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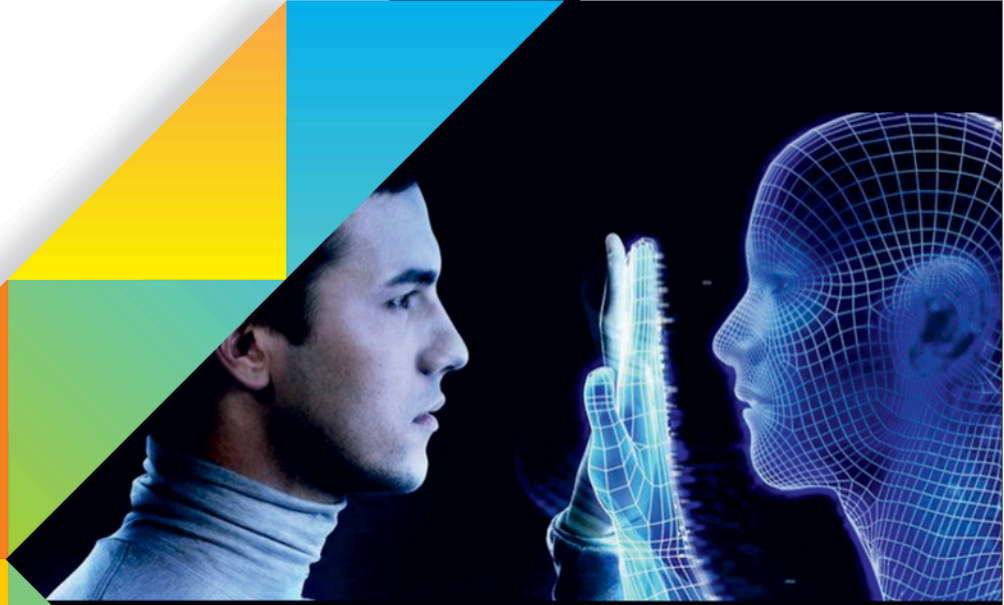
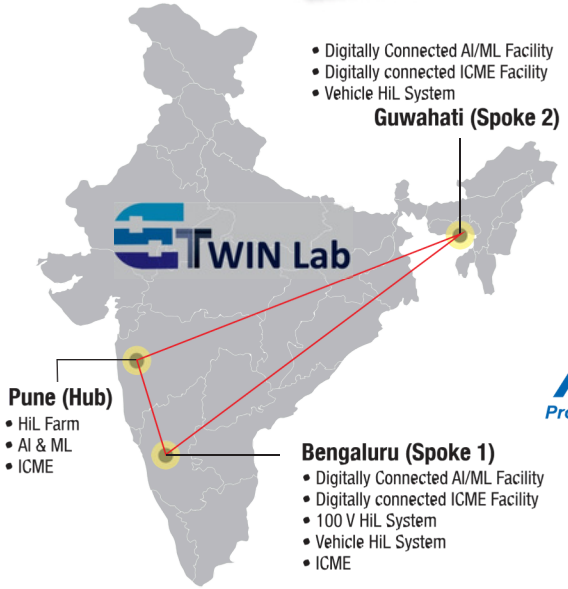
ARAI
Progress through Research

TWIN Lab



Digital Twin Lab

Common Engineering Facility Centre



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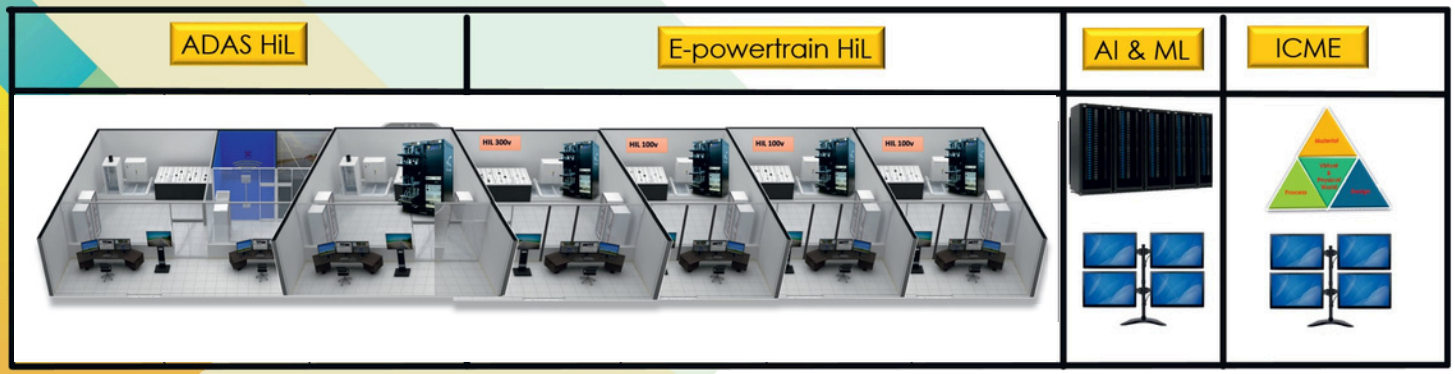
Common Engineering Facility Centre

Emerging Automotive Systems are evolving rapidly and then Common Engineering Facility Centre (CEFC) is here to meet the demands of this dynamic Industry.

Our facility is designed to supprot the following key automotive technology areas

- **HIL FARM FACILITY COMPRISING OF VARIOUS "HARDWARE-IN-LOOP" SYSTEM**
- **CENTRE FOR INTEGRATED COMPUTATIONAL MATERIALS ENGINEERING SIMULATION PLATFORM**
- **CENTRE FOR SYSTEM DEVELOPMENT USING ARTIFICIAL INTELLIGENCE AND MACHINE LEARNING**

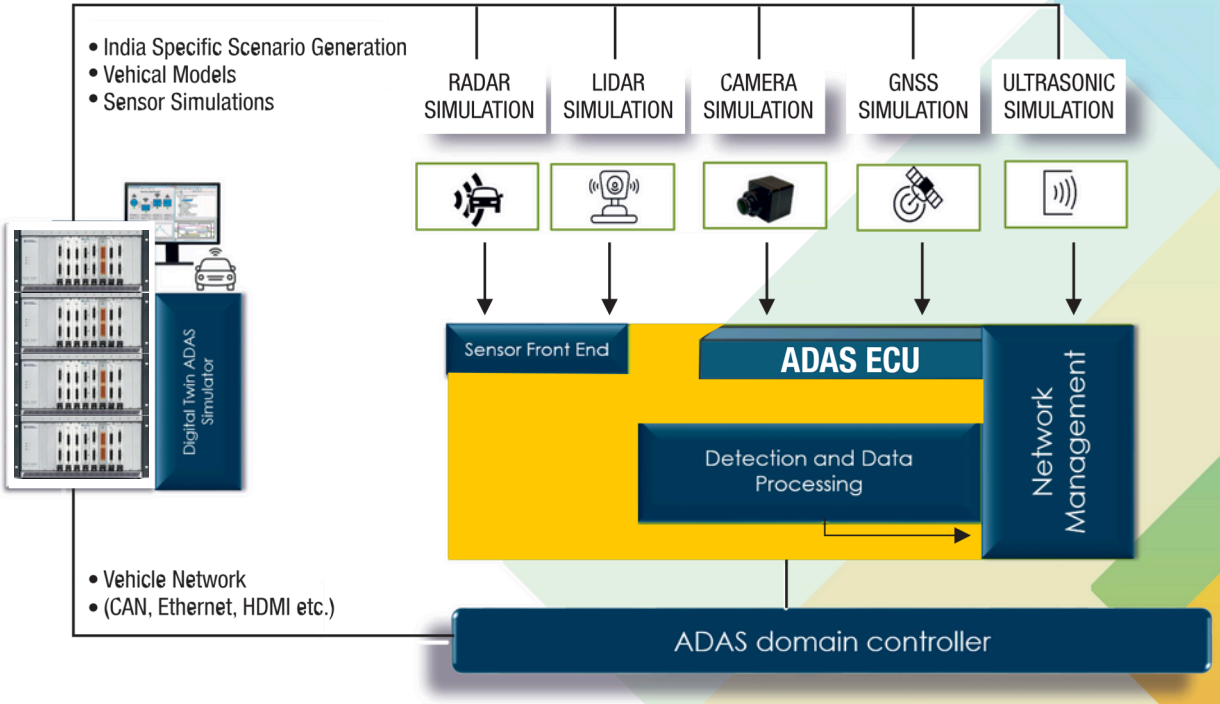


Digital Twin : E Powertrain Hardware in Loop System

- Modular Scalable Architecture up to 1K Volts typically for commercial vehicle
- BMS, MCU, VCU Control System Validation for 2,3 and 4 Wheeler Applications
- Verification and Validation for performance, abuse and failures
- ECUs Diagnostics, Service and interface
- Multidisciplinary Plant Models
- Full Matrix Testing

Digital Twin : ADAS Hardware in Loop System

- 76-81GHz emulation over the air
- Camera scenario injection on GMSL and FPD link
- Plant model for India Specific Scenarios
- Vehicle Network Validation
- Verification and Validation for performance, abuse and failures

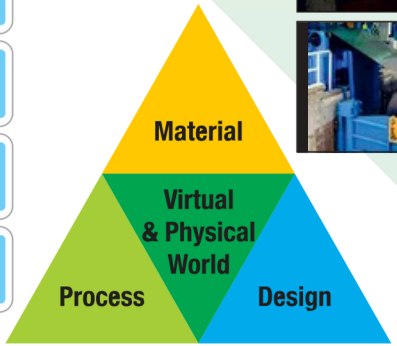


Integrated Computational Materials Engineering (ICME)

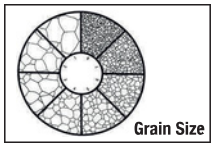
Services

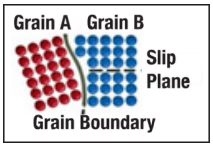
- Material and Associated Manufacturing Process Selection
- Material and/or Associated Manufacturing Process Selection
- New Material Development or Material composition customization
- Materials for Special Needs
- Development or Enhancing Specifications

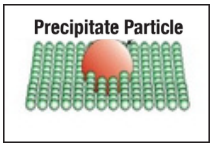
Metallurgical Information

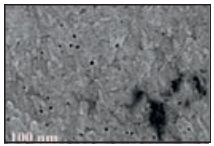


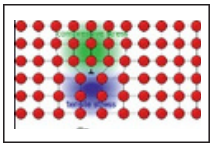
Metallurgical Information



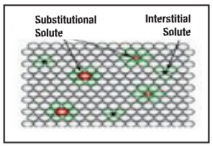








Strengthening Mechanism effect at each time scale

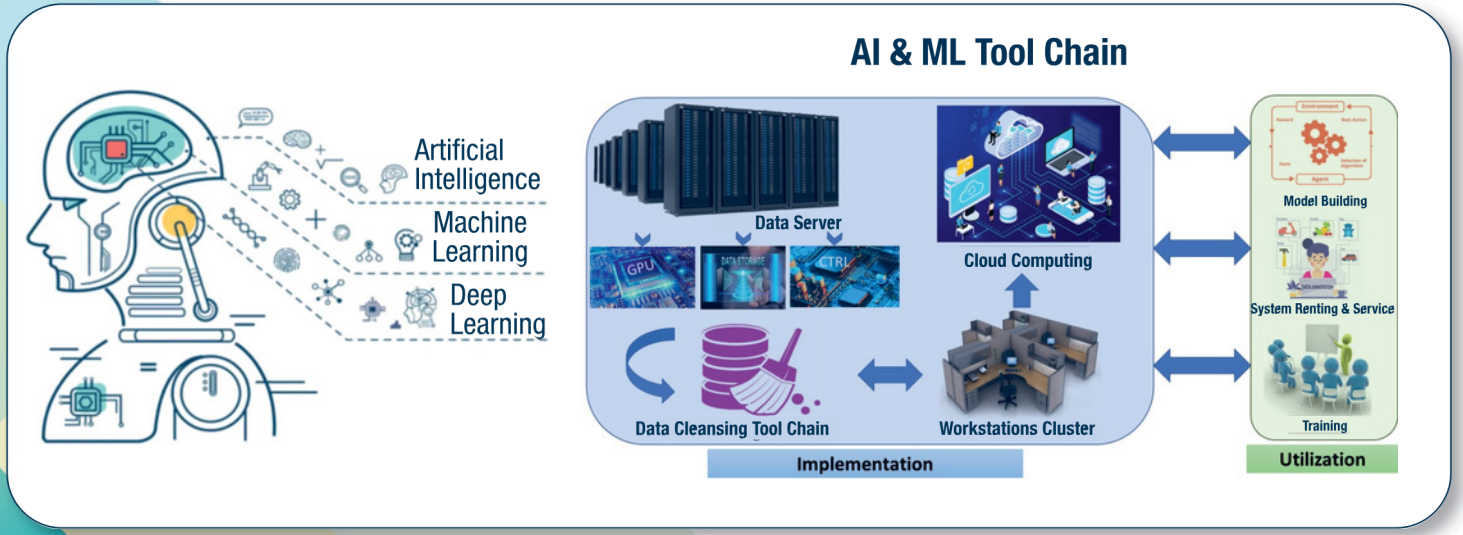


Metallurgical features at Nano scale

Case Studies

- Offering Right Weighting Solution To OEM
- Developing Cost Effective and Energy Saving Manufacturing Process
- Local Manufacturing Of Currently Imported Product
- Achieving The Functional Performance of Critical Product
- Life Cycle Analysis as a Service

Artificial Intelligence and Machine Learning (AI & ML)



- Data Acquisition
- Data Storage & Sanitization
- Data Mining
- Prognostics
- AI & ML module Development

TWIN Lab

Contact Us

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The Automotive Research Association of India

(Affiliated to Ministry of Heavy Industries, Govt. of India)

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