

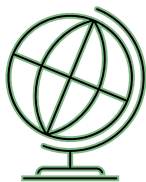
# Introduction to Vayavya Labs



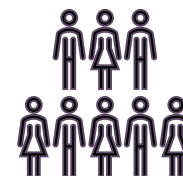
# About Vayavya Labs

## Corporate Snapshot

19 Years



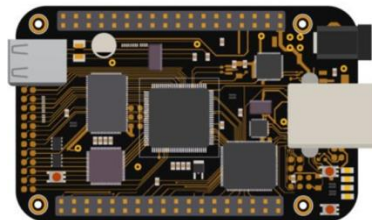
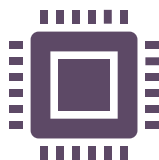
India  
US  
Japan  
Europe



250 plus

## Our Offerings

### “Silicon to System” Engineering Solutions



# Domain Practices at Vayavya Labs

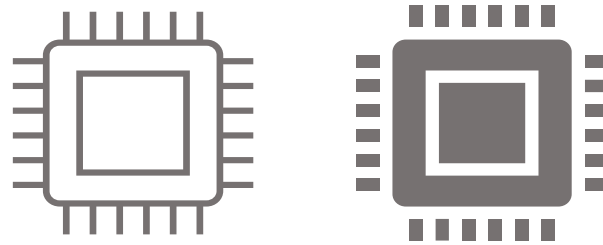
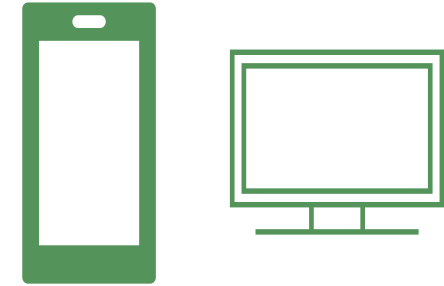
## Automotive



## Communications



## Consumer Electronics



## Semiconductor/ESL



# Industry Standards Participation

Semiconductors



- Founding & Contributing Member of Portable Stimulus Specification (PSS) Work group
- HSI specification (used by DDGEN) is part of PSS 2.0
- Co-authors of the standard

Automotive



- Contributing Member of Open Scenario 2.x Work group
- Co-Authored the OSC 1.x to 2.x Migration guideline
- OSC 2.x will accelerate ADS Virtual V&V

SW. Defined Vehicle



- Cloud Native Software Development
- Develop on Digital Twin & Deploy on Cloud
- Automotive DevOps & DevSecOps
- Working on demonstrating a “use case” in partnership with ARM





# Our Offerings



# Solutions and Service Portfolio for Automotive

1

## Embedded Systems and Software

- Design
- Development
- Integration
- Validation

2

## Digital Twins & Simulation

- Virtual ECUs
- Integration of VECU in SDV flow



3

## AD / ADAS

- Scenario and model development
- Validation
- Integration
- Process set-up

5

## FuSa & Cybersecurity

- Design & Development
- Validation
- Consultancy

4

## Connectivity models and Protocols

- Automotive Ethernet
- PCIe
- USB
- Wireless



# Solutions and Service Portfolio for Semiconductors, EDA, ESL

1

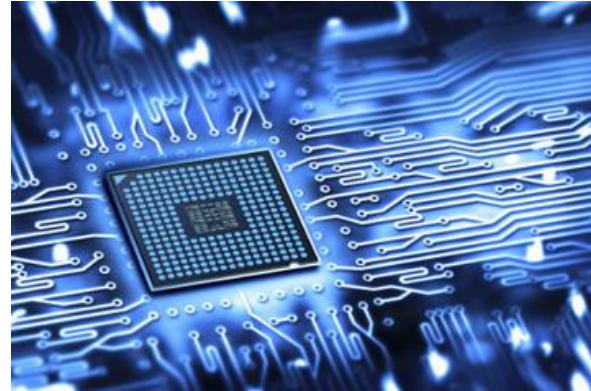
## Embedded Systems and Software

- Pre-silicon / Bare metal software
- Platform Software (middleware, protocol stacks, OS porting and integration)

2

## Digital Twins & Simulation

- Modelling & Virtual platform development
- Software Development and Integration for Virtual Platforms



3

## PSS – Software Driven Verification

- Validation
- Integration
- Process set-up (emulation, co-simulation)

4

## Connectivity models and Protocols

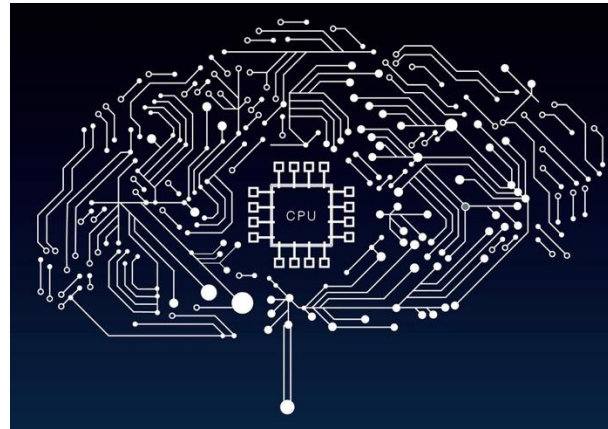
- PCIe
- USB
- Wireless



# Solutions Portfolio based on GenAI / LLM

## 1 VECU Copilot

- Code Generation
- Domain Specific - For VECU Code Development



2

## ChatDoc

- AI-Driven Information Extraction from complex structured/unstructured data repositories
- Provide actionable insights

3

## Janus - Code Compliance

- Automatic Code Compliance Check against Industry Standards

4

## PRISM (Plausible Reconstruction and Inference of Scenario Mechanics )

- LLM-powered reconstruction of accident scenarios from FARS accident database
- Supports OSC 1.x & OSC DSL

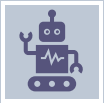




# Virtual ECU (Digital Twin) Offerings



Virtualizing communication and connectivity devices



End-2-End Virtual ECU Development – for both L3 and L4 levels



Integration of different models to deliver a complete Virtual ECU



Integration of multiple Virtual ECUs to deliver a Virtual Automobile

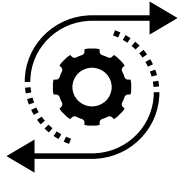


Complete S.W. Development & Integration

Bare metal/MCAL/OS Bringup  
BSW  
App Development  
S.W. integration

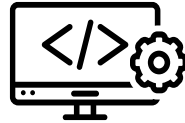


# ISO 26262/FuSA Offerings



## Process

- Item Definition
- HARA
- Safety Goals
- DIA(Development Interface Agreement)
- ASIL Classifications
- FMEA
- FTA
- ASPICE
- CMMI



## Methods

- SW Development
- SW Verification MC/DC
- Range Check
- Control Flow Monitoring
- ASIL Decomposition
- Coding Guidelines Doc



## Tools Selection & Qualification

- MISRA
- Compiler
- Auto code
- Testing Tool
- Verification

Expertise in supporting Software activities for the entire Product development Life Cycle



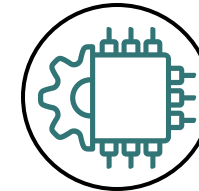
## Compliance

- MISRA
- ASIL level
- Requirements
- Tools
- ASPICE/CMMI



## Safety Team

- Overview Training
- ISO 26262
- Certifications

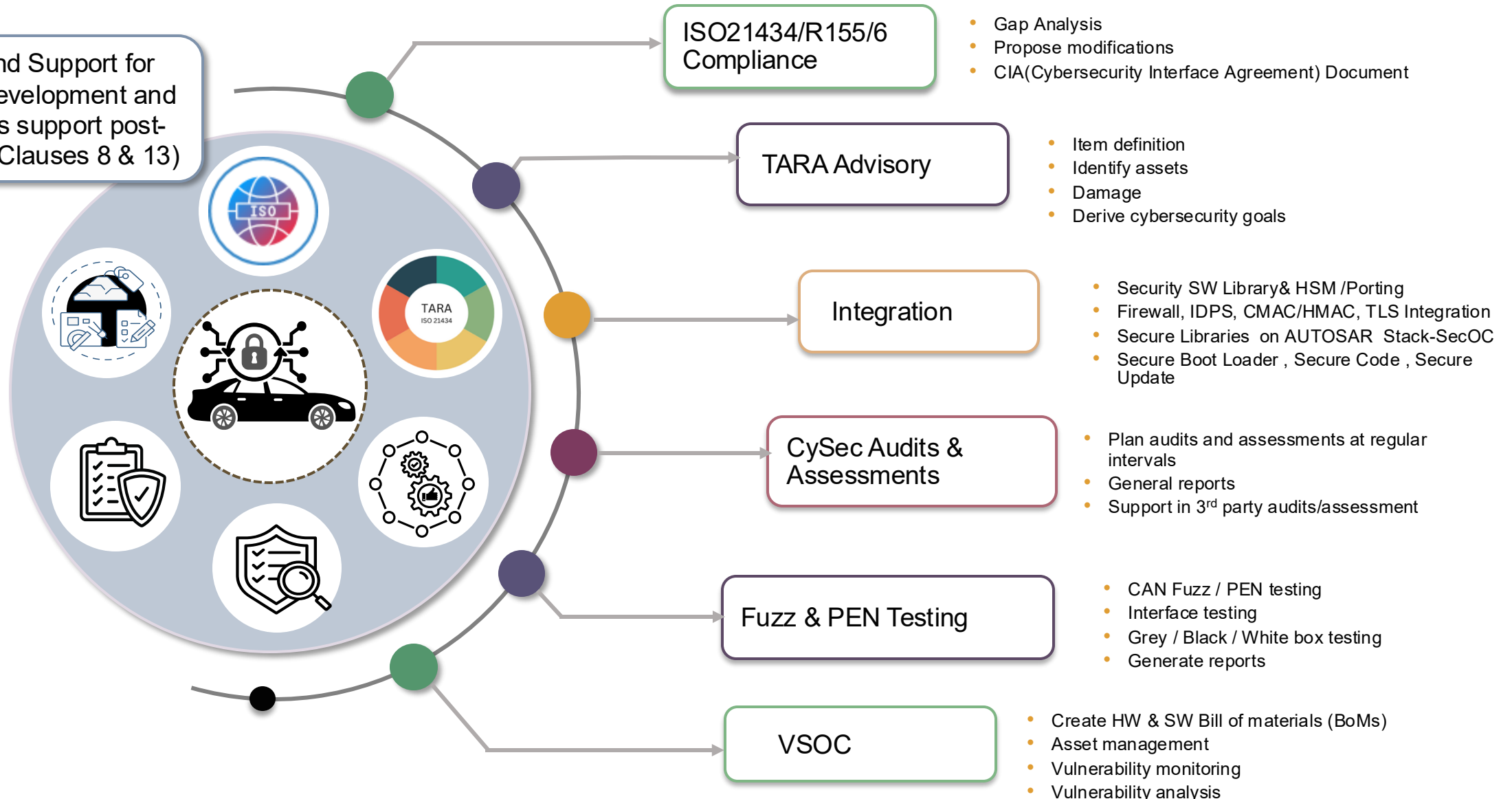


## Components selection

- Microcontroller
- AUTOSAR SW
- HW components

# Cybersecurity Offerings

End-to-End Support for  
**V Model** Development and  
Continuous support post-  
Production(Clauses 8 & 13)




# ADAS and Autonomous Vehicle V&V Offerings



Scenario Development for ADAS/AD features (OSC 1.x, OSC 2.0, custom format)




NHTSA/NCAP-compliant Scenario Library Development for ADAS/AD features



Integration of Virtual Test Automation tools with simulators and scenario libraries



KPI generation for ADAS/AD features



End-2- End Coverage-Driven V&V for ADAS/AD functional and performance testing

Scenario creation  
Test case development  
Test execution (regression)  
Metric collection and analysis



Thank You

[www.vayavyalabs.com](http://www.vayavyalabs.com)

