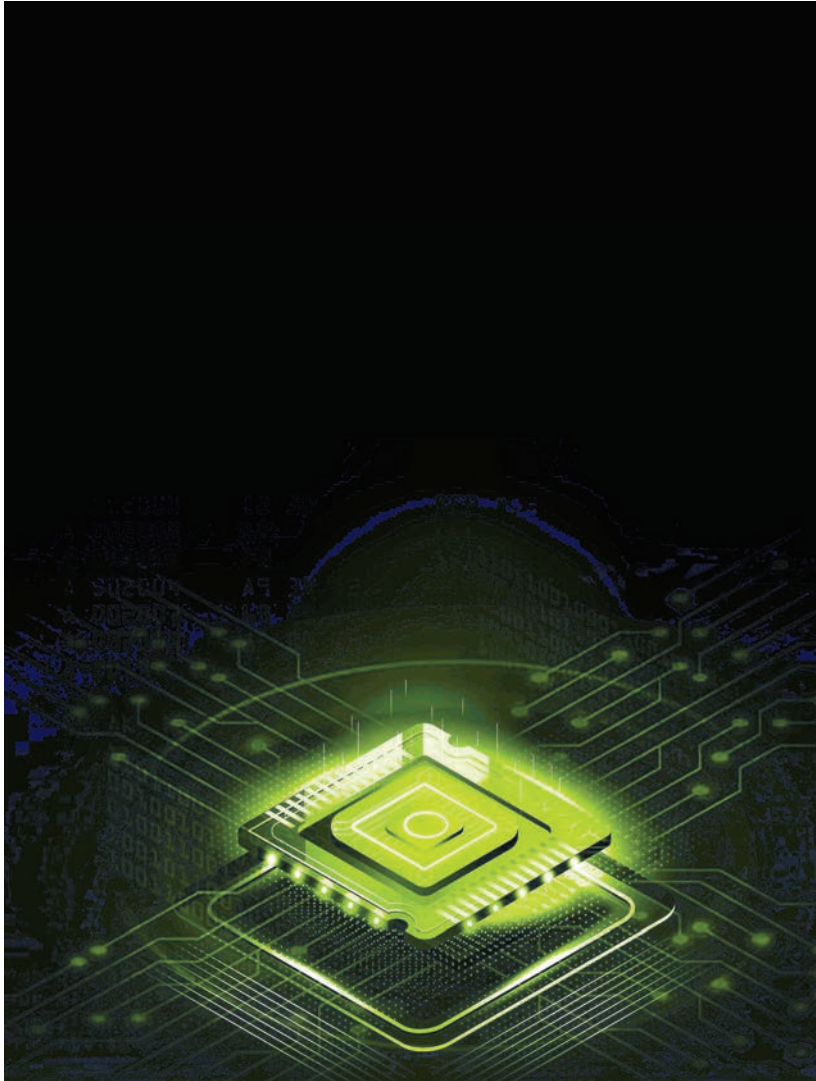
The Design Linked Incentive (DLI) Scheme shall offer financial incentives as well as design infrastructure support across various stages of development and deployment of semiconductor design for Integrated Circuits (Ics), Chipsets, System on Chips (SoCs), Systems & IP Cores and semiconductor linked design over a period of 5 years.

| Application Status as on October 07, 2024 | | |
|---|---|---|
| DLI Applications | Proposals | |
| | Product Design linked Incentive | EDA Tools Access Request |
| Proposals Received | 48 | 36 |
| Evaluation Ongoing | 9 | 1 |
| Proposals Approved | 13 | 33 |
| Proposals Rejected | 26 | 2 |



# MAJOR PROJECT PERFORMANCE/ STATISTICS

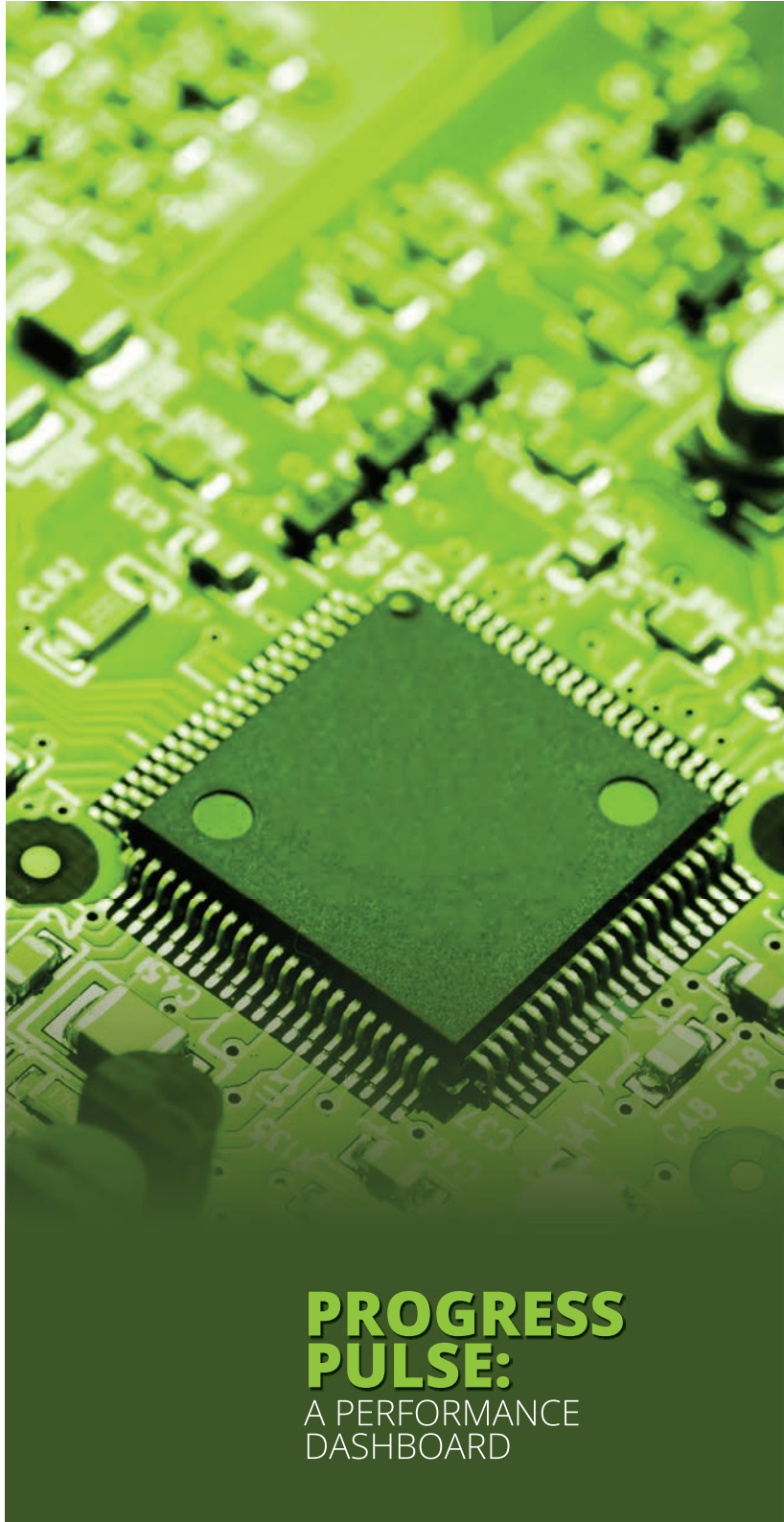
| Approved applicants for Fiscal Support under DLI Scheme (PDLI) | | | |
|---|---|---|---|
| **Sr. No** | **Applicants** | **Approved incentives under the DLI (Rs. In Lakhs)** | **Funds disbursed (Rs. In Lakhs)** |
| 1 | DV2JS Innovation LLP Pvt Ltd | 341.5 | 15 |
| 2 | Vervesemi Microelectronics Pvt Ltd | 1353.0 | NIL |
| 3 | Fermionic Design Pvt Ltd | 413.9 | NIL |
| 4 | Morphing Machines Pvt Ltd | 1024.4 | 22 |
| 5 | Calligo Technologies Pvt Ltd | 1475.5 | 92 |
| 6 | Sensesemi Technologies Pvt Ltd | 1500 | NIL |
| 7 | Saankhya Labs Pvt Ltd | 1138.297 | 216 |
| 8 | Aheesa Digital Innovations Pvt Ltd | 1500.0 | 500 |
| 9 | Netrasemi Pvt Ltd | 1500.0 | 248 |
| 10 | Green PMU Semi Pvt Ltd | 484.00 | NIL |
| 11 | WiSig Networks Pvt Ltd | 1267.785 | NIL |
| 12 | MosChip Technologies Pvt Ltd | 1265 | NIL |
| 13 | Mindgrove Technologies Pvt Ltd | 1500 | NIL |
| **Total** | | **14763.38** | **1092 (disbursed)** |



# MAJOR PROJECT PERFORMANCE/ STATISTICS

| Achievements – DLI Funded Applicants | |
|---|---|
| **Applicant Name** | **Achievements and Outcomes** |
| **Fermionic Design Private Limited** | • Successfully taped out X -band Beamformer 8 -12GHz 4T4R IC.<br>• Successfully demonstrated the silicon performance to customers.<br>• Raised VC funding of Rs 50 Cr |
| **Netrasemi Pvt Ltd** | • Raised Investor funding of Rs 8.3 Cr<br>• Tape expected in Dec' 2024 |
| **Green PMU Semi Pvt Ltd** | • Tape out done in Feb' 2024<br>• Raised funding of Rs 6.5 Lacs from WxBunka Foundation, Japan |
| **Morphing Machines Pvt Ltd** | • Raised VC funding of Rs 23 Cr |
| **Calligo Tech. Pvt Ltd** | • Received the 1st version of fabricated design in March' 2024<br>• Raised Investor funding of Rs 1.15 Cr |
| **Sensemi Technologies Pvt Ltd** | • Architecture and Specifications finalised with the potential customer<br>• Raised VC funding of Rs 80 Lacs. |

| Outcomes – DLI Scheme | |
|---|---|
| **Manpower Generated** | 244 |
| **IP Cores Generated** | 32 |
| **SoC Fabricated** | 3 |



# MAJOR PROJECT PERFORMANCE/ STATISTICS

**Mobile Seva (Mobile Service Delivery Gateway)/ Mobile Seva Appstore**

Mobile Seva platform is an innovative initiative aimed at mainstreaming mobile governance in the country. It provides an integrated whole-of-government platform for all Government departments and agencies in the country for delivery of public services to citizens and businesses over mobile devices using SMS, IVRS, CBS, LBS, apps. It is a centrally hosted cloud-based mobile enablement platform, which allows the departments to expeditiously start offering their services through mobile devices anywhere in India, without having to invest heavily in creating their separate mobile platforms. Over 4966 accounts of government departments and agencies with over 6200 cr+ transactions are integrated with Mobile Seva platform.

| Mobile Seva platform | | |
|---|---|---|
| | **April 2012 to September 2024** | **July 2024 to September 2024** |
| **Accounts of Dept/Agencies integrated** | 4966 | 66 |
| **No of Push SMS Transaction** | 6200 Cr | 190 Cr |

# MAJOR PROJECT PERFORMANCE/ STATISTICS

**e-Hastakshar / e-Sign:**

As a flagship initiative within the Government's Digital India program, C-DAC has introduced e-Hastakshar, a cutting-edge eSign service that allows citizens to digitally sign documents online in real-time, providing a legally acceptable form and convenient alternative to physical signatures. Over the past year, C-DAC integrated this service with various departments, ministries, and agencies at the Central and State Government levels, as well as Union Territories. C-DAC utilizes service of Unique Identification Authority of India (UIDAI) for on-line authentication and Aadhaar eKYC service. e-Hastakshar service supports Online Aadhaar Authentication Modes - One-time password (OTP), TOTP, Fingerprint, IRIS, Face (Mobile Apps only) based modes of authentication for leveraging eKYC service of UIDAI.

More than 18.41 Cr e-Signs have been offered by C-DAC till September 2024. More than 250 Government agencies are leveraging C-DAC's esign service on production level. Several key new agencies, National Bank for Agriculture and Rural Development (NBARD), National Highways Authority of India (NHAI), Bharat Sanchar Nigam Limited, Chandigarh with existing key agencies Tamil Nadu e-Governance Agency (TNeGA), Employees' Provident Fund Organisation, National Informatics Centre, Centre for eGovernance, Karnataka are leveraging eSign on production level.

| eSigns offered by C-DAC | |
|---|---|
| **July 2016 to September 2024** | **July to September 2024** |
| 18.41 Cr | 1.86 Cr |


**PROGRESS PULSE:**
A PERFORMANCE DASHBOARD

# MAJOR PROJECT PERFORMANCE/ STATISTICS

**eSanjeevani:**

eSanjeevani is the National Telemedicine Service of Ministry of Health & Family Welfare (MoHFW), Government of India. Owing to its widespread and speedy adoption, eSanjeevani has evolved into the world's largest documented telemedicine implementation in the primary healthcare. eSanjeevani – National Telemedicine Service is testimony to the fact that digital health has come of age in India. eSanjeevani has revolutionised primary healthcare in India by bringing health services to the masses in rural areas and isolated communities.

In eSanjeevani network nationally, 1,29,071 Health and Wellness Centres (HWCs) have been registered as spokes and 16,418 hubs have been operationalized. eSanjeevani boasts over 2,22,279 doctors, specialists, and health workers as telemedicine practitioners, operating in all states and union territories of India. It serves approximately 6,30,315 patients daily, with the capacity to handle up to 1 million patients per day. eSanjeevani is operational in all States/UTs across India. However, In Delhi, eSanjeevaniAB-HWC is available from August 2024.

| eSanjeevani Usage Report | | | | |
|---|---|---|---|---|
| | November 2019 to September 2024 | | July 2024 – September 2024 | |
| | Total Tele -Consultations | Registered Doctors | Total Tele - Consultations | Registered Doctors |
| eSanjeevaniAB -HWC | 28,51,00,210 | 58,427 | 3,32,18,228 | 2,984 |
| eSanjeevaniOPD | 1,17,62,861 | 11,970 | 3,29,522 | 1,771 |
| **eSanjeevani** | **29,68,63,071** | **70,397** | **3,35,47,750** | **4,755** |

# MAJOR PROJECT PERFORMANCE/ STATISTICS

**Hospital Management System- e-Sushrut:**

e-Sushrut- C-DAC's Hospital Management Information System is a major step towards adapting technology to improve healthcare. HMIS incorporates an integrated computerized clinical information system for improved hospital administration and patient health care. It is integrated with ABDM Mile Stones and provides an accurate, electronically stored medical record of the patient. A data warehouse of such records can be utilized for statistical requirements and for research. The real time HMIS streamlines the treatment flow of patients and simultaneously empowering workforce to perform to their peak ability, in an optimized and efficient manner.

| e-Sushrut Usage Report | | |
|---|---|---|
| Particulars | No. of Patient Visited | |
| | Till September 2024 | July 24- September 24 |
| e-Sushrut for AIIMS (16 No's) | 2,70,75,297 | 30,19,178 |
| e-Sushrut PAN Railways HMIS | 4,13,89,027 | 47,52,631 |
| SAIL BSL e-Sushrut HMIS | 8,62,933 | 1,51,256 |
| HMIS-NHM UP | 2,08,44,562 | 37,71,863 |
| HMIS- DGME UP | 1,35,23,110 | 25,21,748 |
| Punjab | 5,21,85,037 | 79,89,081 |
| Telangana | 2,81,37,989 | 47,11,969 |
| Odisha | 4,90,14,548 | 48,93,165 |
| NIMS HMIS Hyderabad | 43,59,117 | 2,19,255 |
| HMIS Maharashtra | 1,62,44,716 | 22,10,349 |
| IGIMS Patna | 10,86,731 | 3,00,540 |
| HMIS TN | 14,41,071 | 7,76,119 |
| HMIS HP | 12,42,532 | 8,53,116 |
| SAIL RSP e-Sushrut HMIS | 2,68,816 | 1,12,476 |
| Goa State | 20,92,843 | 2,80,661 |
| GIMS | 6,95,421 | 82,224 |
| Arunachal Pradesh | 16,88,215 | 2,10,162 |
| Sikkim | 7,24,186 | 1,82,925 |
| NHPC | 2,33,930 | 33,791 |



**PROGRESS PULSE:**
A PERFORMANCE DASHBOARD

# MAJOR PROJECT PERFORMANCE/ STATISTICS

**Blood Bank Management System- e-RaktKosh :**

e-RaktKosh is a comprehensive IT solution to connect, digitize and streamline the workflow of blood banks. It has on-boarded more than 4200 blood banks on its platform. e-RaktKosh Portal is also extensively used by the citizens for requirements related to blood, blood banks' location identification, blood stock Enquiry, maintenance of donation repository etc. e-RaktKosh is integrated with various state-wide blood bank solutions & has become a single data repository for management of data regarding blood availability, blood-related products, blood donation camps, donor repository etc.

| eRaktKosh | | |
|---|---|---|
| **Description** | **Year 2017 to September 2024** | **July 2024 to September 2024** |
| Total Blood Bank Registered | 4,240 | 47 |
| Total Govt Blood Bank Registered | 1,269 | 4 |
| Number of Active Blood Banks | 3,239 | 3,239 |
| Number of Camp Conducted | 1,43,193 | 19,130 |
| Number of Donor Registered | 75,25,648 | 15,09,388 |

# MAJOR PROJECT PERFORMANCE/ STATISTICS

**e-Aushadhi - Drugs and Vaccine Distribution Management System (DVDMS):**

It is a web-based programme that manages the supply chain of pharmaceutical supplies such as medications, sutures, and surgical items needed by various Drug Warehouses/Drug Stores. The primary goal of DVDMS is to determine the pharmaceutical demands of the state drug programme and the MoHFW's national level programme for various drug warehouses/drug stores so that all necessary materials/drugs are always available to be given to patients/beneficiaries in the state without delay. This involves item classification/categorization, item codification, item quality control, and lastly issuing pharmaceuticals to patients, who are the end consumers in the chain.

| eAushadhi (DVDMS) - Coverage across India along with Procurement and Issue Details for Drugs | | | | | |
|---|---|---|---|---|---|
| Sr.No | Institutions | January 2023 to September 2024 (Amount in Crore) | | July 2024 to September 2024 (Amount in Crore) | |
| | | Procurement Value | Distribution Value | Procurement Value | Distribution Value |
| A. States Implementation | | | | | |
| 1 | Andhra Pradesh | 1778.62 | 1249.63 | 102.51 | 126.80 |
| 2 | Assam | 629.00 | 67.47 | 76.00 | 7.53 |
| 3 | Bihar | 1136.00 | 1082.61 | 155.29 | 154.73 |
| 4 | Gujarat | 852.09 | 930.55 | 134.14 | 103.22 |
| 5 | Himachal Pradesh | 189.00 | 181.90 | 19.00 | 20.90 |
| 6 | Jharkhand | 49.61 | 77.00 | 7.00 | 12.00 |
| 7 | Madhya Pradesh | 1105.75 | 846.54 | 153.20 | 117.23 |
| 8 | Maharashtra (PHD & DMER) | 896.24 | 805.51 | 52.26 | 102.23 |
| 9 | Punjab | 6227.56 | 7977.18 | 411.3 | 1129.2 |
| 10 | Rajasthan | 3884.31 | 3328.53 | 652.96 | 460.52 |
| 11 | Telangana | 941.20 | 858.62 | 81.74 | 88.11 |
| 12 | Uttarakhand | 87.46 | 83.08 | 13.63 | 11.05 |
| 13 | Uttar Pradesh | 1697.55 | 1171.50 | 213.22 | 168.68 |

Continued....



# MAJOR PROJECT PERFORMANCE/ STATISTICS

## e-Aushadhi - Drugs and Vaccine Distribution Management System (DVDMS)

| eAushadhi (DVDMS) - Coverage across India along with Procurement and Issue Details for Drugs | | | | | |
|---|---|---|---|---|---|
| Sr.No | Institutions | January 2023 to September 2024 (Amount in Crore) | | July 2024 to September 2024 (Amount in Crore) | |
| | | Procurement Value | Distribution Value | Procurement Value | Distribution Value |
| **B. Union Territories (UT) Implementation** | | | | | |
| 1 | Jammu and Kashmir | 630.37 | 579.6 | 43.65 | 113.98 |
| 2 | Puducherry | 126.95 | 92.15 | 50.7 | 19.39 |
| 3 | Lakshadweep | 535.11 | 910.27 | 0 | 452.78 |
| 4 | Chandigarh | 0.00 | 4.96 | 0 | 2.48 |
| **C. Centralized / National Implementations** | | | | | |
| 1 | DGAFMS - Ministry of Defence (Army, Navy, Airforce and subsidaries) | 633.33 | 615.03 | 53.29 | 109.785 |
| 2 | Central Medical Services Society - MoHFW | 3933.07 | 1923.41 | 550.52 | 425.34 |
| 3 | Dept of Family Planning -MoHFW | 653.87 | 553.26 | 551.24 | 187.74 |
| 4 | National Tuberclosis Elimination Programe -MoHFW | 731.94 | 4528.68 | 7.21 | 218.71 |
| 5 | Medical Stores Organization - MoHFW | 335.09 | 471.34 | 48.99 | 52.70 |
| **D. Other Implementations** | | | | | |
| 1 | Directorate of Medical Insurance - Govt of Andhra Pradesh | 60.24 | 7.58 | 0 | 0.7732 |

# MAJOR PROJECT PERFORMANCE/ STATISTICS

**IPDMS 2.0, Integrated Pharmaceutical Database Management System 2.0**

NPPA-National Pharmaceutical Pricing Authority (NPPA) was constituted vide Government of India Resolution dated 29th August, 1997 as an attached office of the Department of Pharmaceuticals (DoP), Ministry of Chemicals & Fertilizers to independently monitor and regulate the pricing of drugs (including medical devices), monitoring their prices and to ensure availability and accessibility of medicines at affordable prices.

IPDMS 2.0, Integrated Pharmaceutical Database Management System 2.0: An integrated responsive web-based application having integrated functional flow for drugs and medical devices price monitoring and regulation has been designed and deployed as IPDMS version 2.0.

The Integrated Pharmaceutical Database Management System 2.0 and Pharma Sahi Daam 2.0 were inaugurated during the celebration of NPPA's silver jubilee foundation day on 29th August 2022 by the Honourable Union Health Minister, Shri Mansukh Mandaviya.

The detailed usage of IPDMS is as follows-



# MAJOR PROJECT PERFORMANCE/ STATISTICS

| Integration Pharmaceuticals Database Management System, IPDMS 2.0 National Pharmaceuticals Pricing Authority, (NPPA) | | |
|---|---|---|
| **Activities done by Pharma/Medical Devices Companies & NPPA** | **Till September 2024** | **July 2024- September 2024** |
| **Total Companies (Drugs & Medical Devices) Registered in the IPDMS 2.0** | 1570 (1402- Drugs, 170 - Medical Devices) | 52 (46 - Drugs, 6 - Medical Devices) |
| **Number of Manufacturing Unit verified by the companies** | 7118 | 426 |
| **Number of Drugs verified by companies** | 50557 | 2639 |
| **Medical Devices Plant Registered** | 494 | 5 |
| **Medical Devices Registered** | 52777 | 4190 |
| **Quarterly Stock Collection** | 14299 | 3068 |
| **State Pricing Monitoring Resource Unit (PMRU) registered.** | 31 | 0 |
| **Form-I (Application for Price Fixation) Submitted** | 466 | 54 |
| **Form-II (Submission of Revised Prices) Submitted** | 13581 | 302 |
| **Form-III (Quarterly Return) Submitted** | 43744 | 7684 |
| **Form-IV (Discontinuation of Production) Submitted** | 122 | 18 |
| **Form-V (Price List) Submitted** | 65917 | 6747 |
| **Form – VI (Medical Devices) Submitted** | 39844 | 6028 |
| **Complaints Registered through Web and Mobile Apps** | 5380 | 481 |
| **Legal Cases Registered for Overcharging** | 678 | 0 |

The Ceiling and Retail Price calculations of drugs with defined overcharging workflows linked with 31 state PMRUs have been automated and implemented in IPDMS 2.0 application. Individual can verify ceiling price and register overcharging complaints through mobile apps.

# MAJOR PROJECT PERFORMANCE/ STATISTICS

**Cyber GYAN**

Cyber Gyan is a significant project entrusted to C-DAC Noida by the Ministry of Electronics and Information Technology (MeitY). Titled "Cyber Security Scenario-Based Self-Paced Learning Training Facility," the project is designed to equip SC, ST, and Economically Weaker Section (EWS) undergraduate and postgraduate students from government colleges across 8 North-Eastern states and 4 other states—Uttar Pradesh, Haryana, Gujarat, and Kerala-with critical cyber security skills.

The initiative aims to develop skilled manpower in the rapidly evolving domain of cyber security, essential for protecting critical infrastructure from cyber threats and attacks. Now, this initiative has extended its opportunities nationwide, inviting students from government engineering colleges across India to participate, fostering a generation of cyber security experts capable of addressing modern digital challenges.

| State | February 2022 till September 2024 | July 2024 - September 2024 |
|---|---|---|
| Andhra Pradesh | 97 | 97 |
| Arunachal Pradesh | 116 | 8 |
| Assam | 233 | 18 |
| Bihar | 113 | 112 |
| Chhattisgarh | 68 | 68 |
| Delhi | 217 | 217 |
| Goa | 1 | 1 |
| Gujarat | 311 | 94 |
| Haryana | 306 | 26 |
| Himachal Pradesh | 14 | 14 |
| Jammu and Kashmir | 117 | 117 |
| Jharkhand | 48 | 48 |
| Kerala | 153 | 39 |

Continued....



# MAJOR PROJECT PERFORMANCE/ STATISTICS

| State | February 2022 till September 2024 | July 2024 - September 2024 |
|---|---|---|
| Madhya Pradesh | 265 | 265 |
| Maharashtra | 46 | 46 |
| Manipur | 131 | 59 |
| Meghalaya | 90 | 1 |
| Mizoram | 79 | 3 |
| Nagaland | 5 | 2 |
| Odisha | 9 | 9 |
| Puducherry | 11 | 11 |
| Punjab | 95 | 95 |
| Rajasthan | 56 | 56 |
| Sikkim | 12 | 3 |
| Tamil Nadu | 236 | 236 |
| Tripura | 88 | 7 |
| Uttar Pradesh | 927 | 159 |
| Uttarakhand | 69 | 69 |
| West Bengal | 121 | 121 |
| **Grand Total** | **4034** | **2001** |

# MAJOR PROJECT PERFORMANCE/ STATISTICS

**Works and Accounts Management Information System (WAMIS)**

The challenges posed by rapid economic growth on physical infrastructure and improve governance, a comprehensive approach is necessary. Here are specific areas to focus on:

- Shift from Inputs to Outcomes
- Monitoring and Evaluation (M&E)
- Addressing Lack of Baseline Data
- Follow-Up Actions on M&E Results
- Mechanisms for Data Analysis

The Works and Accounts Management Information System (WAMIS) plays a pivotal role in addressing these challenges by streamlining project management across its lifecycle. Key components include Budget Preparation and Management, Works Management, e-Estimates and e-Measurement Book, E-Billing, Accounting, Mobile App for Site Surveys, Integration with Other Departments, Comprehensive MIS - WAMIS Analytics.

By addressing these specific areas and utilizing WAMIS effectively, governments can enhance their ability to manage infrastructure projects, improve service delivery, and achieve sustainable economic growth.



**PROGRESS PULSE:**
A PERFORMANCE DASHBOARD

# MAJOR PROJECT PERFORMANCE/ STATISTICS

| Transactions details of WAMIS | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Department/ States | September 2019 - September 2024 | | | | July 2024 - September 2024 | | | |
| | Accounts | | Billing | | Accounts | | Billing | |
| | Vouchers | Amount (Crore) | Bills | Amount (Crore) | Vouchers | Amount (Crore) | Bills | Amount (Crore) |
| **Odisha** | | | | | | | | |
| Forest Environment and Climate Change | 40,870 | 347 | 35,135 | 351 | 4,106 | 58 | 3,221 | 55 |
| Rural Development | 227,527 | 21,242 | 163,405 | 20,421 | 7,763 | 1,564 | 3,753 | 1,021 |
| Works | 568,887 | 59,554 | 452,253 | 71,774 | 21,705 | 3,391 | 8,180 | 2,303 |
| Water Resources | 435,553 | 37,649 | 285,426 | 60,492 | 17,388 | 1,721 | 7,430 | 1,242 |
| Housing & Urban Dev. | 131,490 | 3,235 | 92,518 | 3,845 | 3,187 | 96 | 2,263 | 147 |
| Panchayati Raj & Drinking Water | 149,908 | 17,650 | 139,566 | 45,198 | 4,358 | 328 | 3,557 | 1,251 |
| Commerce & Transport | 2,909 | 77 | 1,593 | 75 | 171 | 4 | 104 | 2 |
| Fisheries And Animal Resources Development | 1,406 | 264 | 829 | 269 | 71 | 46 | 37 | 45 |
| Odisha Mining Corporation | 68 | 0 | 3,194 | 506 | 0 | 0 | 416 | 89 |
| **TOTAL (A)** | **1,558,618** | **140,019** | **1,173,919** | **202,931** | **58,749** | **7,208** | **28,961** | **6,155** |

Continued....

**PROGRESS PULSE:**
A PERFORMANCE DASHBOARD

# MAJOR PROJECT PERFORMANCE/ STATISTICS

| Transactions details of WAMIS | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Department/ States | September 2019 - September 2024 | | | | July 2024 - September 2024 | | | |
| | Accounts | | Billing | | Accounts | | Billing | |
| | Vouchers | Amount (Crore) | Bills | Amount (Crore) | Vouchers | Amount (Crore) | Bills | Amount (Crore) |
| **Jharkhand** | | | | | | | | |
| Road Construction | 51,740 | 16,599 | 10,398 | 12,420 | 1,308 | 952 | 340 | 813 |
| Rural Works & Rural Development | 90,430 | 10,540 | 28,793 | 9,642 | 4,778 | 1,427 | 2,659 | 1,361 |
| Building | 82,870 | 3,688 | 19,522 | 3,354 | 4,805 | 290 | 1,153 | 258 |
| Water Resources | 50,679 | 7,849 | 12,400 | 6,802 | 1,969 | 740 | 920 | 707 |
| Drinking Water & Sanitation | 70,701 | 5,161 | 17,241 | 4,217 | 1,612 | 129 | 480 | 92 |
| Energy | 10,717 | 405 | 3,603 | 385 | 442 | 18 | 130 | 16 |
| Forest, Environment & Climate Change | 377,635 | 1,715 | 0 | 0 | 16,577 | 62 | 0 | 0 |
| **TOTAL (B)** | **734,772** | **45,957** | **91,957** | **36,820** | **31,491** | **3,618** | **5,682** | **3,247** |
| **Maharashtra** | | | | | | | | |
| Public Works | 1,213,276 | 165,318 | - | - | - | - | - | - |
| Water Resources | 65,368 | 7,270 | - | | 8,806 | 587 | - | - |
| Forest | 2,943,019 | 37,645 | - | - | 98,585 | 1,311 | - | - |
| **TOTAL (C)** | **4,221,663** | **210,232** | - | - | **107,391** | **1,898** | - | - |
| **TOTAL (A+B+C)** | **6,515,053** | **396,208** | **1,265,876** | **239,751** | **197,631** | **12,724** | **34,643** | **9,402** |



**PROGRESS PULSE:**
A PERFORMANCE DASHBOARD

# MAJOR PROJECT PERFORMANCE/ STATISTICS

## Information Security Education and Awareness (ISEA) Project Phase –III

| ISEA Activities | January 2024 to September 2024 | July 2024 to September 2024 |
|---|---|---|
| | Total number of Candidates | Total number of Candidates |
| **Generating highly skilled & certified Cyber Security Professionals - CISOs** | 170 officers were trained as Associate/ Deputy CISO/CISOs from various critical sector organizations at National level. | C-DAC Hyderabad organized a 4-day training and certification program on "Level-1: ICS Security Engineer Courseware Sector-Specific Operational Technology (OT) / Industrial Control System (ICS) Security" from 03-06 Sep 2024 at C-DAC Hyderabad under ISEA Project Phase-III by MeitY. The program had participation from 43 CISO team members/ officers, ranging from Assistant Engineers to General Managers (Deputy CISO/CISOs), representing sectors such as Tata Power, Delhi Metro Rail Corporation (DMRC), Durgapur Power, West Bengal and Indian Oil Corporation Limited (IOCL). |
| **Cyber Aware Digital Naagriks (Mass Awareness)**<br>• **Cyber Hygiene, Security & Privacy**<br>• **Role based awareness, progression pathways**<br>• **Mass Awareness** | As part of "The National Awareness Campaign on Information Security Education and Awareness (ISEA) Program – Phase III a total of 86 Awareness workshops / Training was organized by covering 41,503 participants. | As part of "Cyber Aware Digital Naagrik (Mass Awareness Program) as part of Information Security Education and Awareness (ISEA) Program – Phase III a total of 26 Awareness workshops/ Trainings were organized by covering 21,839 participants. |


**PROGRESS PULSE:**
A PERFORMANCE DASHBOARD

# MAJOR PROJECT PERFORMANCE/ STATISTICS

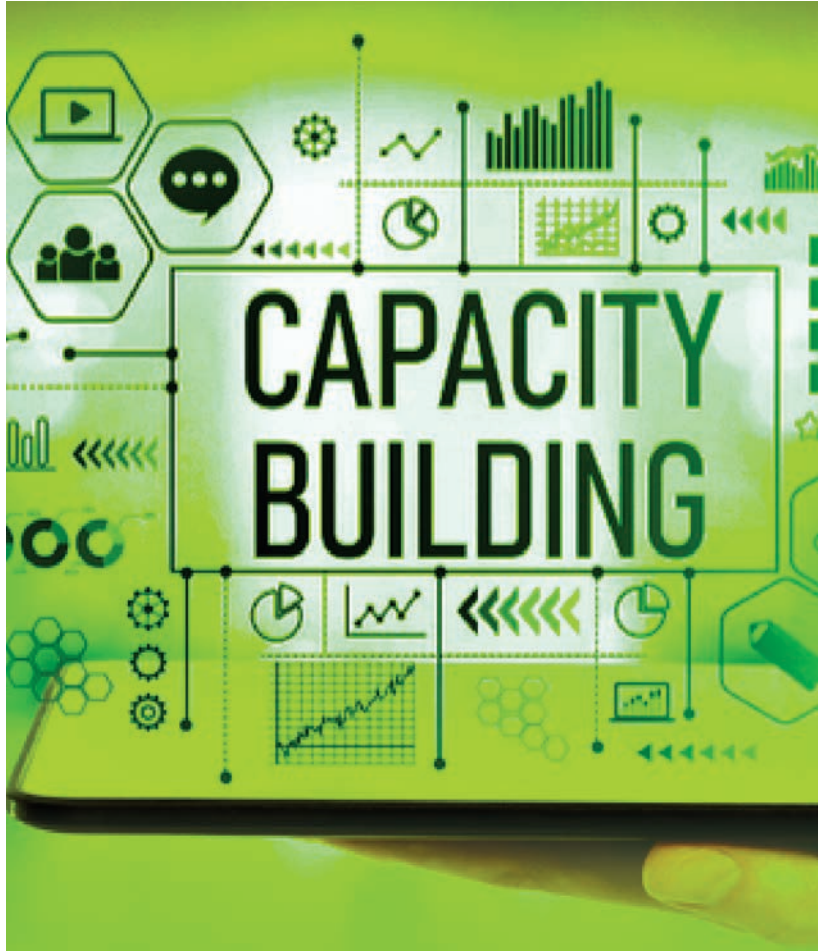
**SwaYaan - Capacity Building for Human Resource Development in Unmanned Aircraft System**

Project 'SwaYaan: Capacity Building for Human Resource Development in Unmanned Aircraft System' is led by C-DAC Hyderabad and IIITDM Kurnool as the Programme Management Unit (PMU) to develop a UAS/Drone Ecosystem across the Nation. The project is implemented in a hub-and-spoke model through 30 institutions including IISc Bangalore, IITs, IIITs, NITs, CDAC, and NIELIT Centres. Under the project, the overall target is to train 45,000+ candidates through various Formal, Non-Formal programs and Research Program such as MTech in UAS/Drones, Minor degree/Retrofitting courses in UAS/Drones, PG Diploma Program, Short term Skilling Courses, Innovation Challenge, Bootcamps, POC, National Workshops, International Conference, Open Online Courses, IPR (Paper and Patents) creation, etc. over a period of 5 Years.

As on date, overall, 413 activities have been conducted across India as part of various Academic programs, Research & innovation activities, Trainings/Workshops and other Knowledge sharing initiatives to train 11,062 participants thereby expediting the spirit of the Nation towards becoming a Global Drone Hub by 2030.

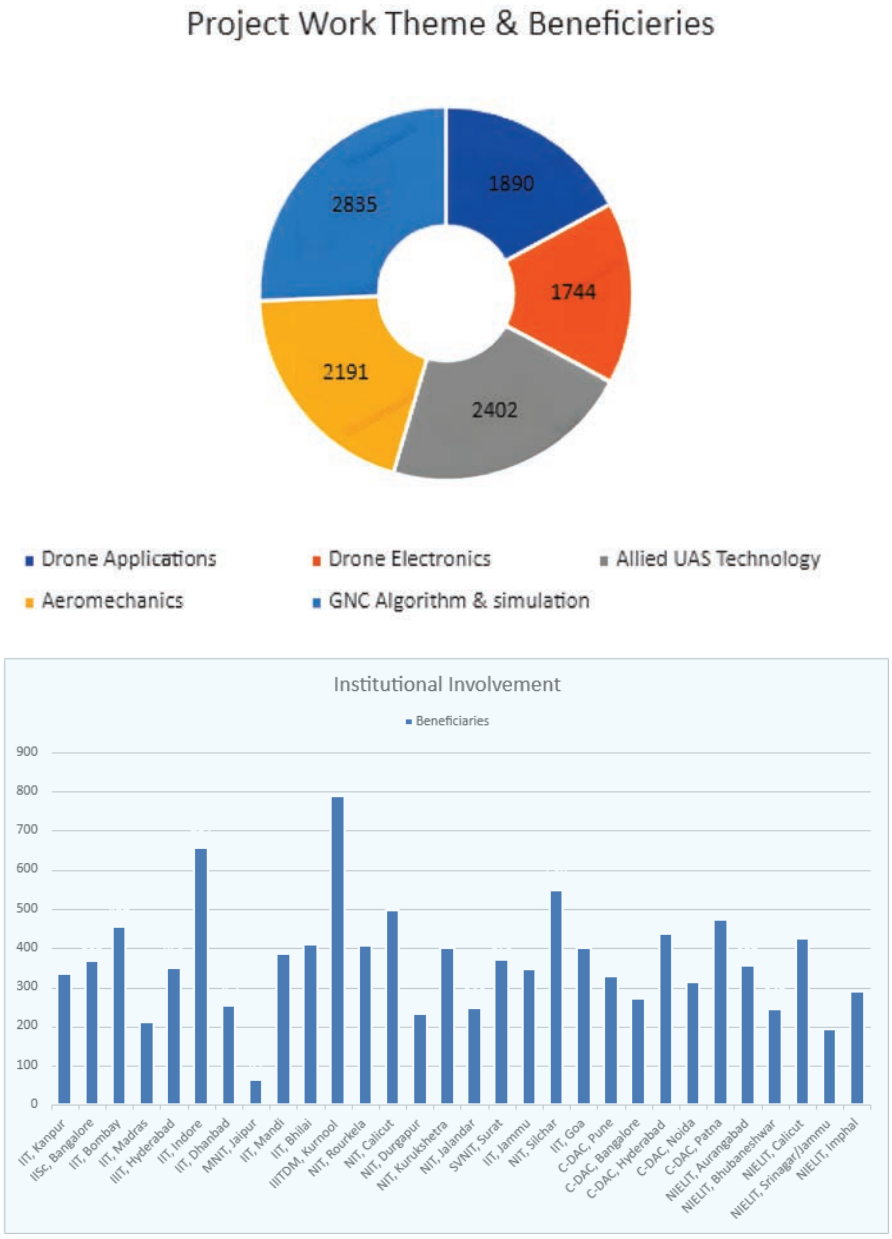
| Program Name | Activity: 2022 -2024 | | | Participants: 2022 -2024 | | |
|---|---|---|---|---|---|---|
| | September 2022 – June 2024 | July 2024 - September 2024 | Total | September 2022 – June 2024 | July 2024 - September 2024 | Total |
| FDP | 13 | 0 | 13 | 326 | 0 | 326 |
| Workshop | 7 | 0 | 7 | 556 | 0 | 556 |
| Bootcamp | 194 | 34 | 228 | 7217 | 1140 | 8357 |
| PG-Diploma | 5 | 0 | 5 | 17 | 0 | 17 |
| POC | 76 | 4 | 80 | 389 | 25 | 414 |
| M-Tech | 1 | 0 | 1 | 11 | 23 | 34 |
| Minor Degree | 3 | 0 | 3 | 66 | 0 | 66 |
| Retrofitting Electives | 44 | 8 | 52 | 906 | 307 | 1213 |
| IPR-Paper | 20 | 2 | 22 | 67 | 7 | 74 |
| IPR-Patent | 2 | 0 | 2 | 5 | 0 | 5 |
| **Total** | **365** | **48** | **413** | **9560** | **1502** | **11062** |

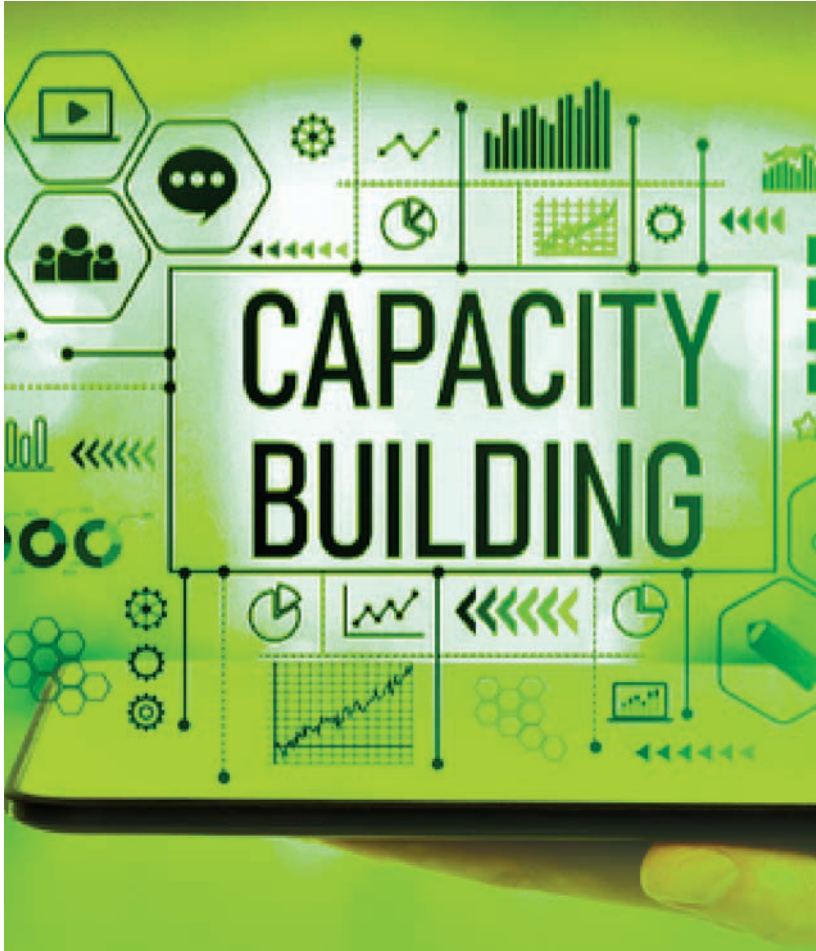





**PROGRESS PULSE:**
A PERFORMANCE DASHBOARD

# MAJOR PROJECT PERFORMANCE/ STATISTICS




**PROGRESS PULSE:**
A PERFORMANCE DASHBOARD


# TECH ROLLOUTS

SYSTEM/ PRODUCT/ SERVICES LAUNCH/ RELEASE

# TECH ROLLOUTS

## LAUNCH OF VISHVASYA-BLOCKCHAIN TECHNOLOGY STACK

Launch of Vishvasya-Blockchain Technology Stack to offer Blockchain-as-a-Service by Shri S. Krishnan, Hon'ble Secretary, MeitY on September 04, 2024. The Secretary, MeitY also unveiled the NBFLite-Lightweight Blockchain Platform, Praamaanik - an innovative blockchain-enabled solution for verifying mobile app origin and National Blockchain Portal.

# TECH ROLLOUTS

## LAUNCH OF STUDENT LIFE CYCLE MANAGEMENT SYSTEM (SLCMS)


Launch of Student Life Cycle Management System (SLCMS) by the Director of AIIMS (All India Institute of Medical Sciences), Bhubaneswar on August 15, 2024. This web-based application is designed to streamline and manage the entire student journey, from admissions to alumni engagement, within health education institutions.

## LAUNCH OF ESTATE OPERATIONS MANAGEMENT SYSTEM (EOMS)


Launch of Estate Operations Management System (EOMS) for the Mumbai Port Authority by Shri Sarbananda Sonowal, Hon'ble Union Minister of Ports, Shipping, and Waterways, on August 23, 2024. The EOMS for Mumbai Port Authority developed by C-DAC, Mumbai aims to provide streamlined management of various aspects Mumbai Port land management.

# TECH ROLLOUTS

## LAUNCH OF ECGC ERP PORTAL


During the Board of Trade Meeting in Mumbai on September 13, 2024, the ECGC ERP Portal was unveiled by Honourable Union Minister for Commerce and Industry, Government of India Shri Piyush Goyal of the Government of India. The portal is a part of ECGC's Enterprise Resource Planning (ERP) System, System for Managing credit Insurance for Leveraging Exports (SMILE), which is developed by C-DAC, Mumbai.

# TECH ROLLOUTS

## LAUNCH OF ERSS-112 Phase 2

ERSS-112 Phase 2 - Launch and Training for Chandigarh, Daman and Diu and Dadra and Nagar Haveli, Mizoram and Puducherry


INTERNATIONAL
OUTREACH

# INTERNATIONAL OUTREACH

## Special Artificial Intelligence Training Programme in Spanish for Delegation of Judges and Judicial Officers from Peru


C-DAC, Noida organised a Specialised Programme in Artificial Intelligence in Spanish for 15 members consisting of Judges and Judicial Officers from Peru during 22nd July 2024 – 9th August 2024. The program was designed to provide comprehensive insights and practical experience in Fundamentals of Artificial Intelligence, Deep Neural Network & AI Trends and Computing Platforms etc. It was offered under ITEC scheme of Ministry of External Affairs, Govt. of India". The delegation of Peruivian Judiciary along with senior officials from MEA and C-DAC, Noida visited Supreme Court and witnessed the proceedings. They were briefed about the e-initiatives taken by the Supreme Court. The delegation also met and interacted with Hon'ble Chief Justice of India, Dr. D.Y. Chandrachud.

# INTERNATIONAL OUTREACH

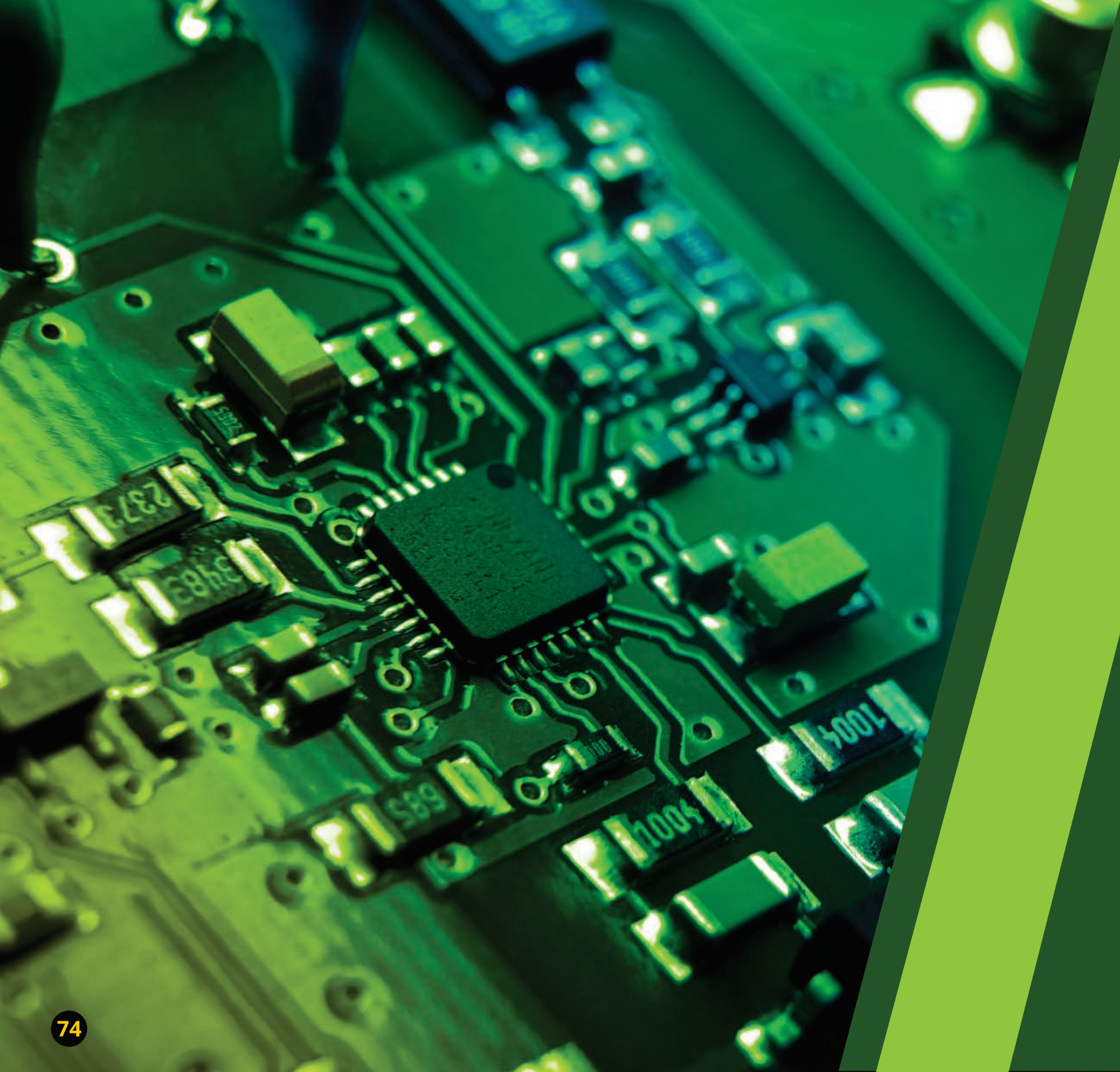
## ITEC Specialised Training Programme on Digital Health


During September 2024, C-DAC Mohali organised a two-week digital health training programme designed for Nigerian officials. The programme was initiated at the request of the Nigerian government and was conducted under the ITEC programme of the Indian Ministry of External Affairs. The training aimed to equip 28 Nigerian participants with the necessary skills to bolster their nation's healthcare system through digital health initiatives. This initiative provided a valuable platform for the participants to enhance their understanding and expertise in the realm of digital health interventions.

# INTERNATIONAL OUTREACH

## Valedictory Ceremony for Certificate Course in Data Analysis using Power BI


A two-week Certificate Course in Data Analysis using Power BI (CCDAPBI), organized by C-DAC, Delhi, successfully concluded on August 12th, 2024. Fourteen participants from Argentina, Congo, Ghana, Laos, Myanmar, Nepal, Nicaragua, Nigeria, Mozambique, Syria, Senegal, Uganda, Vietnam, and Zimbabwe completed the course. The programme was conducted under the ITEC Scheme of the Ministry of External Affairs, Government of India, and commenced on July 29th, 2024.



# EVENTS

# Hon'ble Union Health Minister visit to AIIMS Jammu


**On July 07, 2024, C-DAC gave the Honorable J.P. Nadda Ji, the Health Minister, a demonstration of the e-Sushrut (HMIS).**

C-DAC expands its digital health initiative by integrating AIIMS Jammu onto its e-Sushrut HMIS platform. This marks a significant milestone, as AIIMS Jammu becomes the 16th institute to leverage C-DAC's affordable healthcare IT solution. The platform's implementation was recently reviewed by the Union Health Minister during a visit to AIIMS Jammu. The Honourable Minister appreciated the e-Sushrut patient centric Mobile App features such as Rx & Lab report view, ABDM Scan & Share, e-Visit, e-Payments, etc.

# Visit of Hon'ble Secretary, MeitY, Government of India to C-DAC, Thiruvananthapuram


The Model Electric Vehicle Charging Station was inaugurated by the Hon'ble Secretary at C-DAC Thiruvananthapuram, Technopark Campus on August 24, 2024. C-DAC Thiruvananthapuram has developed a range of indigenous AC and DC EV chargers under NaMPET-III program, from 3.3kW to 50kW.

# Establishment of C-DAC Centre of Excellence (CoE) at MCTE, Mhow


The Letter of Intent (LOI) for Establishment of C-DAC Centre of Excellence (CoE) at MCTE, Mhow was signed on September 26, 2024 at MCTE, Mhow in presence of Hon'ble Secretary Shri S. Krishnan, MeitY, Commandant – MCTE and Shri Magesh E., Director General, C-DAC.

## C-DAC partners with MosChip and Socionext

C-DAC has partnered with MosChip® Technologies, and Socionext Inc. for the design and development of a High-Performance-Computing (HPC) Processor SoC based on the Arm® architecture and built on TSMC (Taiwan Semiconductor Manufacturing Company Limited) 5nm technology node. The event was graced by Shri S. Krishnan, Secretary, MeitY; Smt. Sunita Verma, Scientist G and Group Coordinator, MeitY; Shri E Magesh, Director General, C-DAC; Shri. Srinivasa Rao Kakamanu, CEO, MosChip; Shri. Mr. Hisato Yoshida, Deputy President, Socionext Inc.; Shri. Guru Ganasan, Sr. Vice President, President & MD, Arm, India, and other officials from MeitY, C-DAC, MosChip, Socionext Inc. and Arm. A kick-off event was held at C-DAC Delhi on July 1st, 2024.

## ISEA Project Phase III Kicks Off with a 2-Day Appraisal Workshop


The ISEA Project Phase III recently held its inaugural Appraisal Workshop on July 5th and 6th, 2024, at the IIT Madras Campus. This 2-day event brought together 50 key representatives from leading and co-leading institutions within the ISEA community.

# **BACKEND**
# SQUAD

## CISO DESK

- All C-DAC centers are in the process of RISK Assessment/treatment of their ICT Assets
- Comprehensive Cyber Crisis Management Plan, including components such as Detection, Containment, Response, and Recovery, is currently in the process of development.
- A Cyber Crisis Management Plan (CCMP) Training was conducted on August 6, 2024 to all NISO and System Administration and Networking Group of C-DAC Centres by CERTIn at C-DAC Noida
- Cyber Yodha Tournament was initiated to give Cyber Awareness through gamification through GLAMS platform developed by C-DAC Patna and conducted for all C-DAC employees as part of Cyber Jaagrookta Diwas on August 7, 2024.
- 2nd edition of CAPTURE THE FLAG CHALLENGE was conducted on August 9, 2024 to sharpen the skills and ignite the passion for problem-solving of C-DAC members.

## CIO DESK

The team of CIO along with designated NIOs from each Centre is working to streamline various processes and explore and deploy the systems to do the ease of service delivery of Shared IT Services within C-DAC. Some of the actions undertaken by the CIO group are highlighted below:

- **Project Management Tool**
  - Process for purchasing Project Management Tool is in progress. The technical evaluation of the bids has been completed.
- **MS365 License Management**
  - Microsoft has issued a centralized license code that can be utilized by the respective centers when purchasing Office LTSC licenses to link them to the central license management.
- **Single Sign On (SSO)**
  - Providing a Unified Dashboard for seamless access of the various C-DAC's Shared (internal) IT services (SITS), was finalised.
  - Single sign on to the SITS using e-Pramaan integrated with C-DAC's LDAP is currently being tried out, with Webmail application.
- **Asset Management**
  - Asset details are received from various Centres and are being entered into the Asset Management Software deployed and managed by the Bangalore Team.
- **Shared Services 1.0**
  - The preparation of the SOP and escalation matrix is in progress. A committee was proposed in the MB to finalize the pricing of shared IT services O&M. Infrastructure requirements have been collected from various shared IT services currently in use at C-DAC, which can be moved to the shared cloud once the necessary IT infrastructure is made available.
- **BOSS OS**
  - A one-day training on BOSS OS was carried out by C-DAC Chennai.
  - Data has been gathered from all Centres for the installation of BOSS OS on machines used by non-S&T staff members.
  - Chennai Centre will serve as the coordination point for the overall BOSS management and support related activities to various Centres.

Branding & Communication/Techzine2024/C-DAC

सी डैक
CDAC

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l नॉएडा / Noida l नॉर्थ ईस्ट (सिलचर) / North East (Silchar) l पटना / Patna l पुणे / Pune l तिरुवनंतपुरम / Thiruvananthapuram