



*The world is changing very fast.  
Big will not beat small anymore.  
It will be the fast beating the slow.*

*Rupert Murdoch, 21st century Fox*

## Company & Solution Overview





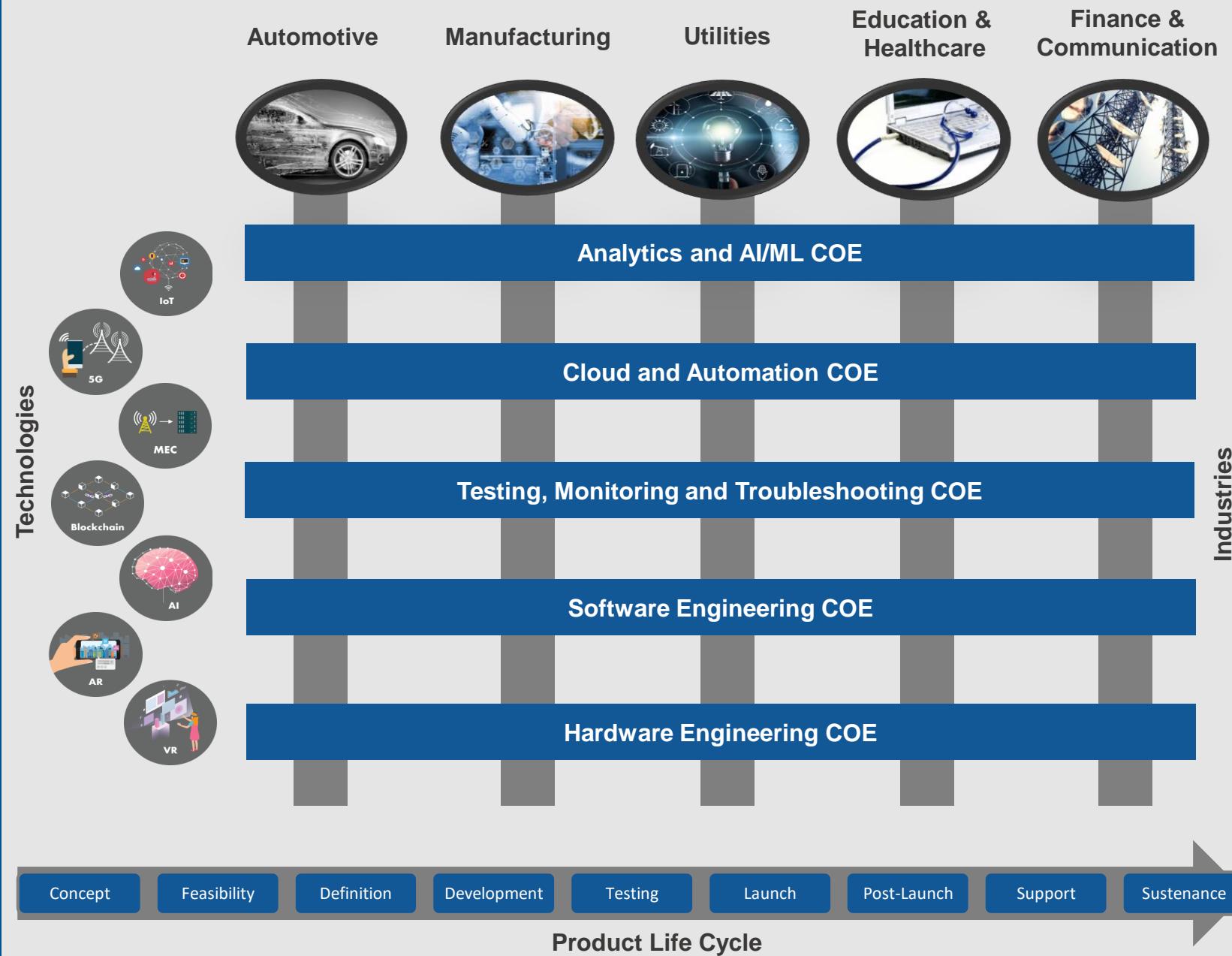
*exists to*

Digitally transform  
clients to deliver  
the best product  
fast

*by enabling*

Digital Strategy  
Digital Innovation  
Digital Intelligence  
Digital Engineering

→ across industries, technologies, centre of excellence and product lifecycle



# Center of Excellence Offerings



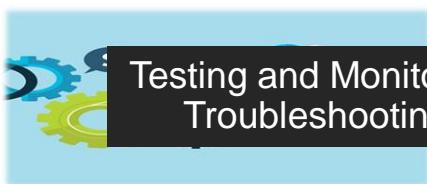
## Hardware Engineering

- Prototype to development, re-engineering, optimization, certification, and compliances
- IoT sensor and gateway, ASIC/SoC/FPGA RTL, board design and selection, BOM optimization, mechatronics motor selection and load analysis, and motion control solutions



## Software Engineering

- Firmware, HAL, middleware, database and application (web/mobile/API desktop HMI)
- Embedded, imaging, video, security, surveillance, telematics, diagnostics, stack development, porting, optimization, on-premise and cloud solutions



## Testing and Monitoring Troubleshooting

- Infrastructure, network, and service/application, QoE, SLA and MTTR compliance
- Quality engineering, consulting, audit, automation, ready-to-go test suites, ALM Implementation, RPA, framework development, benchmarking, L2-L4 support solutions, and TestOps



## Cloud and Automation

- Source code, build, code quality and test, infrastructure, deployment and configuration management
- Zero touch lifecycle automation, Cloud agnostic, CICD DevOps pipeline, DevOps consulting including serverless, stateless, NFV/SDN, virtualization, container, and microservice based solutions



## Analytics and AI/ML

- Architecture, inductive learning, fuzzy logic, data set generation, training, and optimization
- Visualize, track, report, predict, prescribe, diagnose, corrective action, bigdata, data warehouse, and real-time AI, ML, Deep learning, and neural network solutions

# | Capabilities and Experience

Solution & Use case	Smart Logistics, Smart Fleet, Smart City, Smart Retail, Smart Vehicle, Smart Robotics, Smart Learning, Smart ADAS, Smart Asset, Smart Infrastructure, Smart Operations, Smart Healthcare, Smart Process, Smart Light, Smart Monitoring, Smart Energy, Smart Tracking, Wearables, Research Services, Engineering services, Support Services, Managed services, Hardware and Embedded programming and more
Analytics/ AI / ML / DL	         
	Deep learning Networks, interface platform, models, inductive learning, fuzzy logic, neural networks and more
Framework & Programming Language	                       
	Advanced experience of developing using wide set of programming languages and framework and more
Tools & Database	                  
	Comprehensive skillset in various tools and databases from SQL to NoSQL and more
Cloud & Platform	          
	Vendor independent support of several cloud platform from IaaS to PaaS, SaaS and more
Protocol, Interface & Connectivity	           
	Connectivity integration, configuration, optimization, security, protocol stack development and more
OS & RTOS	           
	Several OS and RTOS to address several platform development, customization and more
Hardware & Compliance	     
	BSP, Firmware, HAL, device driver, middleware, mechatronics, MCU, CPU, GPU, FPGA, sensor, gateway, certification and more

# Solution & Use case

UI UX Testing

API Testing

Localization Testing

Interoperability Testing

Compatibility Testing

Connectivity Testing

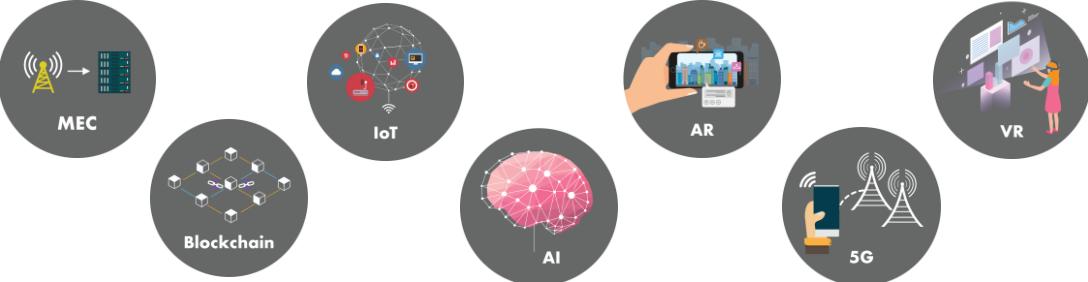
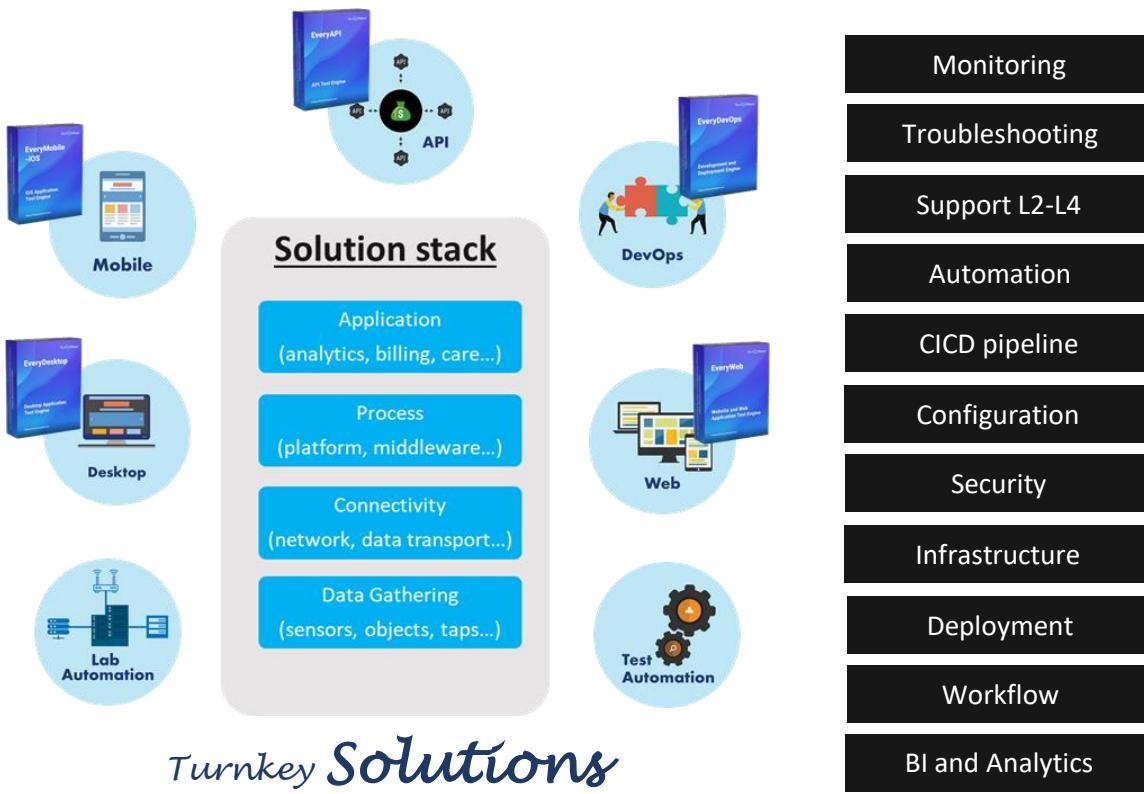
Functional Testing

Security Testing

Recovery Testing

Performance Testing

End to End Testing



Videos

Specification

# w5rtc

We scale, minimize costs, and offer improved services and quality

Testing  
Automation  
TestOps  
DevOps

TestOnNeed

# Capabilities and Experience

w5rtc

Test Management	
Test Tool & Framework	
Performance & Monitoring	
DevOps	

We scale, minimize costs, and offer improved services and quality

Testing  
Automation  
TestOps  
DevOps  
TestOnNeed



Partner for your success

We *solve* your customer challenges

We *start* your project when you need it

We *support* you to win your customer trust and orders

We *offer* SLA and profitability driven partnership model

We *provide* flexible onshore, offshore and nearshore engagements

We *deliver* products fast with high quality

We *automate* all to be fast to beat the slow

Being *efficient* and *fast* is all about *transformation*  
and *success* is all about *welcoming* it.

To *transform* and to provide the *best product fast*, start today your journey with us.



customersuccess@w5rtc.com



<https://w5rtc.com/>

# Customer case Study

Automotive



## Smart ADAS

### USA ADAS Platform Vendor

#### Smart Rear-view Mirror



#### Requirement

- Design and Development of a BSP and porting to Android HAL layer on given Multi-Processor Platform
- Support addon features

#### Solution

- Implemented BSP package Uboot in both Linux & Android OS, and HAL layer porting
- Implemented features such as Fisheye camera (4X), front and rear-view camera, touch system, multi-sensor (( Accel , Gyro , AMS , etc.), Vehicle diagnosis interface, on-board storage and more...

#### Customer Benefit

Go-to-market with improved confidence with rich features, multi-platform support, product quality and performance differentiation than their competitors.

**2** Multi-Processor Architecture

**2** Operating System Support ( Linux & Android)

**15+** Devices Drivers ( Android HAL )

## Smart ADAS

### Japanese ADAS OEM Provider

#### Traffic speed sign detection



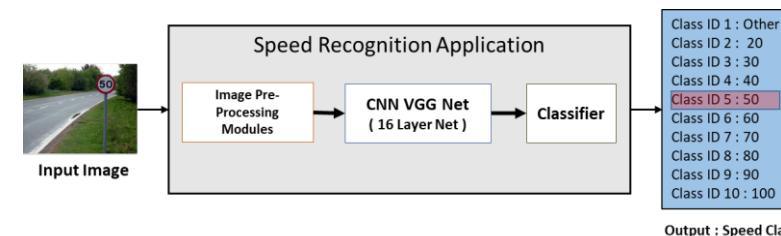
### Requirement

- Design and Development of the solution that detects and classifies the traffic speed sign in real-time
- Solution must have light weight algorithm

### Solution

- Delivered image pre-processing, and deep learning classification module with industry best light weight algorithm
- Implemented CNN 16 Layer network, dataset collection and generation, training and testing of CNN model using Caffe, detection and extraction of the region of interest (ROI)

### Customer Benefit



Accurate detection of traffic speed sign as an input to enrich their overall ADAS automation solution

## Smart ADAS

### Taiwan ADAS OEM Provider

Lane and collision detection and warning



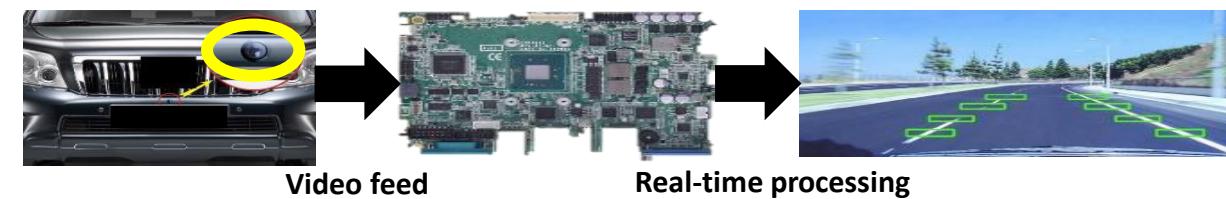
### Requirement

- Provide software solution built on NVIDIA TK1 for Lane and Collision detection and warning
- It has to vision based solution input via cameras

### Solution

- Delivered software solution that captures feed from cameras, detects and alerts in real-time
- Implemented CNN 8 Layer network for detection, anomaly detection, lane recognition, lane generation, and customizable warning output

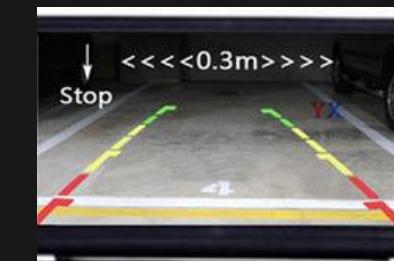
### Customer Benefit



Precise detection/warning of lane and collision event to enrich their overall ADAS automation solution

## Smart Vehicle

### India Car Reseller



### Parking Assistance

## Requirement

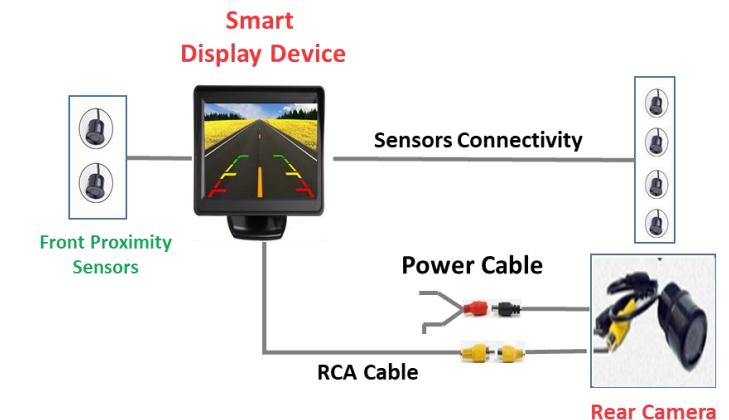
- Develop a low cost reverse driver assistance system which can be retro-fitted in old/new cars
- It has to vision based solution input via cameras

## Solution

- Delivered 6X proximity sensors, 1X Camera, and 1X Dashboard display as an end-to-end solution
- Implemented real time image enhancement, blind spot detection, distance and obstacles monitoring

## Customer Benefit

Customer is able to deliver functionalities better than competition solution with lower cost, amplified particularly selling the old cars.

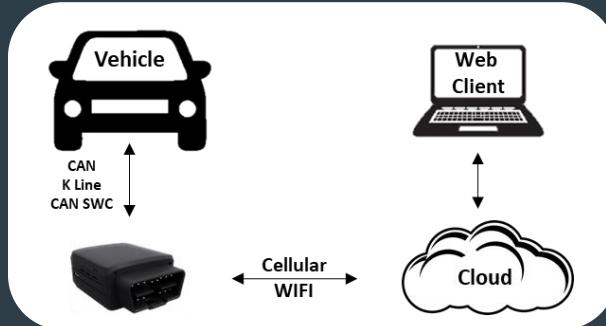


## Smart Fleet

### USA Telematics Solution Provider

#### OBD II

#### Diagnostics & Telematics



### Requirement

- Design and development of on-board diagnostic (OBD II) and telematics solution
- Must provide hardware, firmware, middleware and application development and deliver end to end solution

### Solution

- Delivered boot loader, RTOS Porting, firmware, and stack architecture, design and development, optimization, and testing
- Implemented features GPS Tracking, geo-fencing, Connectivity (WIFI & Cellular), algorithms (tow and crash detection), protocols (CAN 2.0/CAN SWC), security (boot, FOTA, roll back, storage) and system alerts

### Customer Benefit

Customer differentiated their offering by selling a single device with multi-purpose functionality that accelerated the sale of their fleet management solution.



OBD II Dongle  
(Diagnostics + Telematics)

## Smart Fleet

### APAC Cab Service Provider

#### Behavior Monitoring



Nvidia's Jetson TK1

#### Requirement

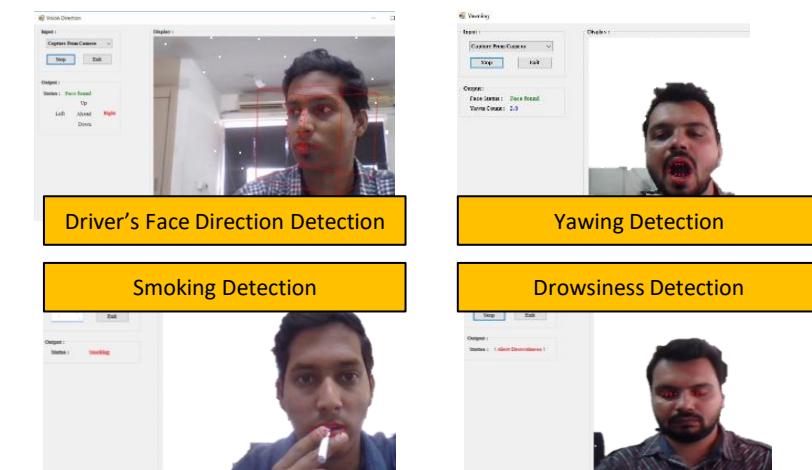
- Develop a solution to monitor the behavioral patters of the cab driver.
- It has to vision based solution implemented using Nvidia's Jetson TK1

#### Solution

- Delivered high performance optimized software solution on Nvidia's Jetson TK1
- Implemented multiple real-time behavioral monitoring modules such as face detection, yawning detection, smoking detection, and drowsiness detection.

#### Customer Benefit

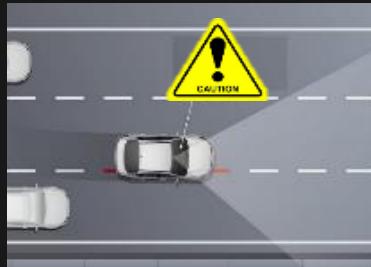
Customer is able to proactively detect and alert drivers to take corrective action, that helped in reduction of potential mishaps.



## Smart Fleet

### APAC Cab Service Provider

#### Driver Maneuver Anticipation



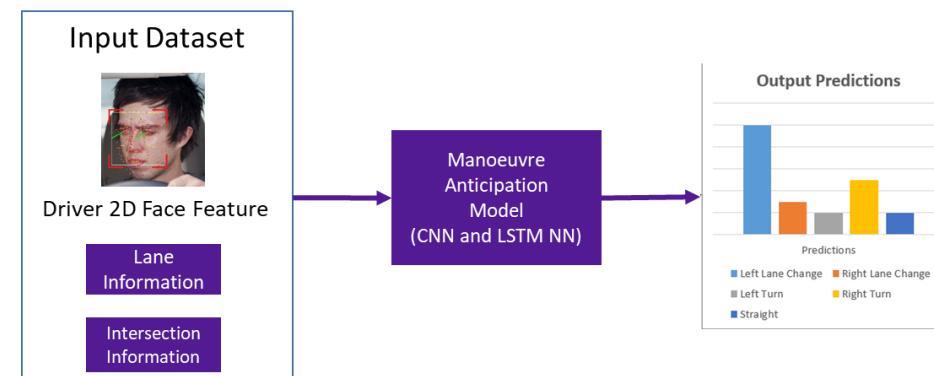
#### Requirement

- Develop a solution to anticipate driver maneuver ahead of time based on AI deep learning module

#### Solution

- Delivered software application for driver anticipated maneuver such as Lane change, turn etc. taking input from camera feed, lane and intersection data
- Implemented CNN and LSTM library on matlab with data collection and generation including training and testing of the model

#### Customer Benefit



Customer is able to proactively detect and alert drivers to take corrective action, that helped in reduction of potential mishaps.

## Smart Vehicle

### North American Vendor

#### Geo tracking and Fleet Management



### Requirement

- Design and development of industrial smart vehicle tracking and fleet management solution
- It must support Geolocation & Geofencing based tracking solution

### Solution

- Delivered End to end solution from hardware to firmware, connectivity (3G) cloud integration and mobile application
- Implemented real time vehicle tracking (geo-fencing/location), vehicle sensor data based events & alerts (start/stop, Idle, low battery, over speed, hard turn...) and In-vehicle environment sensing (cabin, temperature, pressure, humidity...)

### Customer Benefit

High quality, high performance, robust, and feature rich end to end smart vehicle and fleet management solution to manage their operations



## Smart Vehicle

North American  
Software Company

### SDL Mobile and Head Unit Applications



SDL Platform Setup

### Requirement

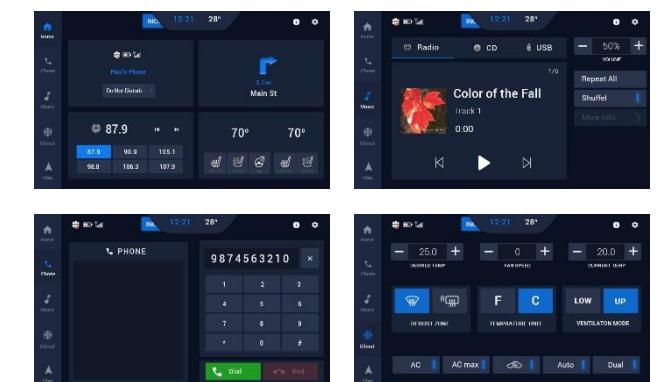
- Design and development emulated head unit using Smart device link (SDL) framework

### Solution

- Delivered emulated head unit with HMI, and document instruction for testing infotainment application
- Implemented on SOC platform, BSP interfaces & plugins with SDL framework such as auto capturing and rendering, display with touch screen, audio over BLE/USB with multiple features such as Voice recognition, navigation support etc.

### Customer Benefit

Customer benefited testing their automotive infotainment application with the emulated head unit to reduced cost in the development lifecycle.

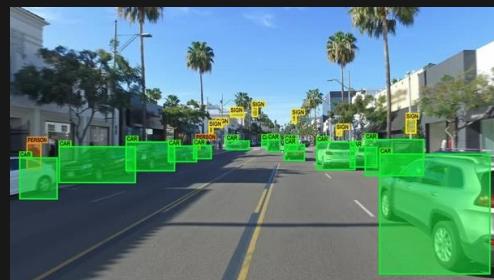


HMI Screen Snapshots

## Smart Vehicle

### APAC Automotive Solution Provider

AI/ML based annotation  
application tool



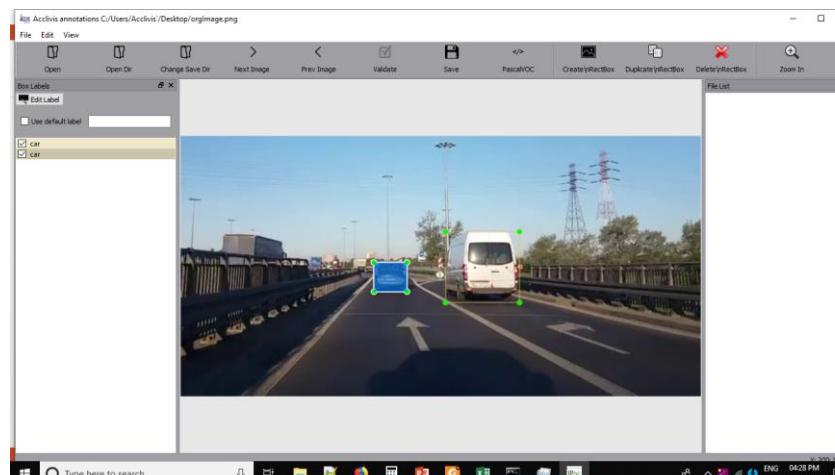
## Requirement

- Develop an annotation manual/automation tool library with datasets for camera/optical image and LIDAR to train with millions of frames
- Ability to adapt the annotation tool library to any type of dataset generation

## Solution

- Delivered a solution with the in-house developed annotation tool with number of features for both Image annotation and LIDAR annotation
- The example features implemented for image Annotation features includes single/multiple image annotation, semantic segmentation and zooming, and for LIDAR 2D/3D selection, zooming, auto save and more

## Customer Benefit



Customer is able to use the dataset created by us for training and maturing their AI/ML algorithms and solutions to their end customer.

# Customer case Study

Manufacturing



## Smart Asset Management

### North American Vendor

### Cold Chain Monitoring



### Requirement

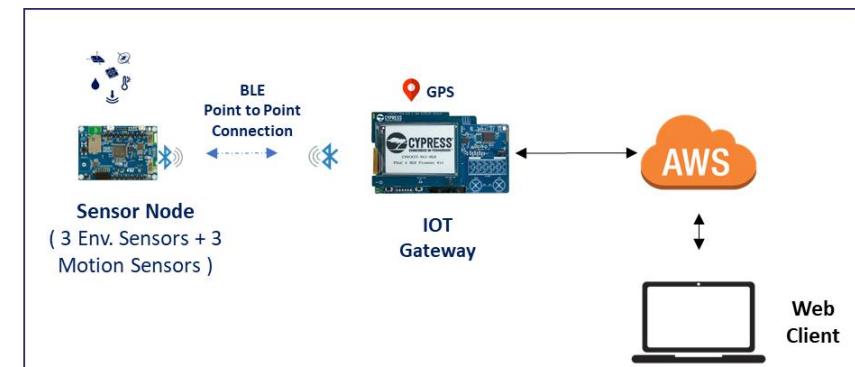
- Design and Development of functional prototype Cold Chain Monitoring Solution
- Identifying and integrating sensors, gateway, connectivity, and cloud

### Solution

- Delivered end to end solution with environmental sensors (temperature, humidity...) and motion sensors (Gyro, Accelerometer) with 32 Bit Controller, FreeRTOS based firmware, BLE connectivity, and AWS cloud connectivity over Wi-Fi
- Implemented Historical data backup/storage, and dashboard visualization with Graph , Google Maps view for tracking

### Customer Benefit

High quality, high performance, robust, and feature rich end to end cold chain monitoring and management functional prototype.



## Smart Infrastructure Monitoring

European software solution provider



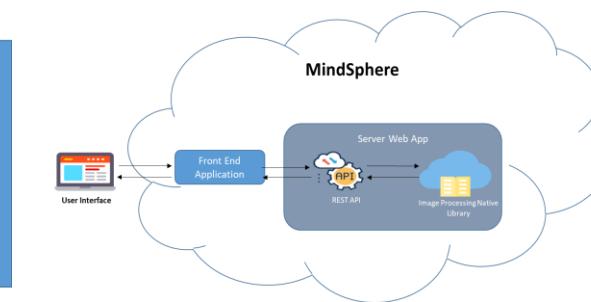
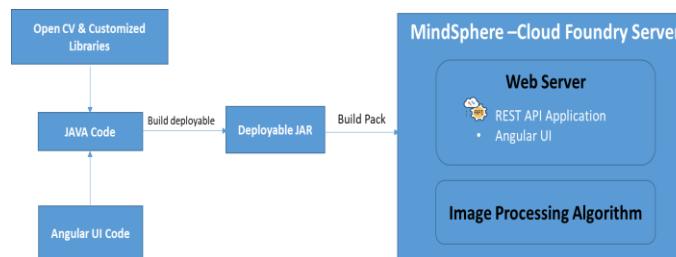
High rise building, tunnel, road, and Bridge inspection

### Requirement

- Develop a software solution to capture, process, identify, alert, and report the cracks in the infrastructure
- The solution must be integrated in to the existing Mindsphere cloud foundry server

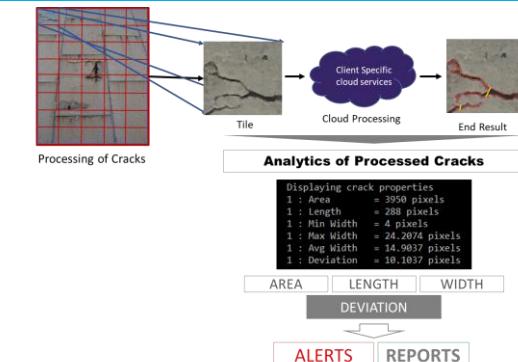
### Solution

- Delivered image processing plugin with optimized crack detection algorithms, frontend UI, and integrated with the Mindsphere foundry server.



### Customer Benefit

Customer leveraged the solution to innovate and provide solution for multiple use cases such as tunnel, high rise building, roads, and Bridge inspection etc.



## Smart Operational Monitoring

### Asian Manufacturer

Automated cooling of pipe in manufacturing plant



### Requirement

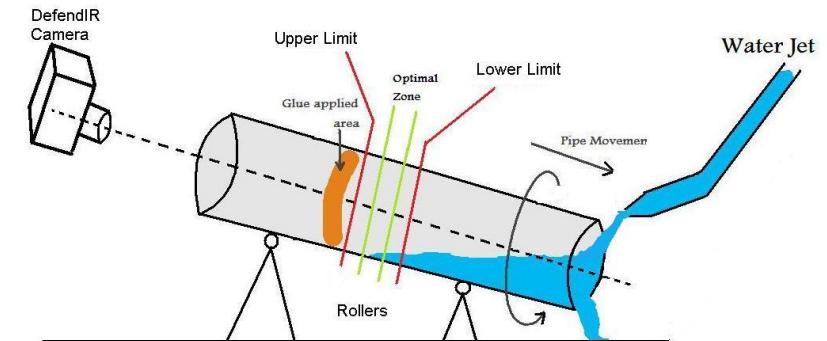
- Design and Development of automated mechanism to cool the pipe when manufacturing by maintaining the appropriate water level
- The solution should be integrated with existing manufacturing infrastructure.

### Solution

- Delivered machine vision based solution with algorithms to detect the water level below or above threshold, generate events to control the water supply.
- Integrated thermal camera with touch screen frontend with performance and user defined statistics in the existing infrastructure

### Customer Benefit

Customer controlled the cooling at optimal level with the delivered automated solution and increased the quality of Pipe manufactured with no defect.



# Smart Operational Monitoring

**NA Vendor**

## Requirement

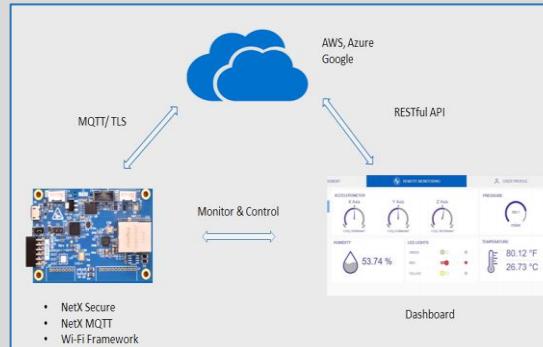
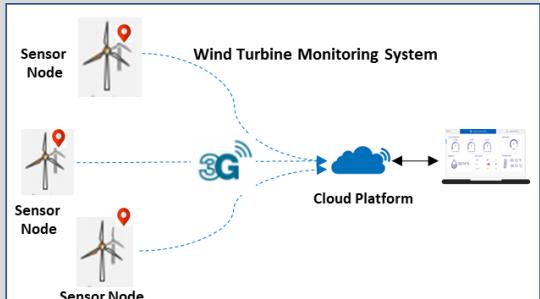
Build solution for remote monitoring of wind turbine through data collection, provide insights with analytics for corrective action

## Solution

- Delivered end to end solution from hardware to firmware, sensor acquisition, certification, cloud and mobile application
- Implemented / integrated environmental sensors(temperature, pressure, humidity) and motion sensors(accelerometer, gyro), Firmware and device upgrade/configuration over the air, Cloud (AWS), Connectivity (Wi-Fi, 3G), GPD, data analytics and dashboard

## Customer Benefit

Customer are able to monitor and take corrective action instantly and deliver SLA to their end customers



# Smart Asset Tracking

**European Vendor**

## Requirement

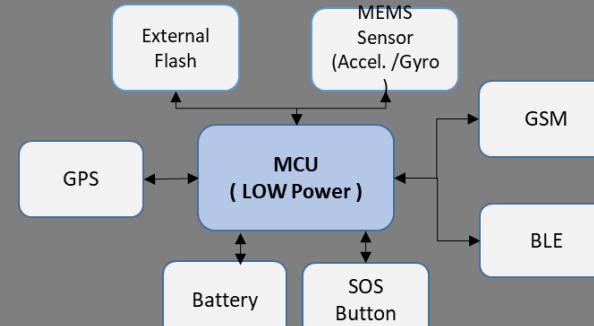
Design and development of Low power low cost solution for tracking device for industrial, vehicle, and personal asset

## Solution

- Delivered end to end solution from hardware to firmware, sensor acquisition and filtering, certification, mobile application, and consulting for mass production
- Implemented Low Power GPS Tracking and Geo-fencing, motion detection algorithms using GPS and accelerometer data, alerts such as low battery , temperature etc. and connectivity over BLE

## Customer Benefit

Customer leveraged low cost solution to improve profitability margins



## Smart Robotics

World leading  
Home Appliance  
Vendor

Computerized Sewing  
Machine

8 Product Line Variants

10+ Complex Devices Hardware Abstraction

3 MCU Variant Abstraction

Model Based Design

IEC IEC Standard Compliance

Motor Control Algorithms

## Requirement

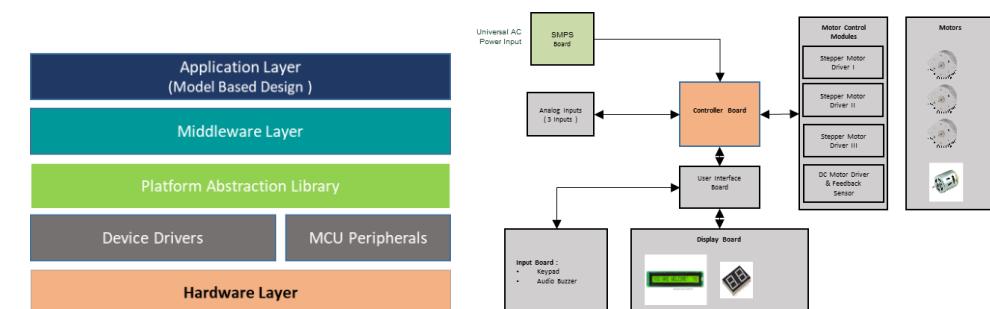
- Reverse engineer, re-design and implement sewing machine product appliances for multi-variant product line
- BOM Costing and optimization for improved profitability

## Solution

- Delivered advanced motor control system with new control and user interface board, electro-mechanical interface design engineering with accuracy/timing, testing and certification
- Implemented Optimized hardware components selection & analysis with improved scalable modular system architecture & design ( hardware & firmware )

## Customer Benefit

Considerable savings by reducing the electronics BOM per machine equals 5.5 USD, and customer manufactures millions of them in a year with functionality enhancements



Hardware & Software architecture

## Smart Robotics

European  
Vendor

### Health Monitoring of Motor engine



Delivered low cost, low energy, high performance health monitoring of motor engine end to end IoT ecosystem

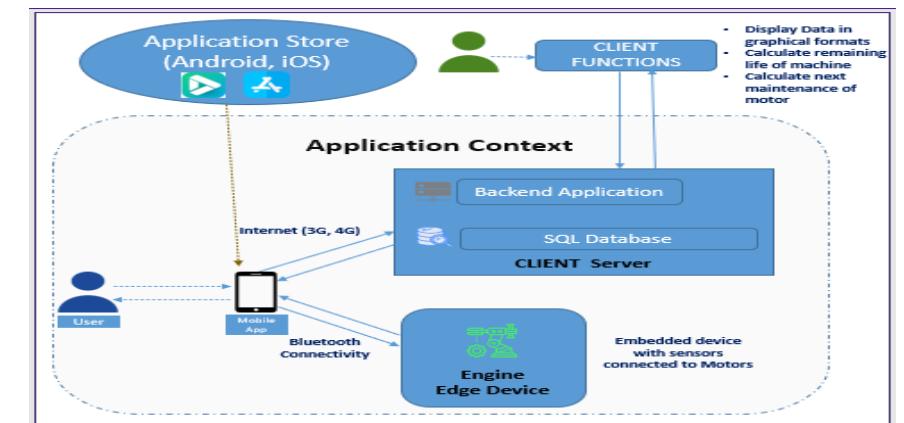
## Requirement

- To build ground up end to end IOT system for collection of motor critical parameters like vibration and temperature data for predictive maintenance and saving costs.

## Solution

- Delivered Raspberry Pi application to periodically collect temperature and vibrational data from sensors of the motors
- Implemented android and iOS application, data storage, and server side application for visualization and dashboard

## Customer Benefit



## NA Vendor

## Requirement

**Design and Development of board with HOST platform to support PCIe 2.0 , SDIO 3.0 and USB 2.0**

## Solution

- Delivered solution by selecting components, hardware and enclosure design, linux utilities development and testing
- Implemented and tested measurement on selective rails, thermal analysis, form factor usability and aesthetics using tools such as OrCAD Schematic and instruments such as analyser and power meter

## Customer Benefit

- Improved speed and signal integrity
- Smaller form factor with considerable savings in cost and space.



## Asian Vendor

## Requirement

**Implementation of FPGA enabled real-time video processing and enhancement removing background from the scenes and accurately specify the targets**

## Solution

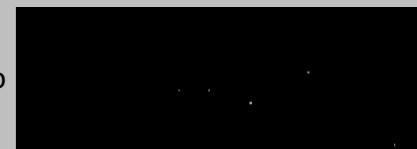
- Delivered solution by eliminated the background with automatic threshold, target detection in real time computation of image size (720x576x10 bits) i.e. at 25frames per sec i.e. over 150 Mbps data rate
- Implemented by acquiring input video from source using decoder chip configured with IIC bus, and did Comprehensive testing with Virtex-4, Virtex-5, Kintex-7 and Virtex 7 devices

## Customer Benefit

Input Video Frame



Accurate Output Video Frame



## European Vendor

## Requirement

**Develop low cost RF signal attenuator that attenuate signals up to 90dB with RF frequency range (0 to 6GHz) in 2G& 5G Wi-Fi signal testing**

## Solution

- Delivered using FPGA interface connected to host processor interface via glue logic, and Hybrid dielectric PCBs using Rogers +FR4 material were fabricated
- Implemented and tested using tools (OrCAD Schematic, PADS PCB, FloTHERM, SolidWorks) and Instruments used (Network Analyzer, Agilent VSG, Temperature chamber, Power meter, Spectrum analyzer, Shield boxes room (Rx sensitivity testing)

## Customer Benefit

- High accuracy and linearity
- Minimized RF signal loss and substrate leakage
- Considerable savings in cost and space.



# Test Automation

## NA Vendor

### Requirement

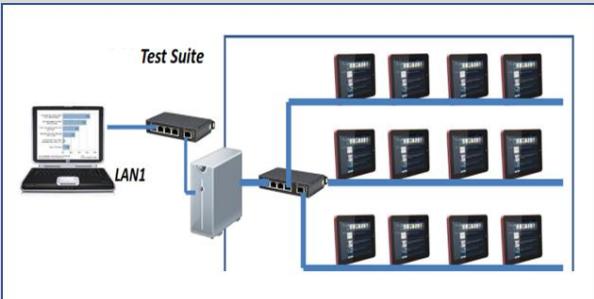
Auto controlling , testing and monitoring the inflight entertainment devices

### Solution

- Delivered test automation framework with record and playback, data driven & event driven, and model based testing, test management, reporting, and logging via web interface
- Implemented on Android and QNX Platform support, and Hardware Simulation such as events, Scenarios etc.

### Customer Benefit

Cost reduction with high-quality product delivery



## Asian Vendor

### Requirement

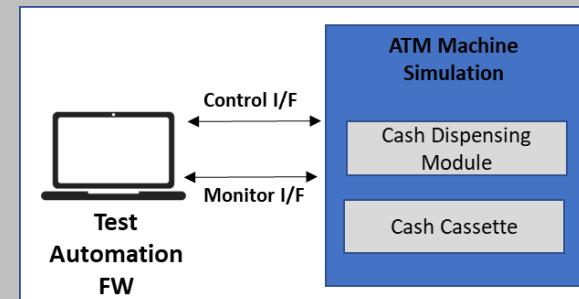
Automation testing solution for testing ATM machine modules

### Solution

- Delivered windows based testing framework for ATM Modules Simulation and Emulation
  - ATM Cash Dispensing Module
  - ATM Cash Cassettes
  - ATM Module sensors
  - Cash Notes
- Implemented standard device communication module over XFS on USB , Ethernet and Serial

### Customer Benefit

Cost reduction with high-quality product delivery



## Asian Vendor

### Challenge

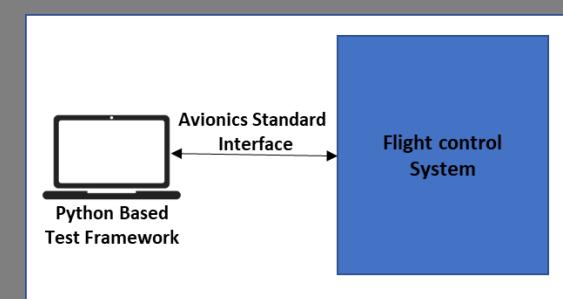
Test automation solution for verification & validation for Flight Control System

### Solution

- Delivered automated Python based test framework
- Implemented different types of analysis as per Aerospace DAL A level
  - Structural Coverage Analysis
  - Stack usage Analysis
  - Memory Usage Analysis
  - Object Code Analysis

### Customer Benefit

Cost reduction with high-quality product delivery



# Customer case Study

**Utilities**



## Smart City

### North American Utility Manufacturer

#### Smart Bin

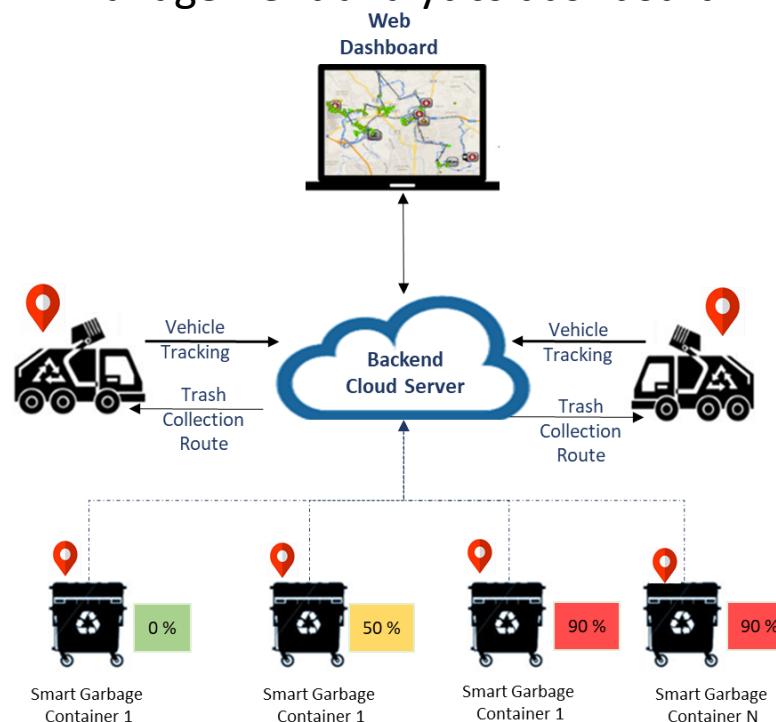


#### Requirement

- Design and development of smart city wastage management system with smart trash bins

#### Solution

- Delivered end to end solution for real-time monitoring of % bin occupancy, per household waste statistics, and smart pickup and collection status
- Implemented alerts such as status and overdue for scheduling pick-up event, vehicle routing and garbage collection status, and waste management analytics dashboard.



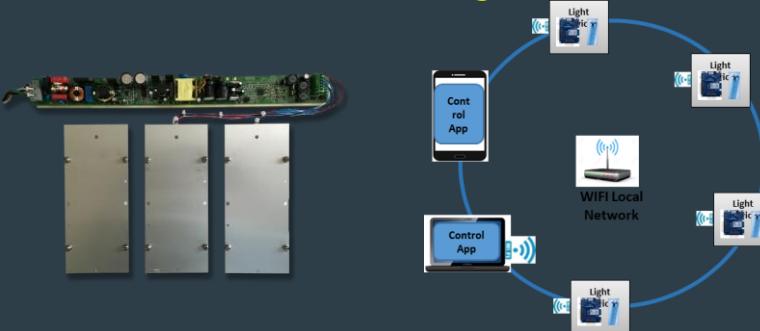
#### Customer Benefit

Customer reduced cost significantly through reduced truck roll out, and with optimized pick up truck routes.

## Smart City

### European ODB Vendor

#### Smart Light



Three channel LED Ballast & Network  
Wireless Lightning Control System

## Requirement

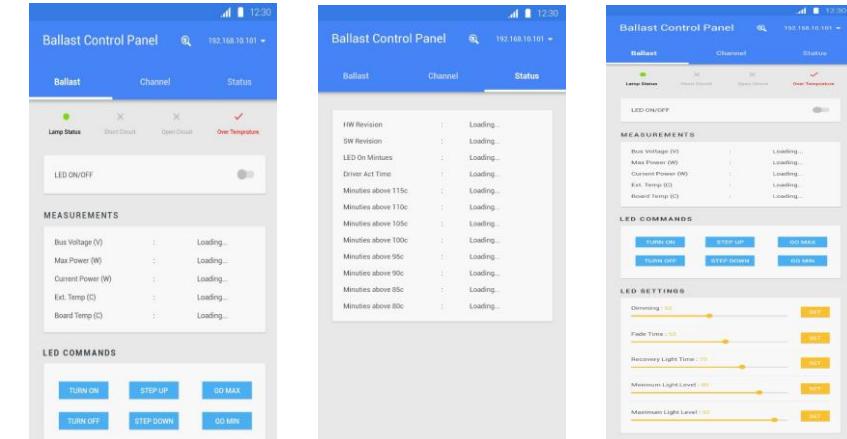
- Develop a retrofit solution to enable wireless connectivity to current wired LED ballast devices

## Solution

- Delivered end to end solution from Hardware to embedded software, mobile app and lighting control features
- Implemented wireless add-on hardware card, firmware for wireless connectivity, mobile application, lighting control algorithms, LED driver, communication protocol and stack development and support

## Customer Benefits

The automated, highly scalable solution with rich lighting features from basic on/off to monitoring and alerting controlled via user intuitive mobile application



## Test Automation and RPA



EHS Platform

enabl<sub>on</sub>

### Requirement

- Develop an Enterprise-wide Automation Strategy & Roadmap for migration of EHS Platform.
- Enable data entry to the system from upstream through RPA process

### Solution

- Delivered Automation Tools Strategy & Blueprint for migration
- Implemented RPA process to enable data entry into platform with multiple review and approval stages

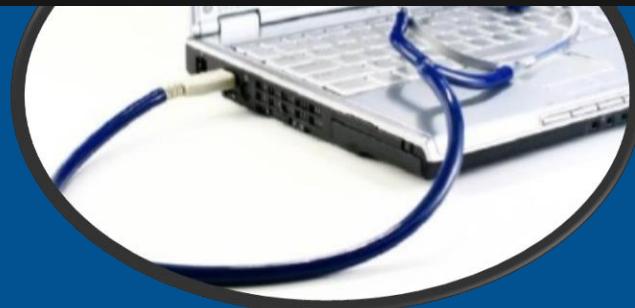
### Customer Benefit

- Customer reduced cost significantly through reduced cost of testing and better coverage.
- Customer saved cost on the data entry efforts and compliance submission of reports decreased to a day instead of week.



# Customer case Study

**Education & Healthcare**



## Smart Healthcare

### Asian Enterprise

#### Pathological Kit Monitoring

The screenshot shows the KRIYAC medical software interface. The top navigation bar includes 'Dashboard', 'Bags History', 'Lab Collection', 'Home Collection', 'Manage Bags', 'Assign Carrier', and 'Logout'. Below the dashboard, there are two main sections: 'CRITICAL BAGS' and 'ACTIVE CARRIERS'. The 'CRITICAL BAGS' section lists a single entry: Bag ID L001, Pickup Date 24th Dec at 03:04 PM, Carrier Name Shreya P, Status Specimens, Last Active 24th Dec at 03:08 PM, and Current Location Shreya Bungalow, P10, Tapovan Society, Patherbagh Society, Ram Nagar, Deonar, PUNE, Maharashtra 411021, India. The 'ACTIVE CARRIERS' section lists three entries: Bag ID L001, Pickup Date 24th Dec at 03:04 PM, Carrier Name Shreya P, Status Specimens, Last Active 24th Dec at 03:08 PM, and Current Location Shreya Bungalow, P10, Tapovan Society, Patherbagh Society, Ram Nagar, Deonar, PUNE, Maharashtra 411021, India. Both sections have 'Previous' and 'Next' buttons.

## Requirement

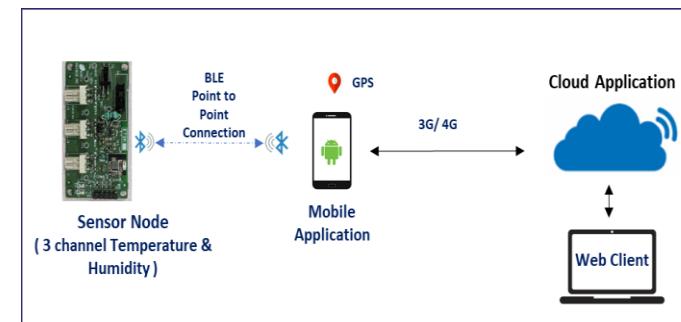
- Design and Development of end to end data logger & tracker solution for monitoring environmental parameters of pathological samples
- Provide affordable end to end solution for low volume production

## Solution

- Delivered embedded data logger device with temperature & humidity sensor, BLE connectivity, data caching (offline, 10 hrs backup) with battery powered solution.
- Implemented mobile application with GPS tracking and geo fencing, integration with cloud (Client, Heroku, AWS) with dashboard for graphs , Alerts, and Google Maps

## Customer Benefit

Low cost battery operated IoT enabled tracking device which monitors temperature for three chambers and reports in the mobile at real-time.



The screenshot shows the KRIYAC mobile application interface. At the top, it says 'Bag L001' and 'name - Current trip'. Below this, there are three tabs for 'CHAMBER 1', 'CHAMBER 2', and 'CHAMBER 3', each showing a graph of Specimen Count vs Current Temperature. Chamber 1: Specimen Count 6, Current Temperature 24.4°C. Chamber 2: Specimen Count 6, Current Temperature 23.8°C. Chamber 3: Specimen Count 3, Current Temperature 24.1°C. Below the chambers, there is a 'Pickup Points' section with a map showing locations like 'Shreya Bungalow', 'Software Craft', 'The Melody Call', 'Monica's Block', and 'Ruchi's Home'. The bottom of the screen has a navigation bar with icons for 'Dashboard', 'Bags History', 'Lab Collection', 'Home Collection', 'Manage Bags', 'Assign Carrier', and 'Logout'.

## Smart Virtual Learning

# RUBRIK ✓

Development, Testing and DevOps



## Requirement

- Develop, maintain, scale and improve the quality and performance of the home, school and board application including analytics engine
- Deploy, automate, and setup CI/CD pipeline for multiple applications in the public cloud

## Solution

<https://teachers.rubriksoft.com/>  
<https://students.rubriksoft.com/>  
<https://principal.rubriksoft.com/>  
<https://admin.rubriksoft.com/>  
<https://home.rubriksoft.com/>  
<https://rubriksoft.com/>

Delivered end to end solution including design, development, testing, monitoring and DevOps



## Customer Benefit

Customer focuses on customer acquisition and let the W5RTC as a trusted partner to manage the end to end solution



## Smart Virtual Learning

RUBRIK ✓

AI/ML based handwritten recognition



### Requirement

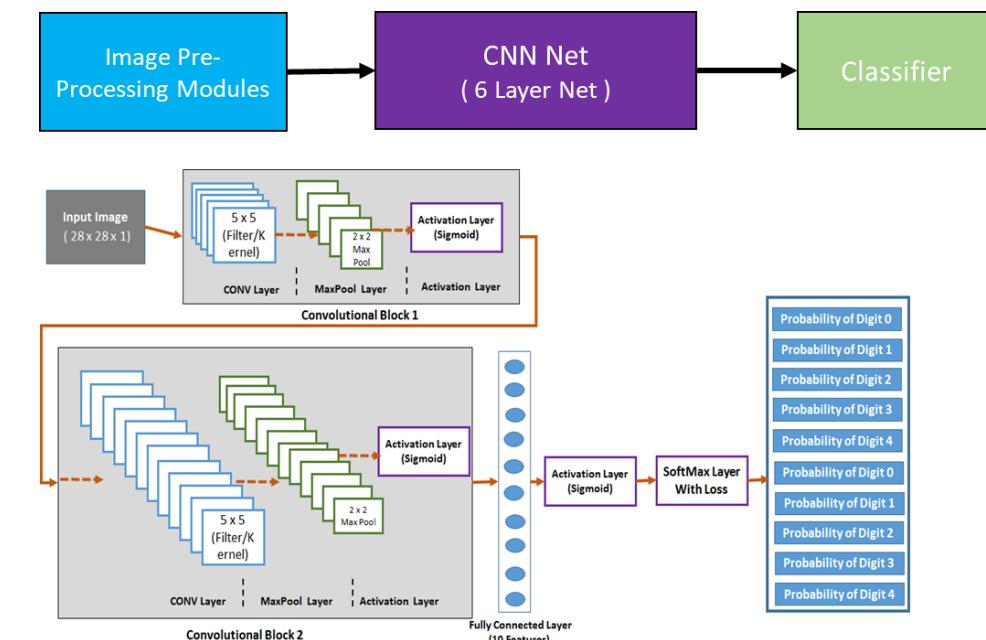
- Develop a AI/ML module to recognize hand written digits and character for test evaluation

### Solution

- Delivered the application that performs handwritten digit and English character recognition using deep learning CNN network and model in Matlab .
- Implemented and generated 6 layer networked CNN model, trained with given NET architecture using 60K handwritten digits and English characters

### Customer Benefit

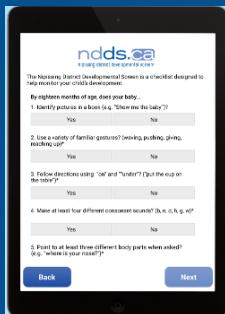
The solution enabled customer to validate and verify the hand written answers and score marks.



## Smart EHealthcare



### Patient Engagement & eReferral



### Requirement

- Client decided to build their new cloud-based app, they decided from the start to move to developer-driven testing using CI-CD.
- It required a solution that could provide them with the same safety net they had before, but one that would be much less brittle.

### Solution

- Developed AI/ML to Inbuilt smart DOM selection logic
- Delivered simple, intuitive, point and click interface for test creation
- Introduced processes and control around test environment utilization, reporting and problem management.
- Implemented guided product tours to learn and familiarize about new features using RPA

### Customer Benefit

- Client was able to launch a new and improved Portal navigation, along with a few bonus features in less time than planned.
- Customers were delighted by the guided tours and the client was able to present a WOW factor to the customers.
- Client was able to gain better efficiency in feedback and reporting from various releases.

# Customer case Study

**Finance & Communication**



## Managed Services



### IPTV VOD Content Validation & Automation



#### Requirement

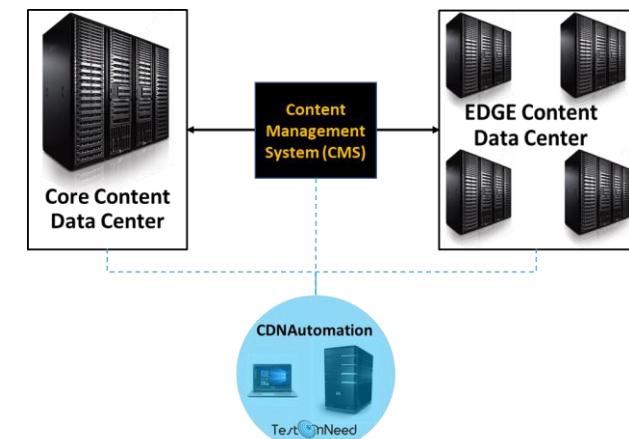
- IPTV VOD service provider experienced out of sync video content between the core data center and edge content data center
- As a result, service failed because of errors injected by CDN such as invalid format, file missing, incorrect location, etc. and required an automation solution to be developed

#### Solution

- Delivered easy to use automation solution to verify and validate content between the core and multiple edge data centers
- Implemented flexible solution that can be configured and executed on-demand or periodically to validate the accuracy

#### Customer Benefit

The customer can ensure consistency of video content between data centers and as a result, improved IPTV VOD service performance



## Managed Services

### European Telecom Vendor

#### Network Management solution



Real-time monitoring and management using the E2E NMS solution for Wi-Fi based Mesh Networking system .

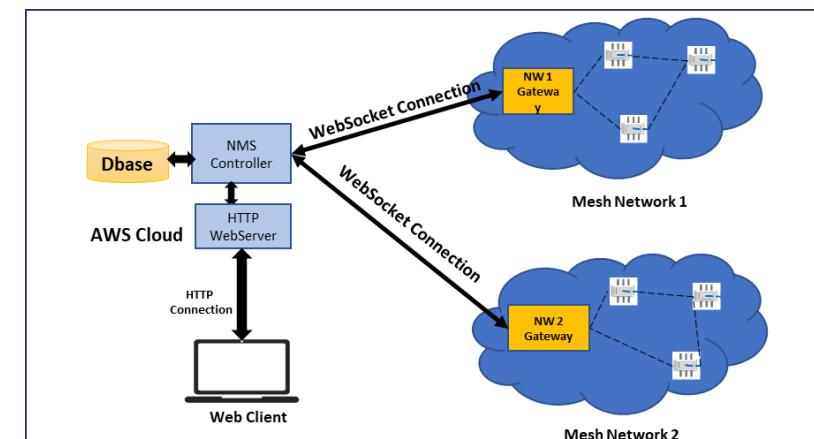
### Requirement

- Develop a solution to control, monitor and managing Wi-Fi based Mesh Networking system.

### Solution

- Delivered custom built NMS gateway, NMS controller backend application, data storage, and cloud web application for configuration, monitoring, upgrade/update firmware and security certificate
- Implemented Secure design for data and storage security (encryption), user authentication, and connectivity (TLS with WebSocket)

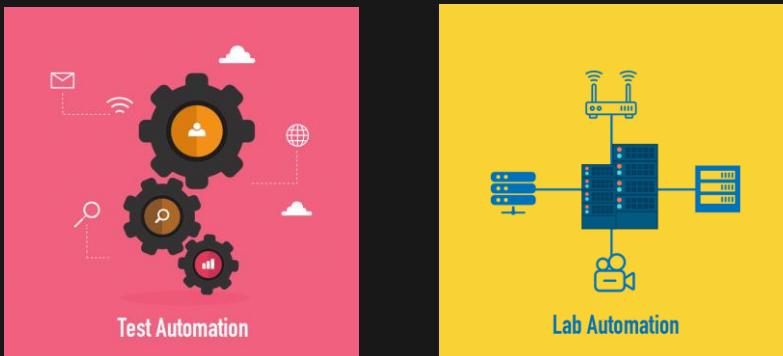
### Customer Benefit



## Test and Lab Automation



### Wi-Fi AP



### Requirement

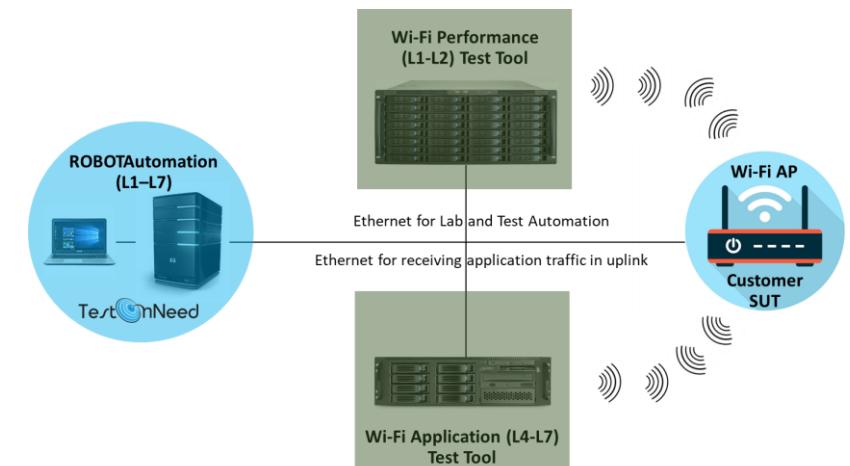
- A tier one operator in North America wants to test and deliver new Wi-Fi Access point (STB) product fast as well as subsequent upgrades
- Test cycle takes 5 - 12 weeks with 1000<sup>nds</sup> of manual test cases with two different test tools (Wi-Fi network and Application testing) and require a cost effective solution

### Solution

- Delivered easy to use Turnkey ROBOTAutomation solution to automate both test cases and the lab equipment
- Implemented test design, test execution, test automation as well as test analytics

### Result

Customer successfully reduced complexity, improved efficiency from 12 weeks to maximum 2 weeks. As a result reduced cost, and higher ROI



## Managed Services

### Indian System Integrator

FPGA solution testing, benchmarking and optimization



### Requirement

- Test, benchmark, and optimize performance parameters of various packet architecture designs by synthesizing and implementing it on various Xilinx FPGA devices

### Solution

- Delivered results performing different synthesis and implementation strategy, better pipeline mechanism to optimize the performance
- Implemented critical path analysis for design on various xilinxFPGA's (i.e) XCVU7p-flva2104-1, XCVU7p-flva2104-2, XCVU13p-fhgc2104-2-I, XCVU31p-fsvh1924 and other lower end devices

### Customer Benefit

Customer are able to achieve better optimization of placement & route, synthesis strategies and selection of device with speed grade

SN	Device	Design	Max Freq obtained
1	XCVU13p-fhgc2104-2-I	Design_1	Fmax = 156 MHz
2	XCVU13p-fhgc2104-2-I	Design_2	Fmax = 156.92 MHz
3	XCVU31p-fsvh1924	Design_3	Fmax = 183.32 MHz
4	XCVU31p-fsvh1924	Design_4	Fmax = 180 MHz

## Test Automation

Leading Canadian  
Bank

ETL Data quality & monitoring



### Requirement

- Customer experienced several issues that were ultimately found to have been caused by data quality. To reduce its vulnerability to this form of operational risk, the Bank turned to W5RTC for their data quality and monitoring solution.

### Solution

- Delivered Data Testing framework provided a unified strategy and visibility for the developers, testers, SMEs, business users, and management.
- Implemented automated data comparison, and enabled continuous, consistent and automated testing of all the data passing through the ETL processes.

### Result

- Up to 20% fewer resources were required for testing over a period of nine months.
- Improved efficiency to get automated and quick feedback to SMEs, and the capability to drill down on the problem dataset led to higher efficiency.

## Test Automation

### Canadian Telecom Operator

#### Mobile Application Testing



#### Requirement

- Our client looked for a reliable QA and testing service provider well equipped to assist in its foray into the mobile application management enterprise market dominated by the new technology and growing end-user expectations.
- Size, budget, time limit, newer technology, and reliability of offshore testing partner put some serious challenges for our client before we took upon their project.

#### Solution

- Delivered Robust system and integration tests across different devices and simulators.
- Developed, generated and recorded the crash logs so that we could get closer to the bugs in short span of time.

#### Customer Benefit

- Savings of costs by 60% due to extensive use of automation tools.
- Our proficiency in performance engineering helped the client to get the best possible results for scalability, reliability, and sustainability
- Testing on extra devices helped in ensuring more stable function of the product and catering to the extensive needs of mobile users.



Partner for your success

We *solve* your customer challenges

We *start* your project when you need it

We *support* you to win your customer trust and orders

We *offer* SLA and profitability driven partnership model

We *provide* flexible onshore, offshore and nearshore engagements

We *deliver* products fast with high quality

We *automate* all to be fast to beat the slow

Being *efficient* and *fast* is all about *transformation*  
and *success* is all about *welcoming* it.

To *transform* and to provide the *best product fast*, start today your journey with us.



customersuccess@w5rtc.com

<https://w5rtc.com/>

