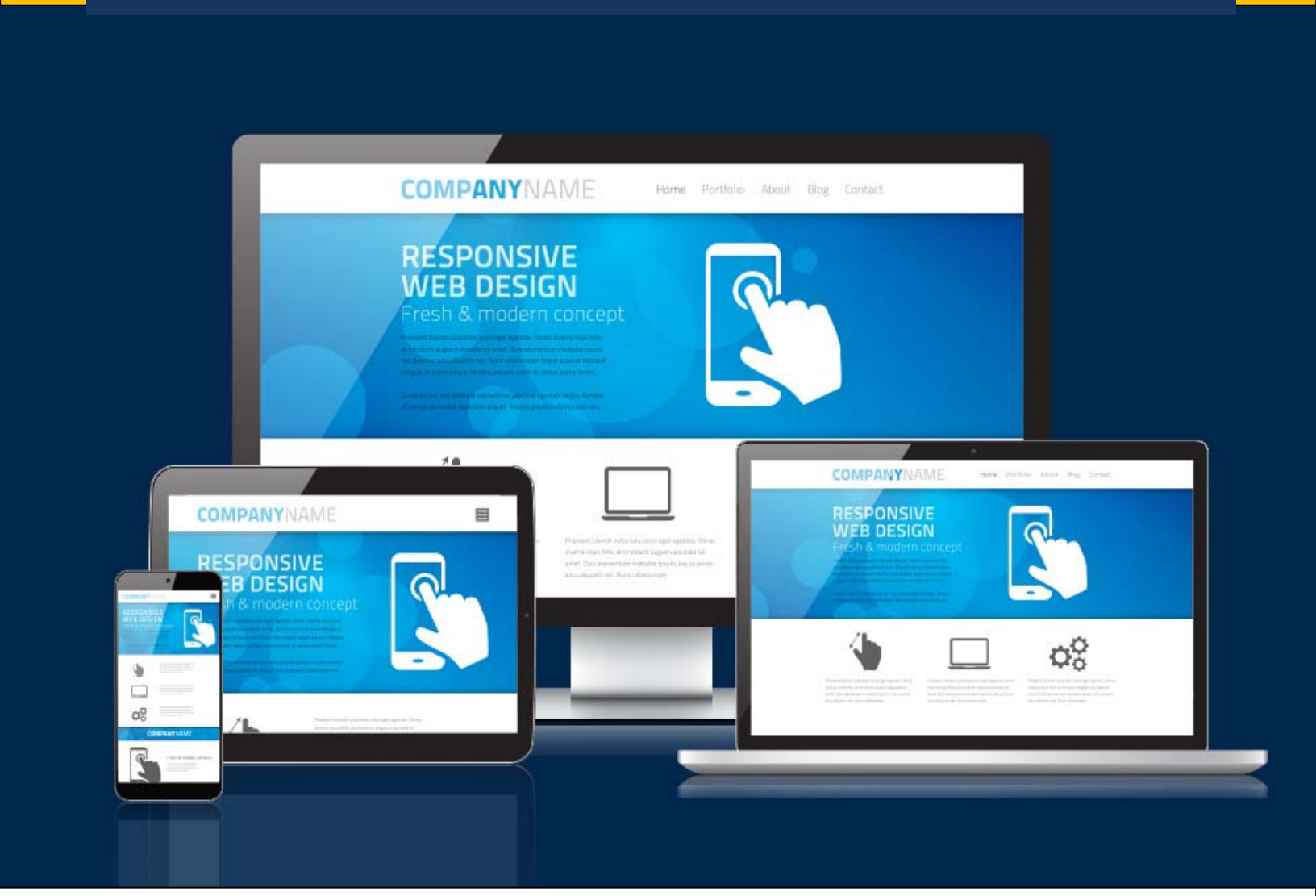
Big 3 Automotive OEM Increases Vehicle Testing Productivity & Efficiencies using STG's Mobility Solution Offerings



SYSTEMS TECHNOLOGY GROUP, INC. (STG)

WE DO IT WITH PRIDE®

CASE STUDY

Customer Business Overview:

This Big 3 Automotive OEM client is one of the world's largest Automotive OEM's with operations across the globe.

Business Domain Description:

This Automotive OEM's Scientific Labs and Proving Grounds is an industry leader in engineering, validation and testing services. With vast experience in automotive testing, they are uniquely positioned to understand and meet specific requirements with an overall turn-key approach.

This Automotive OEM's highly skilled and experienced staff of engineers, mechanics and technicians, combined with state of the art testing facilities, offer unsurpassed capabilities allowing them to offer premium customer service in engine and powertrain dynamometer testing, stress and durability development, energy management development, hybrid and electric vehicle battery testing, full scale aero-acoustic wind tunnel analysis and emission and fuel economy testing, in addition to more than 7,500 acres of proving grounds with over 150 "lane miles" of road.

STG Solution Overview:

STG developed a new mobile application to replace the 3-ring-binder version of the driver book with electronic versions of the documents on iPads mounted inside the vehicle. The second main feature is the ability for the driver to enter the shift/test feedback during the test, as opposed to doing so at the end of the shift. These two features alone can significantly improve driver productivity and morale. It is further envisioned that such an app can improve driver test conformance by providing real-time feedback to the driver based on data from the vehicle component data buses. Another possibility is to integrate the currently available navigation systems into the application to provide the driver with turn-by-turn voice assisted instructions. Real-time messaging and communication in case of distress is also required.

STG developed a new admin web interface to automate the test schedule documents authoring, publishing and maintenance. Currently the test schedules and associated events are authored in MS-Word, converted to PDF when ready and stored in MS-SharePoint Driver Durability Testing documents repository. This web interface will also provide capability to automate the forms (such as Vehicle Damage, Ballast Schedule, etc.,) used in the Durability Testing Vehicle Book.

The following diagram provides an overview STG's solution:

Technical Solution Overview:

Our technical solution addresses the business objectives by developing the following three different applications:

- An iPad Native Application developed using Kony 5 MDAP (Mobile Application Development) Platform
- A Back-End Web Admin Interface developed using Java EE Web Platform
- A REST Services to integrate with Back-End Systems.

STG leveraged the following key technologies in this project:

iPad Application:

- Kony 5 MDAP (Mobile Application Development) Platform
- JavaScript
- FFI (Foreign Function Interface)
- Native Multi-Channel Application
- iPad Tablet,
- Ping Federate Server / oAuth Security
- WebSphere TAI (Trust Associate Interface) Security,
- Enterprise Web Services (REST)
- iSpeech TTS (Text to Speech) and ASR (Automatic Speech Recognition)
- GeoLocation API
- Map Interface

Admin Web Interface:

- Java EE, HTML 5, CSS 3
- JavaScript
- JQuery
- TinyMCE
- iSpeech SDK

REST Services:

- Java EE, Spring, Hibernate
- JSON

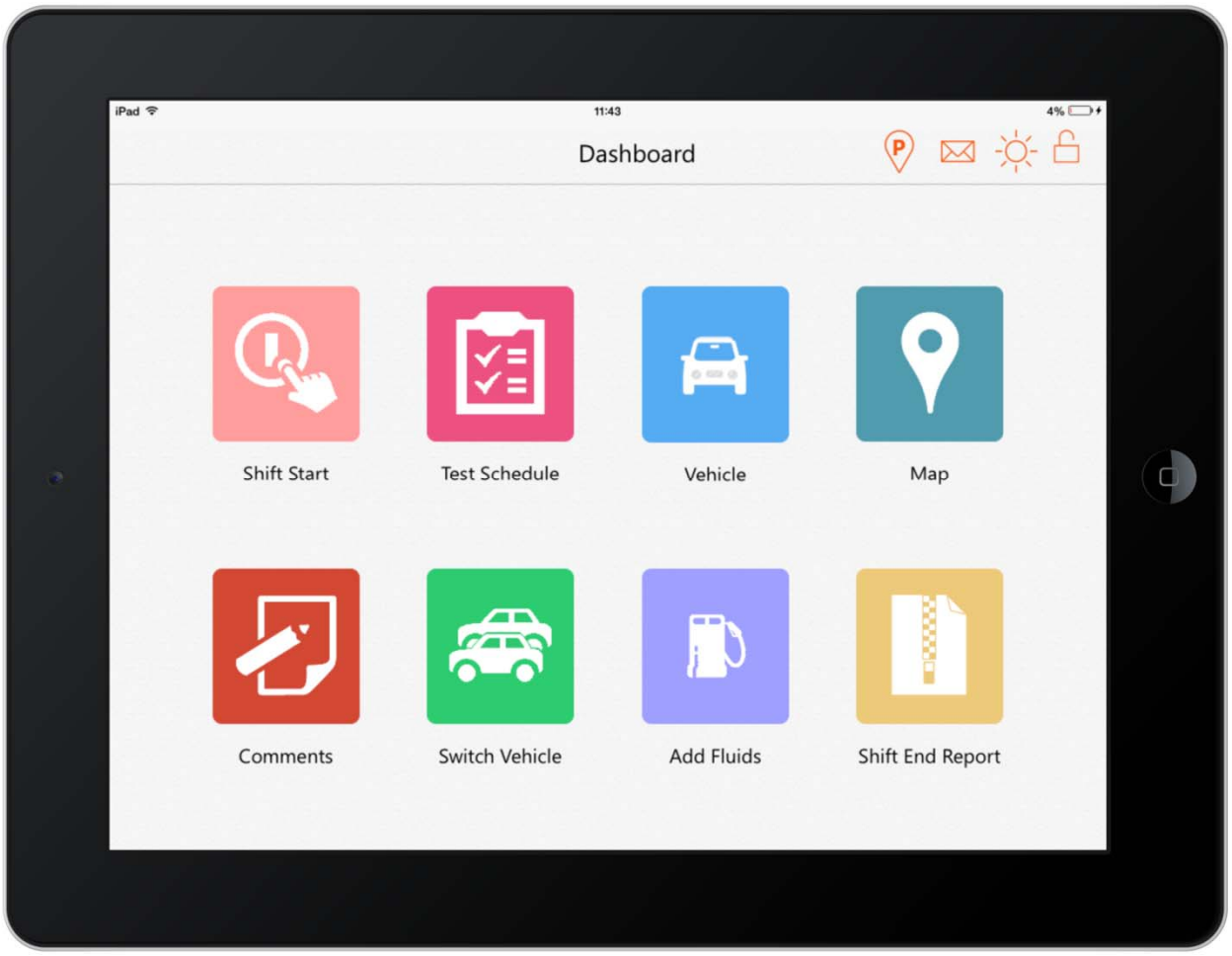
STG implemented the following innovative solutions in this project:

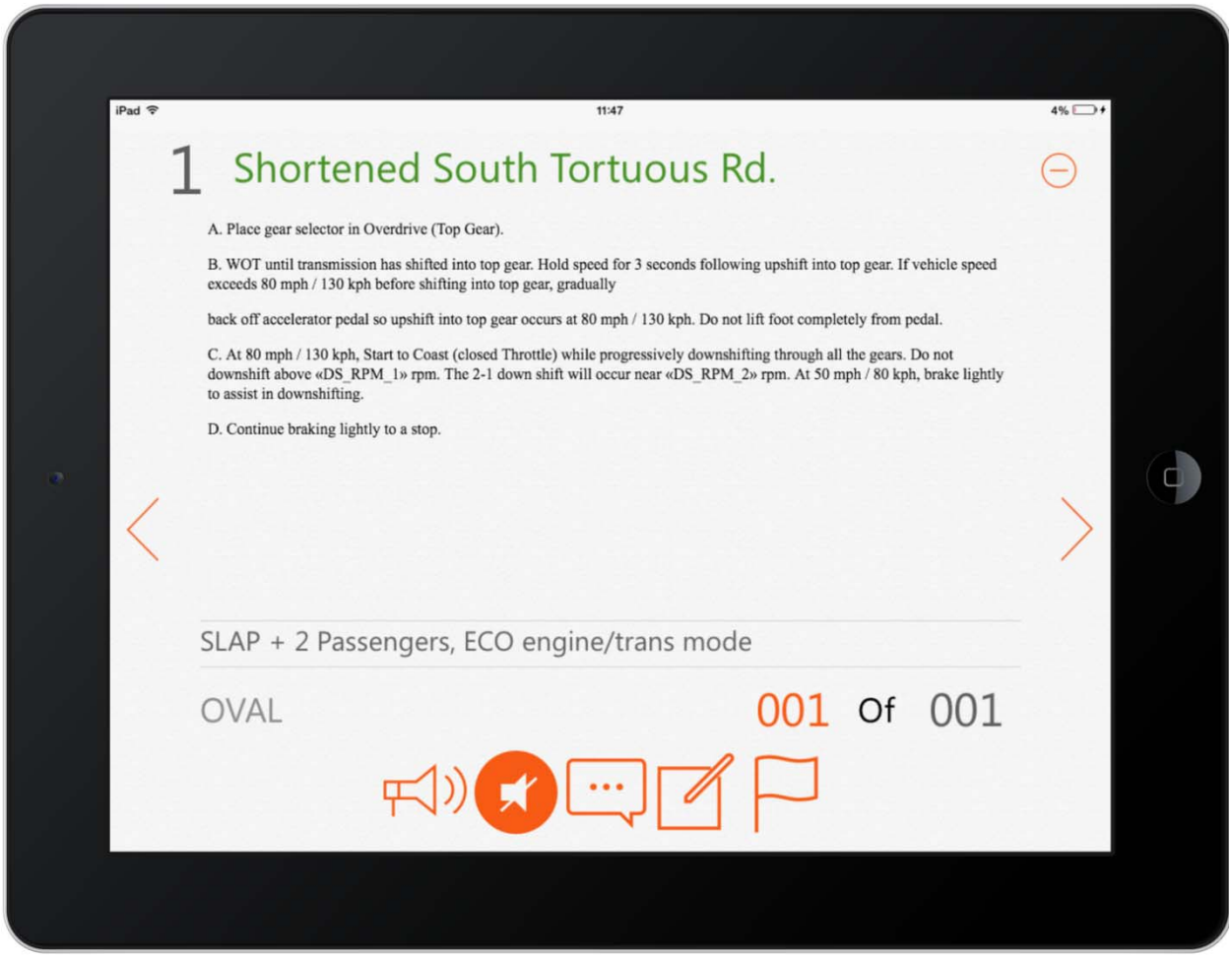
- QRCode Scanning to scan the Vehicle Number
- Speech Recognition to capture Driver Comments
- Text to Voice based Testing Instructions while driving
- Private Proving Ground (APG & CPG) Maps (Garmin Source)
- Google Maps integration including Satellite View
- Geolocation capturing to identify:
  - Driver Comment Location
  - Vehicle Parked Location
- Push Notifications for Messages to enable two way communications between Supervisors & Drivers
- iOS 7 Flat Design Native UI (Content Centric)
- Responsive Web Design (RWD, HTML 5, CSS 3, JS) & Intuitive Admin Web Interface
- Cross-Browser Compatible - Mobile First Responsive Design
- Reuse of functionality on both iPad and Web

Business Results:

- STG replaced the need to maintain MS-Word document based Test Schedules with a completely automated Test Schedule Management capability using the Admin Web Interface developed by STG.
- STG replaced the binder book used by the Driver to perform the durability testing with an iPad mounted on the vehicle with Electronic Book. The Electronic Book not only makes the test schedules available to the driver, it also obtains their testing feedbacks/comments and sends them to the back-end test information system real time. It completely replaced the need to use any paper based forms or documents while testing the vehicle.

Solution Artifacts:




iPad
11:47
4%
1 Shortened South Tortuous Rd.
A. Place gear selector in Overdrive (Top Gear).
B. WOT until transmission has shifted into top gear. Hold speed for 3 seconds following upshift into top gear. If vehicle speed exceeds 80 mph / 130 kph before shifting into top gear, gradually
back off accelerator pedal so upshift into top gear occurs at 80 mph / 130 kph. Do not lift foot completely from pedal.
C. At 80 mph / 130 kph, Start to Coast (closed Throttle) while progressively downshifting through all the gears. Do not downshift above «DS_RPM_1» rpm. The 2-1 down shift will occur near «DS_RPM_2» rpm. At 50 mph / 80 kph, brake lightly to assist in downshifting.
D. Continue braking lightly to a stop.
SLAP + 2 Passengers, ECO engine/trans mode
OVAL
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