PI-SQUARE TECH
EXCEEDING EXPECTATIONS

PI-SQUARE EXCELLENCE TECHNOLOGIES

We believe coming together is a **Beginning**
keeping together is **Progress** and
working together is **Success**

In Vehicle
Infotainment

Advanced Driver
Assist System

Connected
Vehicle Technologies

Autonomous
Vehicles

Functional
Safety & Cyber
Security

Automotive
Apps

www.pisquaretech.com

Innovative Technologies Solution Provider

PI-SQUARE
EXCEEDING EXPECTATIONS   TECH

WE ARE

Pi Square Technologies LLC is a Michigan based Fastest growing Automotive Embedded Software Engineering services company

WE OFFER

- *Partnership in Excellence for a "Defect Free Product Launch"*

- *Experienced Resources to meet your critical Resource and Project needs*

- *On-Site and Off-Site Project execution to meet your demanding timelines*

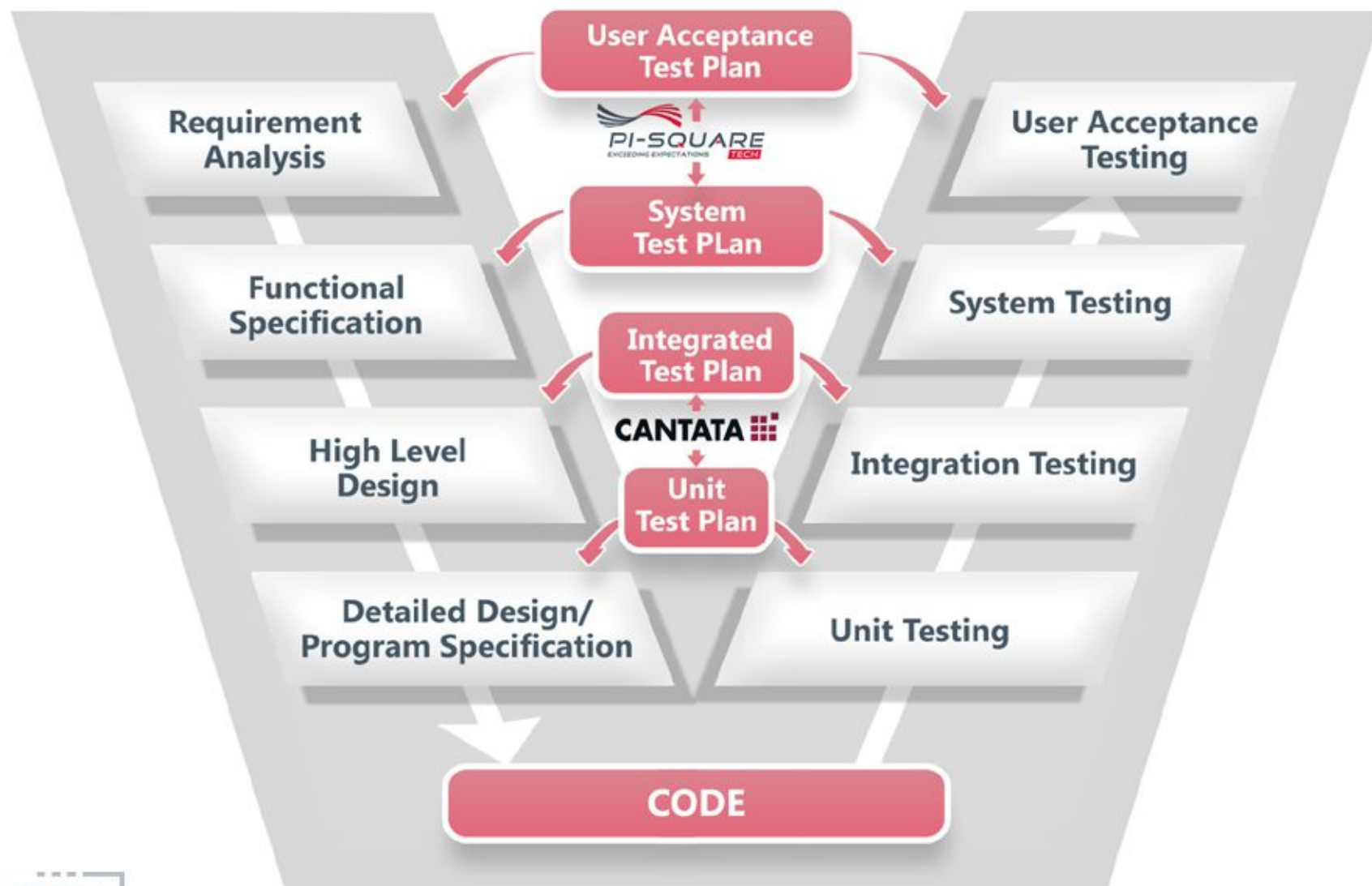- *Complete turnkey solutions for Standards Compliance and Certification*

- *Unit and Integration Dynamic test specialists with cutting edge tools such as **CANTATA***

- *Effective Bug tracking management solution*

- *State of the art Training and Professional certification programs for Corporate and Individuals on emerging Technologies to meet growing demand for talented resources*

- *Domain expertise in niche technologies include*

    ‣ *In Vehicle Infotainment*

    ‣ *Connected Vehicles (V2V, V2I, V2X)*

    ‣ *Active Safety, ADAS, Autonomous Driving technologies*

    ‣ *Over The Air (OTA) Updates and Cyber Security Standards*

    ‣ *Certification testing for latest features such as Apple Car play & Android Auto*

V-Model Diagram

- User Acceptance Test Plan
- PI-SQUARE TECH EXCEEDING EXPECTATIONS
- Requirement Analysis
- User Acceptance Testing
- System Test PLan
- Functional Specification
- System Testing
- Integrated Test Plan
- CANTATA
- High Level Design
- Integration Testing
- Unit Test Plan
- Detailed Design/ Program Specification
- Unit Testing
- CODE

WHY PI SQUARE

High quality, Cost effective ECU Software Solutions with exceptional value

Flexibility to customize both on-site and off-site solutions that best fits client's needs
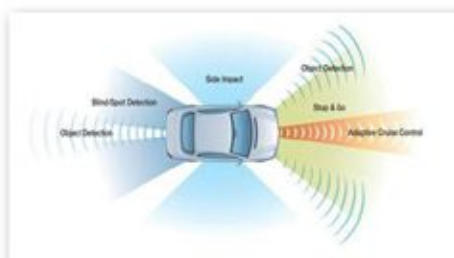
'INDUSTRY BEST' ECU Software Testing Practices with proven excellence in root cause Analysis

UNIQUE Corner and Negative Test cases methodologies

Proven process to reduce Warranty costs

Good control and visibility on project progress as we are local to 95% of our clients

Help clients launch 'DEFECT FREE' products while meeting critical timelines

Carplay v. Android Auto

FUNCTIONAL SAFETY

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PRODUCTS • PEOPLE • PROCESS
INNOVATION

Product Innovation

Solution: Wouldn't it be nice to make many critical components of a car intelligent and smart to self-monitor themselves so that they can

Notify owners proactively its State of Health and State of Life, for preventive maintenance
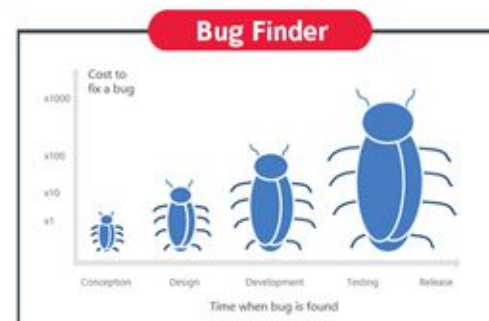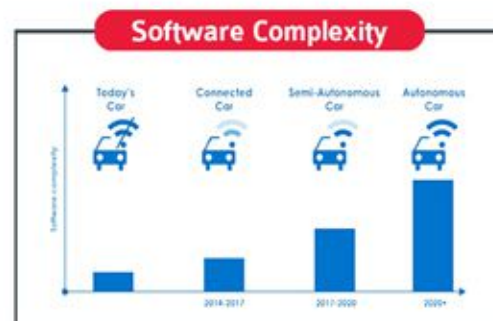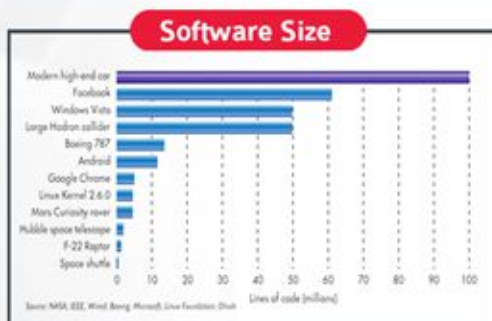
Provide manufacturers insights of its wear and tear for data analytics for future product improvements

Pi-Square Technologies specializes in simple solutions connecting various dots of current technological inventions to productize for the current day to day needs of consumers

Process Innovation

Do you know complexity of Software code is increasing exponentially in cars & more complex code means more risk for its quality

Software Size

Modern high end car
Facebook
Windows Vista
Large Hadron collider
Boeing 787
Android
Google Chrome
Linux Kernel 2.6.0
Mars Curiosity rover
Hubble space telescope
F-22 Raptor
Space shuttle

0 10 20 30 40 50 60 70 80 90 100
Lines of code (millions)

Source: NASA, IEEE, Wired, Boeing, Microsoft, Linux Foundation, Ohloh

Software Complexity

Today's Car | Connected Car | Semi-Autonomous Car | Autonomous Car

2014-2017 | 2017-2020 | 2020+

Bug Finder

Cost to fix a bug

x1000
x100
x10
x1

Conception | Design | Development | Testing | Release

Time when bug is found

Quality & Agility are two edges of the sword

Code • Plan • Release • Deploy • Operate • Monitor • Test • Build

Pi-Square Technologies is in the forefront of bringing **"Automotive DevOps Pipeline"** to Embedded Software development by building 'Continuous Build, Release and Verify" pipeline Automation by partnering with innovative companies like Verifa.

People Innovation

Problem

Biggest challenge facing many tech industries today is lack of skilled resource to support unprecedented growth. Even though US has world class universities, there is a 'skill gap' between academic excellence & Industry needs

Solution

Bridge the 'Skill gap' by connecting experts in the technology with those interested to launch and grow their career in that domain.

Pi Square Technologies is proud to innovate talent pipeline initiative, establishing tight partnerships with Universities and Industry in providing one of a kind "Industry Readiness" skill enhancement program.

Universities • Talent Pipeline • Industries

DevOps Pipeline for Automotive Embedded Software Development

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EXCEEDING EXPECTATIONS
PI-SQUARE TECHNOLOGIES INDIA PVT LTD
Innovative Technologies Solution Provider

ACCELERATING & IMPROVING PROJECT VELOCITY

We help companies in delivering high quality, reliable and secure software systems in an agile and compliant manner. Our experienced team enable continuous improvement across the entire SD lifecycle.
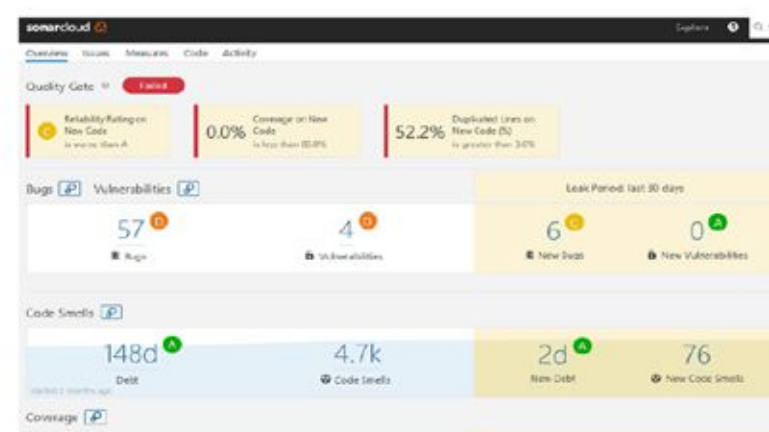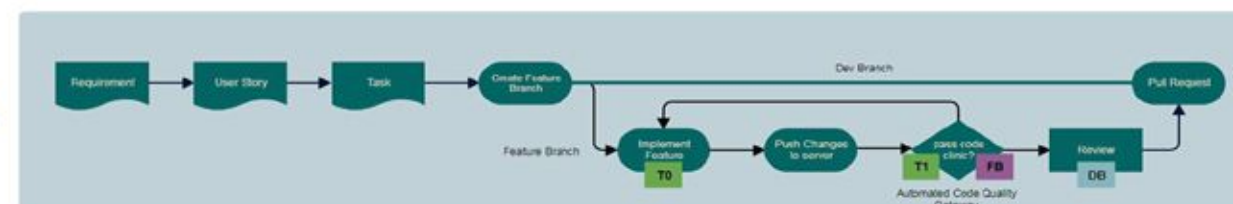

T(X) : ISOLATE-VERIFY-MERGE

T(X) is a novel time-based approach by Verifa to minimize **technical debt**. When a developer introduces technical debt (e.g. failing build, new architecture or static analysis issues, failing unit test cases) and merges this with a shared development branch, all members working on that development branch will now inherit this technical debt. T(x) provides checkpoints in the development process to avoid the accumulation of technical debt:

T0 daily at the desktop

T1 incrementally on feature branches

T2 incrementally on integration branches

T3 scheduled for long-lived activities

UNPARALLELED AUTOMATION

We automate 5 key areas of the SD Lifecycle:

Building. Through blazingly fast infrastructure as code, builds are optimized and parallelized through Docker instances.

Testing. Achieve Test Automation at unit, integration and system level. Create regression suites to verify software changes.

Static Analysis. Ensure compliance to ISO26262, FDA, MISRA, ASIL B/C.

Security. Bake in advanced security checkers, e.g. CERT, CWE, OWSAP at Time Zero (T0).

Architecture. Manage software dependencies to reduce complexity, avoid erosion and optimize the build.

DevOps SERVICES

Verifa's Professional Services team is available to implement your DevOps pipeline, either from scratch, or to add tooling and code to complete gaps.

AUTOMATE, MANAGE, SUCCEED

Automating and managing with T(X) results in compelling ROI:

Building. Reduction in build times by 65%, broken builds reduced by 75% in the Dev Branch.

Quality. Detection of architecture defect early reduces technical debt and saves over $100K, 45 crash causing defects found at T0 before code committed to the repository.

Security. Vulnerabilities at T3 decreased by 40%

Success. DevOps pipeline expanded to 12 projects and is being rolled out to other sites with the corporation.

- Engineering Services
- Project Solutions
- Product Solutions
- Critical Resources Consulting
- Center of Excellence
  - "INDUSTRY READINESS" *Training*
  - Niche Technology & Toold Corporate Training

AUTOMOTIVE EMBEDDED EXCELLENCE

In Vehicle Infotainment

Advanced Driver Assist System

Connected Vehicle Technologies

Autonomous Vehicles

Functional Safety & Cyber Security

Automotive Apps

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PI-SQUARE
EXCEEDING EXPECTATIONS **TECH**

—| Our Alumni Working in **Leading** **Companies** |—

DENSO
Crafting the Core

nexteer
AUTOMOTIVE

ZF

HYUNDAI MOBIS

Continental

FCA
FINANCIAL CONDUCT AUTHORITY

GM

sasken
Make the Right Connection

HARMAN
A **SAMSUNG** COMPANY

HYUNDAI

HONDA

DELPHI
Automotive Systems

BOSCH

Panasonic

Johnson Controls

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Our **Implementation** Partners

TATA
TATA ELXSI

Tech Mahindra

HCL
HCL TECHNOLOGIES

wipro

Capgemini

L&T Technology Services

automotive engineering **iau**

FEV

Cognizant

Our **Recognition & Awards**

Corp! EVERYTHING BUSINESS
2018 WINNER
SALUTE TO DIVERSITY

EMBEDDED ADVISOR
TOP 10
EMBEDDED DESIGN
& Solution providers for Automotive Sector - 2018

CIO 20 MOST PROMISING
AUTOMOTIVE
Review TECHNOLOGY SOLUTION PROVIDERS - 2017

PEOPLE | PROJECTS | PRODUCTS

> Engineering Services

> Project Solutions

> Product Solutions

> Critical Resources Consulting

> Center of Excellence

  > "INDUSTRY READINESS" *Training*

  > Niche Technology & Tools
    Corporate Training

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