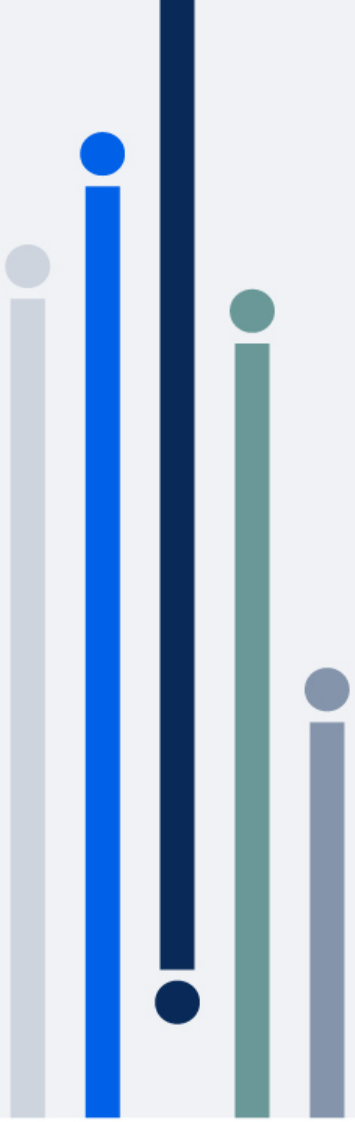
Response to NHTSA's Request for Information: *Impaired Driving Technologies*



Response to Docket 2020-0102

impirica

Office of Impaired Driving and Occupant Protection Division,
Office of Research and Program Development, NHTSA
1200 New Jersey Avenue SE
NPD-100, Room W44-243
Washington DC
United States of America
20590

Subject: Federal Register response related to Impaired Detection Technologies

Thank you for the opportunity to participate in this Request for Information,

As you will see from our response, Impirica has been actively engaged in the research and commercialization of impairment assessment tools for two decades and continue to develop solutions that will support the proactive assessment of driver impairment.

The information included in this document directly pertains to the questions asked by the National Highway Traffic Safety Administration (NHTSA) in Docket 2020-0102. Should you require further information or have any questions on the documented content we encourage you to reach out to us.

Further to the content of this presentation, should you see an opportunity to collaborate in either research and/or development within this mutual space of interest, we would be happy to explore this with you.

On behalf of our team, we are happy to support you in meeting your survey objectives.

Peter-John Barclay
President & CEO
Impirica Inc.

Impirica Quick facts

Who we are

- Edmonton, Canada based company focused on the research, development and commercializing of sustainable, cause-agnostic impairment testing solutions

Industries we operate in

- Workplace safety
- Medical reviews
- Law Enforcement
- Medical Cannabis

Key Partnerships

- University of Alberta
- University of Colorado
- Royal Canadian Mounted Police
- Edmonton Police Service
- DriverCheck

Leaders in cognitive based driving evaluations

Established on 8 years of research

20 years industry experience

Trusted evaluation

145,000 real-world evaluations

Used across North America

1. Vendor Information

Requested information	Impirica Response
a. Full name of company	Impirica Inc.
b. Contact information	P-J Barclay – President & CEO pjbarclay@impirica.tech Office: 1-780-628-3641 Ext 226 Toll Free: 1-855-365-3748 Ext 226
c. Website URL	www.Impirica.tech
d. Years the company has been in business	20 years excluding the 8 years of research preceding this time
e. Number and types of customers served	Licensing authorities – 8 Municipalities – 7 Private entities - 25 Hospital groups – 171 Law enforcement agencies – 2 (solutions still in development working with agencies in piloting and development capacity)
f. Location where the technologies are developed	Edmonton, Alberta, Canada

2. Tool Information

a. Tool overview	The tool is an evolution of an in-office, cognitive based screen used to proactively evaluate driving impairment risk. The original tool was offered to doctors, licensing authorities and commercial fleets to identify driving impairment risk as a result of medical conditions, fatigue, alcohol and drugs. The original tool was an in-office based hardware specific solution that used cognitive based tasks to provide a predictive risk score of on-road performance. Impirica used the knowledge and foundation of the original tool together with 145,000 real world evaluations (cognitive screens and on-road drives) and collaboration with research as well as commercial partners to develop a mobile (tablet and phone) based cognitive screen that is designed to evaluate real time driving impairment. The output of the tool is a predictive risk score for impairment. While the mobile tool is currently administered by decision makers (doctors, license authorities and fleet safety managers). We are in the process of releasing a self-administered screen that will be deployed within a vehicle to provide both driver and/or oversite authority with information on driver impairment risk.
b. Physical Information	Tablet version tested on the following hardware specifications: • Dimensions - 250.6 x 174.1 x 7.5 mm (9.87 x 6.85 x 0.30 in) • Temperature range - 14° to 113° F, that's -10° to 86° C. • Display unit - 10.2 inches, 324.6 cm^2 (~74.4% screen-to-body ratio) Phone version tested on the following hardware specifications: • Dimensions - 138.3 x 67.1 x 7.1 mm (5.44 x 2.64 x 0.28 in) • Temperature range - 14° to 113° F, that's -10° to 86° C. • Display unit - 4.7 inches, 60.9 cm^2 (~65.6% screen-to-body ratio)

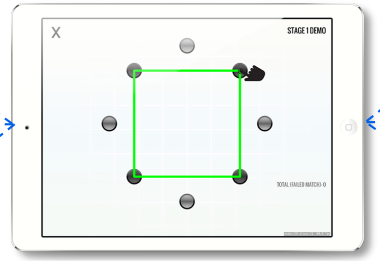
2. Tool Information (continued)

On-going validation studies with commercial & research partners

Packaged to suit needs time/predictive power

Scientifically validated

Real Time Cognitive Evaluation



Tablet/phone platform

Evaluate impairment relative to driving

Cause agnostic assessment Drugs/Alcohol/Medical conditions/Fatigue

- **Today -** Mobile cognitive screen used by decision makers outside of the vehicle to proactively evaluate impairment risk.
- **2021** - Working with key research and commercial partners to collect further day to day driving data relative to impairment risk.
- **Mid 2022** - Deploy cognitive based impairment screens to tablet infrastructure within the cab of commercial vehicles to facilitate rapid impairment testing.
- **Mid 2023** - Deploy cognitive based impairment screens to touchscreen infrastructure within identified public vehicles to facilitate rapid impairment testing.

2. Tool Information (continued)

c. Technical Specifications	• Use cognitive metrics to measure impairment risk • Demonstrates 85% predictive accuracy of driving impairment when compared to a standard law enforcement toxicology screen – results were presented at the 2019 The International Council on Alcohol, Drugs and Traffic Safety (ICADTS) conference and the results are in the process of being published • Data collected is not stored on device but immediately transferred to server via internet location except remote locations which are performed in offline mode and transferred once internet access is established. • Mobile device uses battery power supply. Testing device used a Non-removable Li-Po 8827 mAh battery (32.9 Wh) with 10 hours consistent use (non charge) on 3G platform
d. Types/Classes of Drugs or impairment Detected	The initial model that we have developed is cause agnostic. This means that the cognitive screen establishes a person's impairment risk associated with driving and not necessarily the substance or medical condition that has caused the impairment. Common causes of impairment risk identified through our cognitive solution: **Illicit substances:** • Alcohol • Amphetamines • Barbiturates • Benzodiazepines • Cannabinoids • Cocaine • Ketamine • Methamphetamines • Opioids **Medical conditions:** • Anti-depressant medication • Cardiovascular disease • Dementia • Diabetes • Hypertension • Medications & treatments • Psychiatric illness • Renal disease • Respiratory disease • Sleep apnea • Uncontrolled pain medication • Traumatic brain injury

2. Tool Information (continued)

e. Operating Information	Calibration	Calibrated through normative data and consistently refined algorithm. Following an initial assessment, a baseline is available for comparison.
	Response time	Immediate
	Warm up time	Immediate
	Training	The tool is self administered for user prompting and guidance.
	Technical support	1st round of support is directed to licensee technical resources 2nd round is escalated to Impirica. For organizations with no internal resources, Impirica will provide full technical support through identified associates.
f. Software	Software	Mobile application deployed via Apple and Google app store
	Frequency of updates	Our Agile development cycle is based on two-week long iterations. The goal being to have new user functionality built, tested and deployed at each iteration. This does not mean there is a new app version available on the app store each iteration, as changes could be back-end, database, or unrelated to the mobile application. At most software update frequency would be two weeks, but normally would be a longer cycle.

2. Tool Information (continued)

f. Software (continued)	

Last update	December 23rd 2020
Steps to update	Server-side application code is integrated into a continuous integration pipeline. Each completed piece of functionality is built, tested and deployed via an automated build pipeline. This provides consistency across environments, replicability, and improved quality. Mobile application deployments are handled via app store updates.
Operating system	Applications run on iOS and Android Server-side application code is .NET Core and is hosted on an Azure App Service.