## Augmented Reality (AR)

Augmented Reality (AR) domain is a perception domain technology that enhances the world we perceive with virtual content in real time. C-DAC has developed first of its kind applications namely the AR Board and AR Book, for creating more useful and interactive learning environments.

Smart Card Technologies

C-DAC is pioneer in the smart card technologies and has developed applications which include
- Operating system for smart card
- Crypto token based on SCOSTA with PKI features
- Standalone smart card reader
- Enterprise applications like attendance and access control system
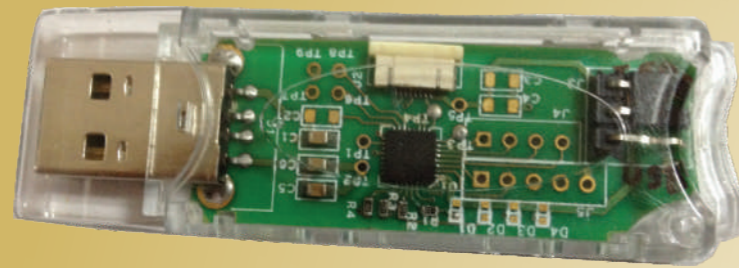
Transfer of Technologies (ToTs)

C-DAC has developed various indigenous solutions and has transferred the Technologies to various organizations. Following are some of such Transfer of Technologies (ToT) carried out:

- Integrated Electronic Nose and Vision System (ENOVISION) for tea
- Electronic Tongue (E-Tongue) for tea
- Electronic Vision System for Rice (Annadarpan)
- TETRA (Terrestrial Trunk Radio)
- Area Traffic Control System
- Vehicle Tracking System
- Black Box for automobiles
- 2-level Statcom and UPQC
- Electronics Paralleling of UPS Systems
- Front-end Converter Telecom Power Supply
- Online Double Conversion System with Electronics Paralleling
- Motor Wheel Chair
- Power Assisted Bicycle
- Automated Dial 100 System
- Wireless Traffic Control System
- ASTeC (Automation Systems Technology Centre)

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Professional Electronics

VLSI and Embedded System

Power Electronics

Agriculture and Environmental Electronics

Intelligent Transportation Systems

Next Generation Control Systems

Strategic Electronics Systems

Advanced Wireless Communication Systems

Smart Grid Security

Augmented Reality (AR)

Smart Card Technologies

सी डैक
CDAC

प्रगत संगणन विकास केंद्र
CENTRE FOR DEVELOPMENT OF ADVANCED COMPUTING

C-DAC has harnessed expertise in the design of VLSI systems, ASIC IP development, microprocessor, microcontroller as well as DSP hardware and software technologies, which constitute the key building blocks of many electronics based solutions for various industrial and strategic technology areas. C-DAC has designed, developed, deployed and transferred manufacturing technology for numerous large scale electronics systems as well as small footprint VLSI and Embedded system products for applications ranging from Supercomputing, Energy measurement, Personal computing, Medical appliances, Power and process control, Wireless broadband, Sonar and acoustic detection, etc. These technology solutions are offered for a range of verticals such as railways, steel, power generation, defence, health-care, police, media broadcast and many more. Transfers-of-technology for large scale manufacturing have proved the commercial viability of these products time and again.

VLSI and Embedded Systems

C-DAC specializes in turnkey development of Complex-Compact-Cost effective (CCC) electronics products for consumer and industrial applications, with total responsibility from chip to product design; including ergonomics, engineering, and transfer-of-technology for high-volume manufacturing. With a portfolio of robust silicon proven processor, peripheral, communication, data converter and clock synthesizer IPs. C-DAC has developed and deployed a range of System-on-Chip (SoC) products for embedded systems in the area of smart metering, smart card, automotive, bio-medical, etc.

Power Electronics

Power electronics technology is identified by its basic functionality to convert electrical energy to suit the needs of the load in the most efficient way using power semiconductors and advanced digital control techniques. C-DAC has developed various solutions for power electronics under the National Mission on Power Electronics Technology (NaMPET) initiative of DeitY, Govt. of India and has developed applications in the areas of:

- Power quality improvement
- Electric traction, Electric vehicles, Hybrid electric vehicles and Automotive electronics
- Distributed power generation, Renewable energy and Micro generator control
- New topologies for converter and inverter applications
- New generation sensors for Power electronic applications
- Modelling and simulation packages for real time simulation with Hardware in the Loop (HiL) feature

Agriculture and Environmental Electronics

C-DAC has developed and implemented Electronic Nose and Vision (ENOVISION) system for measuring quality parameters of tea and rice. This work is being extended to the measure the quality parameters of other products such as chili and turmeric and to identify obnoxious gases. A number of sensor technologies are being developed, which are the building blocks of such solutions. C-DAC has developed Wireless Data Logger for determining the fitness of use of perishable agricultural items.

Intelligent Transportation Systems

In the area of Intelligent Transportation System (ITS), C-DAC focuses on traffic control, traffic monitoring and traffic information system suitable for Indian conditions covering Urban traffic control system, Area traffic control system, Wireless traffic control system, Red light violation detection system, Vehicle tracking system and Smart parking solutions. C-DAC has developed and deployed a number of ITS solutions in various cities in India including Indore, Jaipur, Pune, Ahmedabad, Kolkata and Thiruvananthapuram.

Next Generation Control Systems

Under the Automation Systems Technology Transfer (ASTeC) program, C-DAC has developed Next Generation Control Systems solutions required for process industries. These include iROSE, iRESS, iLoC, iSMART, iCON, iGate, iWiSe, iWase, iCoSS, iSimP, PMU, iSTeC, iCoMS.

Strategic Electronics Systems

In this area C-DAC has developed various applications like non-destructive testing, underwater surveillance, health care and agriculture for organisations such as ISRO, army and navy.

Advanced Wireless Communication Systems

In the area of Advanced Wireless Communication Systems, C-DAC has developed the full spectrum of TETRA products; including base stations, handheld and vehicle mount terminals, gateways and management system. C-DAC has also pioneered technology development in India for Software Defined Radio (SDR), including next generation waveforms.

Smart Grid Security

In the area of Smart Grid Security, C-DAC has been carrying out research in physical power layer (transmission and distribution), the data transport and control layer (control and communications), and the applications layer (applications and services). C-DAC has developed solutions for Advanced Metering Infrastructure (AMI), Demand response, Grid optimization, Distributed energy, Energy storage, SCADA systems, Smart homes/networks, plug-in hybrids, etc.