Submission No 27

DRIVER EDUCATION, TRAINING AND ROAD SAFETY

Name: Mr Dean Vince
Organisation: ii-Drive Pty Ltd
Date Received: 19/02/2017

Parliament of New South Wales
Staysafe – Joint Standing Committee on Road Safety
Macquarie Street · Sydney NSW 2000

19 February 2017

RE: Inquiry into Driver Education, Training and Road Safety

Thank you for the opportunity to submit our submission to Parliament of New South Wales Staysafe, Joint Standing Committee on Road Safety inquiry into driver education, training and road safety, with a focus on the role of whole-of-life driver education and training in supporting improved road safety outcomes in New South Wales.

ii-Drive is a Proprietary Limited Company owned and operated in Sydney NSW, we are partnered with Western Sydney University (WSU) who are represented by researchers specializing in virtual reality and artificial intelligence, CKAS Mechatronics Pty Ltd, a Melbourne based company, who specialize in 6 Degree of Freedom full motion simulation capabilities, and some of the most advance simulator systems and Western Sydney Regional Organisation of Councils as part of our drive to deliver a new way to deliver an end to end driver training program that will achieve real results.

The attached enclosure - A Proposition to Dramatically Improve Young Driver's Hazard Perception has been endorsed by all members of the ii-Drive Board and Dr Anton Bogdanovych for the School of Computing, Engineering and Mathematics of Western Sydney University. Both parties are the primary contributors to this response. The ii-Drive Board and Dr Bogdanovych has authorised the Managing Director ii-Drive Pty Ltd to sign and submit this submission.

Any inquiries in regards to this submission should be directed to the undersigned.

[redacted]
Dean Vince
Managing Director

Enclosure:
1: ii-Drive Pty Ltd - A Proposition to Dramatically Improve Young Driver's Hazard Perception

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“Cars are Safe, Drivers are not”

Parents. ii·Drive National Survey April 2014

Learn Apply Survive

A Proposition to Dramatically Improve Young Driver’s Hazard Perception

[redacted]

Dean Vince

Managing Director

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“Cars are Safe, Drivers are not”

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A Proposition to Dramatically Improve Young Driver’s Hazard Perception

February 2017

ii-Drive™
A Proposition to Dramatically Improve Young Driver's Hazard Perception

The Directors of ii-Drive Pty Ltd offer to the Australia driver training market a revolutionary, life saving program for novice drivers.

It's a sad fact, despite the improvements in motor vehicle safety and systematic national graduated driver programs, young Australians continue to be critically injured and killed at alarming rates. Newly licensed drivers are 9x[1] more likely to encounter a critical injury or suffer death during their early driving experiences. For most young drivers *"it's not **if** you will have an accident, it's **when** you will have an accident."*

ii-DRIVE proposes an innovative and accessible 'end-to-end' experiential training program which utilises virtual and 6 degrees of freedom (6DOF) motion simulation technologies to engage novice drivers to significantly enhance life- saving driving skills by creating lasting awareness of hazardous driving situations, while, also developing a positive behavioural change.

We aim to produce a pilot that would feature a high fidelity virtual reality driving simulation that closely replicates the experience of driving a car in the physical environment. The benefit of driving a car in the virtual space is that (guided by the existing accident data) we would be able to simulate a large number of extremely dangerous traffic situations with the aim to alert young drivers as well as to train them to handle such situations in the best possible way. Furthermore, we plan to also utilise the combination of EEG/eye-tracker technology for better understanding of the cognitive state of the students undergoing such virtual training. Similar to existing military applications this would help to dynamically identify the gaps in student knowledge and then re-target the simulation to better address these gaps. After conducting the initial studies with the pilot we plan for the ii-Drive approach to be used as an additional training module in driving schools around the country.

Situation

Motor vehicle accidents resulting in critical injuries and fatalities are one of the largest contributors to premature death in our community. 2015 there were 348 fatalities on NSW which was a 13% increase on the 2014 figure of 307. Alarmingly figures show a 15% rise in serious injuries since 2008[2].

Young drivers are most at risk. More under 25's are injured or killed than any other age group. Since 2007 on average 21% (79) of all fatal crashes and 26% (5945) of all injury crashes involve drivers between 17-25 years[3].

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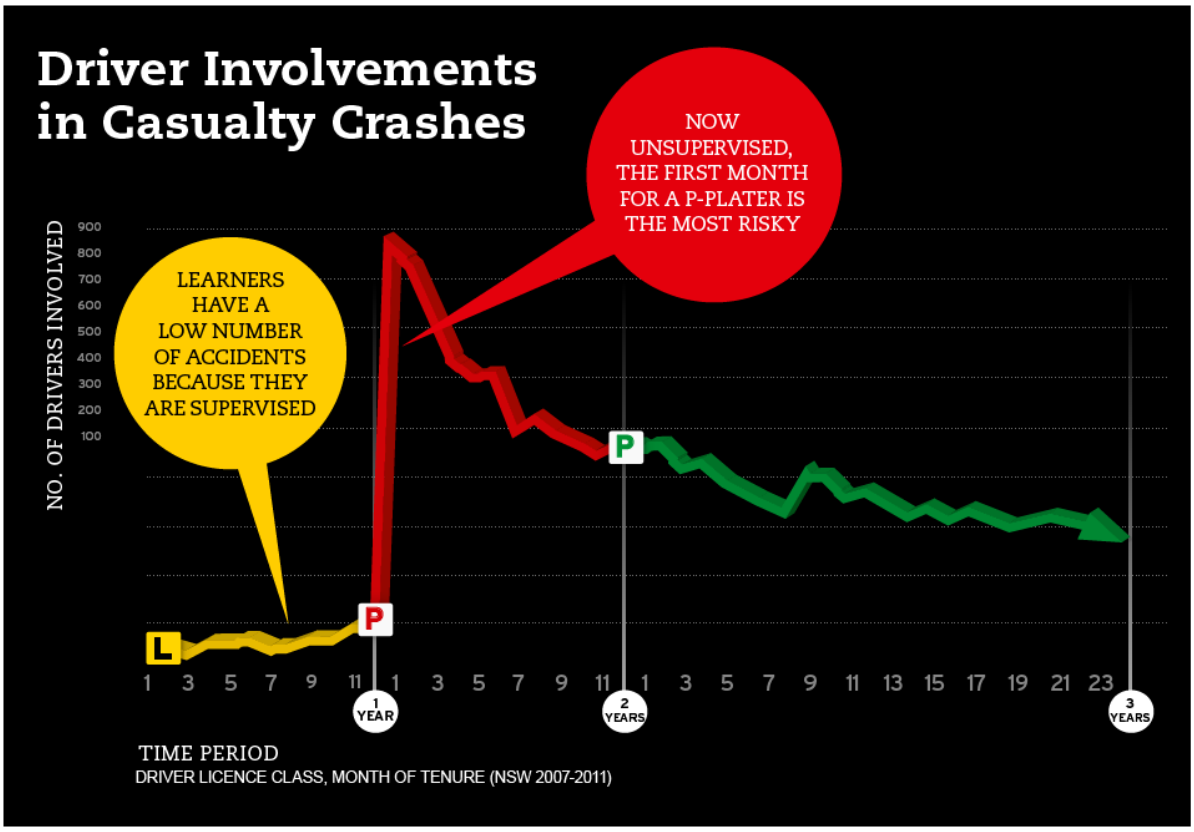
[1] RMS Report – Centre for Road Safety 2007 – 2015 - Road Traffic Crashes in New South Wales - Statistical Statement for the years ended 31 December 2007 – 2015, Centre for Road Safety, Chippendale, NSW, 2008

[2] RMS Report – Centre for Road Safety 2015 - Road Traffic Crashes in New South Wales - Statistical Statement for the years ended 31 December 2015, Centre for Road Safety, Chippendale, NSW, 2008

[3] RMS Report – Centre for Road Safety 2007 – 2015 - Road Traffic Crashes in New South Wales - Statistical Statement for the years ended 31 December 2007 – 2015, Centre for Road Safety, Chippendale, NSW, 2008

Statistically the initial three months of solo driving is the critical transition period. The unsupervised first month is the most critical. In fact young drivers experience a 900% increase in injury-causing accidents immediately after graduating to their first solo drive on their "P's"[4].



Source: Roads and Traffic Authority 2011 annual accident report

Current GDL has stalled

The approach to training young drivers has stalled. The two major initiatives - GDL [Graduated Driving Licence] program and RBT [Random Breath Testing] –which have demonstrated improvements in safety are over two decades old.

The GDL program has demonstrated that a state-wide program can improve outcomes – reducing teen injury and fatalities. The issue confronting Government is that the combination of these two programs is no longer an effective tool. These programs have ceased to impact the reduction of injuries and fatalities. The nation experience a 7.9% increase in road deaths during 2016 compared to 2015 and the Federal Government reports that serious injuries have increased every year since 2000[5].

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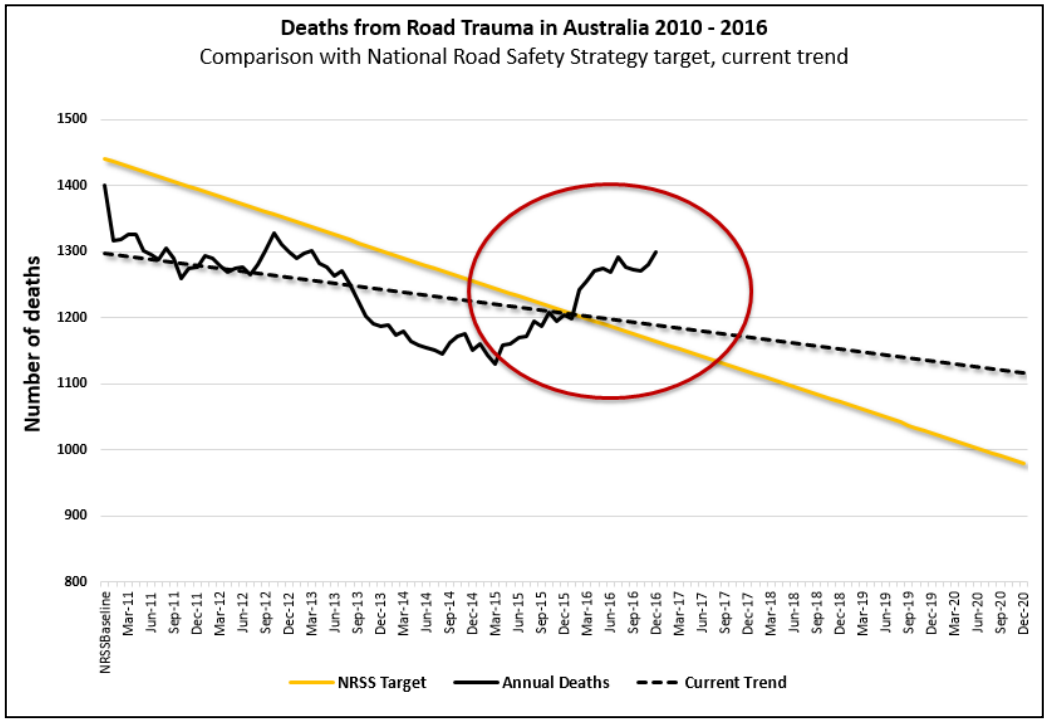
[4] RMS Report – Centre for Road Safety 2007 – 2015 - Road Traffic Crashes in New South Wales - Statistical Statement for the years ended 31 December 2007 – 2015, Centre for Road Safety, Chippendale, NSW, 2008

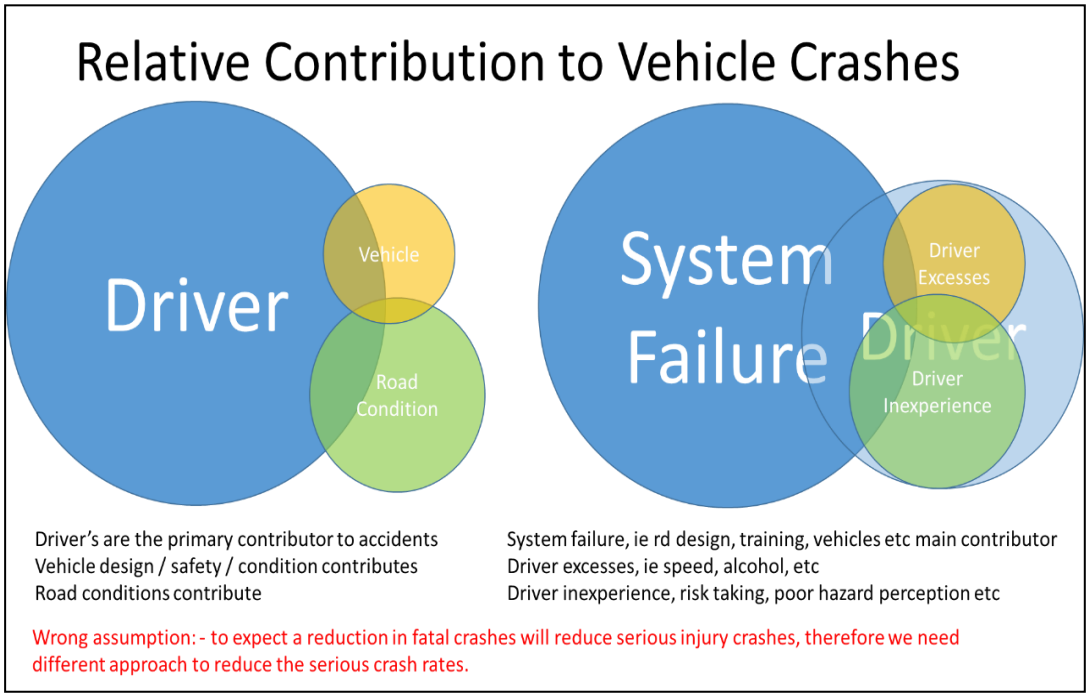
[5] Bureau of Infrastructure, Transport and Regional Economics (2016) Australian Road Deaths Database. Published online at https://bitre.gov.au/statistics/safety/fatal_road_crash_database.aspx



Source: BRITE, 2017 Chart ACRS

Systematic Failure

Prof Fred Wegman, during the 2013 Australasian Policing and Road Safety Conference suggested that a comprehensive driver education program is a solution to addressing a broad systematic failure which is identified as the main contributor; poor road design, little training and substandard vehicles versus driver excesses.



Source: Prof Fred Wegman, presented at 2013 ARSPE conference, Brisbane, QLD

Driver Training - A 21st Century Cottage Industry in Australia

In pre-industrial times the commercial workplace was a cottage based workshop system. Work was contracted by a central agent to subcontractors who completed the work by hand in their own homes or in small workshops with multiple craftsmen.

Similarly the driver training market sector in NSW is characterised by a range of SME businesses. Driving Schools are a collective of franchises - a loose network of trainers, which resemble a cottage industry.

Today in 2016 the driver training sector resembles a cottage industry. Dad and Mum trainers, poorly trained professional instructors, little regulation and governance are the markers of an untapped marketplace. There is an opportunity to bring significant innovation to this market sector.

"Just three precent of drivers teaching L-platers in NSW would pass a driving test. The alarming news comes from a new study which found just 18 of 624 participants could pass a 16-question online road rules test similar to the Driver Knowledge Test faced by prospective L-Platers"

NRMA-Wheels Magazine 2013

Consequently fast growing NSW is battling with an increasing rate of vehicle related injury and death [+17% versus prior year[1]], which in part is attributed by injury accidents, caused by novice drivers. This cohort remains oblivious to the consequences of aggressive driving styles, vehicle speed, distractions and poor perception and judgement of life threatening hazards - not the general operation of a car.

National research by ii-Drive confirms that parents believe that "*cars are safe, drivers are not*"[6].

The Driving Training sector in Australia is ready for a radical overhaul as authorities now agree that the key to lowering youth driving risk is through universal education.

Evaluating current driver training, including the effectiveness of refresher training and skills updating, and adaption to changing vehicle technology

Solution

ii-DRIVE, a start-up, has developed and is researching an innovative and accessible 'end-to-end' comprehensive experiential competency based training system which utilizes theory, practical, simulation and advanced simulation training modes within the framework of a modern learning management system to engage novice drivers and create lasting awareness of hazardous driving situations, while, also developing a positive behavioral change.

[6] ii-Drive National Survey conducted by McCrindle Research through Reach Australia Surveys, April 2014

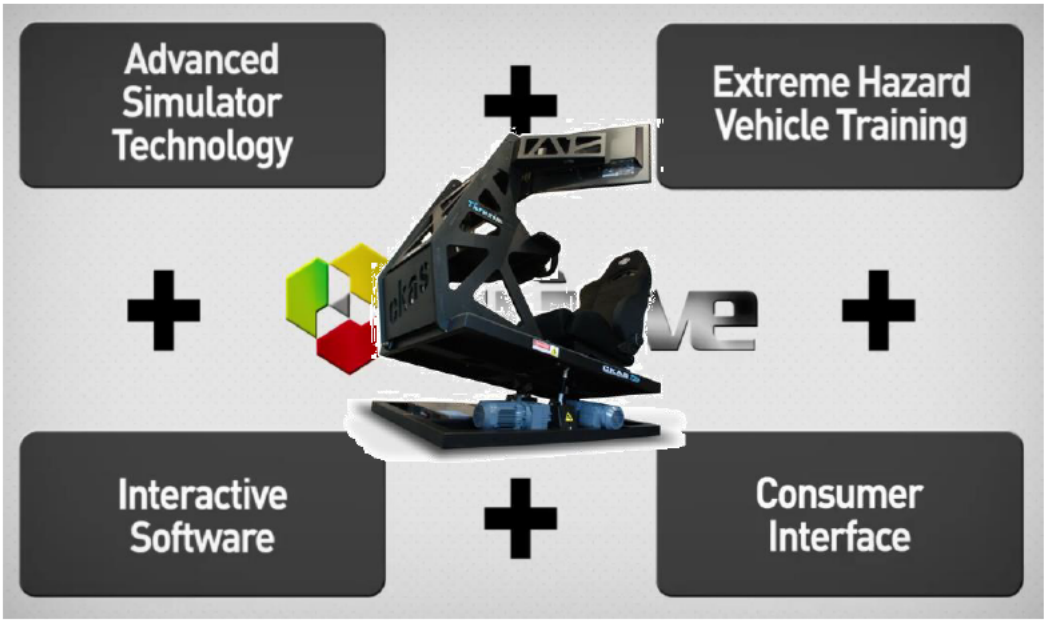


Figure 1: ii-Drive Training System

The ii-DRIVE program **assists novice drivers to discover the risks and consequences of driving choices**. The ii-Drive's training system offers a **holistic solution** founded on academic and industry research to combine the most effective components of road training into a single continuum.

The platform is capable of delivering controlled yet **revolutionary experiential Learner Driver training**, advanced hazardous driving training, driver reform programs for repeat road offenders and can be adapted for significant additional outcomes including routine cognitive testing of elderly or international drivers and analysis of driving habits to determine 'at risk' individuals.

Practically ii-DRIVE is a stand-alone driver education and training system that incorporates state of the art Australian **patented CKAS simulation technologies** with a proven adult **experiential learning platform** adapted from the Australian Army training model.

ii-Drive's pilot will feature a high fidelity virtual reality driving simulation utilizing 6 DOF that closely replicates the experience of driving a car in the physical environment. The benefit of driving a car in the virtual space is that (guided by the existing accident data) ii-Drive will be able to simulate a large number of extremely dangerous traffic situations with the aim to alert young drivers as well as to train them to handle such situations in the best possible way.

As part of the research, conducted by our research partner - Western Sydney University, ii-Drive plans to also utilise the combination of EEG/eye-tracker technology for better understanding of the cognitive state of the students undergoing such virtual training. Similar to existing military applications this would help to dynamically identify the gaps in student knowledge and then re-target the simulation to better address these gaps. After conducting the initial studies with the pilot we plan for the ii-Drive approach to be used as an additional training module in driving schools around the country.

The ii-DRIVE program focuses on the high risk novice drivers who experience a 900% increase in injury-causing accidents immediately after graduating to their first solo drive on their "P's" a peak risk period in a young driver's learning experience.

The training model provides an adaptive solution to this problem. Initially the program will address the peak risk periods; *rare and dangerous situations* in a novice drivers learning experience as a priority training solution. The system is then adaptable to target habit reform in repeat road offenders, to identify high risk drivers early and can offer advanced driver training for commercial drivers.

The key focus for the ii-Drive program is not to reproduce learning of how to drive a vehicle (which can be effectively mastered in the physical world), but on exposing drivers to scenarios that are difficult to expose them to in real life. We anticipate that this approach will help to reduce the number of crashes and fatalities on Australian roads.

Significantly simulation based driver training approach is accessible by a broad cross section of the community. Apart from training novice drivers, virtual reality can also be helpful as a driving fitness assessment tool. Such a tool could be particularly useful for drivers over 65 years of age, the group responsible for 21% of all driver fatalities in 2016[7], as well as key compromised regions within NSW which are overrepresented in fatal and critical injury crashes can be rapidly supported by the replicable ii-Drive infrastructure.

Why Simulation

Simulation based 'experiential learning' lead to improved outcomes. Simulation based 'experiential learning' training programs work. Studies in the US document a 70% reduction in youth accident rates compared to traditional learn to drive education programs[8]. Research shows an elevated level of engagement and (up to 20%) better academic performance of students who learn through virtual simulations[9]. A study conducted by Nolan and Jones confirms that virtual training of army soldiers has a positive impact[10], while a more recent Australian Government report suggests that virtual training may not be as effective as physical training on the field[11]. An overview given by Roman and Brown outlines a number of scenarios where virtual reality training was conducted in the military domain and confirms the effectiveness of such training for the majority of scenarios[12]. A particularly interesting case covered in this overview, which is closely aligned with the focus of our proposal, is training military aircraft pilots. Many aircraft pilots are able to successfully learn how to independently fly complex military jets

[7] Bureau of Infrastructure, Transport and Regional Economics (2016) Australian Road Deaths Database. Published online at https://bitre.gov.au/statistics/safety/fatal_road_crash_database.aspx

[8] Allen, R.W., Park, G.D., Cook, M.L. Fiorentino, D. 2007, 'The Effect of Driving Simulator Fidelity on Training Effectiveness', National Advanced Driving Simulator University of Iowa retrieved on 10th May 11 from University of Iowa online

[9] Ijaz, K., Bogdanovych, A. and Trescak, T. Virtual Worlds vs Books and Videos in History Simulation. Interactive Learning Environments, 2016. Accepted for Publication

[10] Nolan, J. M., & Jones, J. M. (2005). Games for training: Leveraging Commercial Off The Shelf multiplayer gaming software for infantry collective training. Unpublished Master's thesis, Naval Postgraduate School, Monterey, California

[11] Whitney, Susannah J., Philip Temby, and Ashley Stephens. Evaluating the Effectiveness of Game-Based Training: A Controlled Study with Dismounted Infantry Teams. No. DSTO-TR-2799. DEFENCE SCIENCE AND TECHNOLOGY ORGANISATION EDINBURGH (AUSTRALIA) LAND OPERATIONS DIV, 2013.

[12] Roman, P. A., & Brown, D. (2008). Games–Just how serious are they. In The Interservice/Industry Training, Simulation & Education Conference (I/ITSEC) (Vol. 2008, No. 1)

purely from virtual simulations[13], which confirms the high effectiveness of the virtual simulation approach in training.

ii-Drive Pilot Project

ii-DRIVE is a validated, research based platform. A comprehensive study in conjunction with Western Sydney University commenced in 2016 aims to establish user acceptance and test the effectiveness of the simulated scenarios and analyses the cognitive state of the drivers immersed in those. The study compares driving records of the general public the virtual reality training to establish a correlation between the duration of the training and successful simulation performance.

The focus of this project is on complementing driver training with realistic virtual reality simulations. One of the key benefits of using virtual reality is that with its help it becomes possible to stage situations that are rare, dangerous or are such that even experienced drivers may struggle to handle. The key focus of such simulations is not on learning how to pilot the car (which can be effectively mastered in the physical world), but on exposing drivers to scenarios that are difficult to expose them to in real life. Such scenarios will involve dangerous situations on the road and recreating conditions associated with known accidents. It is quite beneficial and highly desirable to include such scenarios in driver training, but most such training is currently conducted in the physical world, where these scenarios would be associated with extremely high risk of serious injury or death, while using virtual reality would allow to eliminate these risks.

While developing the ii-Drive pilot we plan to achieve the following objectives:

- To collect statistics from at-risk drivers and understand how to address common problems they experience
- To measure the effects of various types of disruptions on the road (e.g. mobile phone call, fellow passengers talking) and through simulation let the drivers experience the consequences firsthand and learn from those experiences
- To study and simulate the effects of the 3 big killers on the road: alcohol, fatigue and speeding and stage complex road scenarios that would help understanding their impact
- To build facilities for conducting comprehensive driver assessment in a simulated environment and offering suggestions on what and how to improve
- To develop driving fitness assessment software for general public and tools for highlighting the areas that need improvement based on driver observation: (e.g. smoother breaking, blind spot checking, etc.) and to illustrate the effects of those training gaps by simulating scenarios where they could result in serious consequences

[13] ibid

- To develop fitness tests for elderly drivers by conducting a comprehensive simulation-based tests featuring the key areas of concern and monitoring driver reactions to the simulated hazards

- To help policy makers and road planners to dynamically test planned road and infrastructure changes before they occur and help with dynamically selecting the best alternatives

Prototype and Studies

In order to reach the aforementioned objectives we aim to build a comprehensive virtual reality driver training solution and to test the effectiveness of this solution with thousands of participants in selected driving schools. Our investigation has shown that the optimal hardware platform for this prototype is CKAS Motion Sim1[14] outlined in Figure 1 a). This hardware provides a high fidelity platform with realistic physical controls and a car booth that can simulate the physical effects of various forces applied to a car. We have already developed a preliminary prototype using a much cheaper setup: Logitech Momo[15] Steering Wheel and Pedals as shown in Figure 2 b), but this setup is limited in terms of providing feedback on the road conditions and car behaviour to the driver and, this, has limited training power, as the simulated car behaves very differently to the actual physical vehicle.

Figure 2. a) The CKAS Motion Sim1 Simulator b) Driver simulator setup available at WSU

Once the pilot has been built, we plan to conduct a comprehensive study in regards to user acceptance of the simulated scenarios and analyse the cognitive state of the drivers immersed in those. Conducting this study would require employing the pilot by members of the general public and accessing their driving records in order to compare those with the records of the group not involved with virtual reality training. We would also be able to monitor whether training to avoid an accident in one simulated scenario would result better accident avoidance in other simulated scenarios. In this way we will be able to establish a general correlation between the duration of the training and successful simulation performance. We will be testing the hypothesis that by spending a sufficient

[14] http://www.ckas.com.au/motionsim1_truck_sim_79.html
[15] http://support.logitech.com/ru_ru/product/momo-racing-force-feedback-wheel

amount of time within the simulation the users will not only be able to avoid accidents in the scenarios for which they were immediately training, but will also perform better than users not exposed to the simulation in new scenarios (where no prior training has been conducted)

In regards to monitoring driver performance, we will employ SMI Eye Tracking Glasses[16] (for having a full understanding of the user's gaze). Tracking the gaze of the driver would help to gather precise information about what the drivers were focusing their attention on, which hazards and road signs were they able to see and which have they missed. Using brain-computer interfaces similar to Emotiv Epoc[17] will help to constantly monitor the brain activity of the user through the analysis of the EEG data. This will allow for measuring and track user focus, engagement, interest, excitement, affinity, relaxation, frustration and stress levels. In our study we will assess whether there is a correlation between successful training and the aforementioned cognitive and emotional parameters of the users. We will conduct user studies aiming to measure how the aforementioned cognitive and emotional parameters would change throughout user training. While attending the US Army organized Artificial Intelligence Competition final, Anton Bogdanovych has seen first-hand how American soldiers are being trained in virtual reality simulations and how their cognitive and emotional parameters are being analyzed to improve the quality of training and training performance. While this work has not been published we have contacts of the sub-contractor[18] who was in charge of this implementation and who was happy to share the non-classified technical details of this work. We will also conduct further literature review as the use of EEG is gaining momentum and many publications in the area of our interest start to arise. (e.g.[19],[20],[21])

Current Progress

During the last 6 months we have been working on the preliminary pilot of the driving simulator. The current pilot recreates an area in Parramatta, NSW shown in Figure 3. Figure 3 a) features the map of the area and shows the reconstructed part of the map surrounded by the red dotted line. Figure 3 b) shows the overview of the resulting pilot environment.

[16] http://www.eyetracking-glasses.com
[17] https://emotiv.com
[18] http://discoverymachine.com
[19] Galway, L., McCullagh, P., Lightbody, G., Brennan, C., Trainor, D. (2015). The Potential of the Brain-Computer Interface for Learning: A Technology Review. In proceedings of IEEE International Conference on Computer and Information Technology.
[20] Kotchetkov, I. S., Hwang, Brian Y., Appelboom, G., Kellner, C. P., Connolly E. S. (2010) Brain-computer Interfaces: Military, Neurosurgical, and Ethical Perspective. Neurosurgical Focus, 28(5).
[21] Rizzo, A., Morie, J. F., Williams, J., Pair J., Buckwalter, J. G. (2005) Human Emotional State and its Relevance for Military VR Training. In proceedings of the 11th International Conference on Human Computer Interaction.

Figure 3. The Area Reconstructed for the Current Pilot: a) Map of the Area, b) Simulated Environment

The current version of the pilot represents a close replica of the selected area with buildings, plants, roads, road signs and road markings. Figure 4 shows some screenshots of the simulation environment and gives and impression of the quality of the simulated graphics and the level of details of the simulated objects.

Figure 4. Preliminary Pilot Screenshots

Apart from the environment itself the pilot also provides the 3D model of the car including its interior and exterior and provides functionality for being able to drive the car by using a set of pedals and a steering wheel connected to a computer. The driver perceives the experience of driving the car through a virtual camera that is positioned so that it gives the illusion of sitting in the driver seat. The user can also see the mirrors that correctly reflect the outside world. Figure 5 shows the pilot setup where a user drives the car using the steering wheel located on the table and two pedals (acceleration and break) located on the floor. In order to provide a more realistic experience our pilot supports the functionality of visualising the environment via a virtual reality headset (Oculus Rift). Apart from offering a more realistic 3D effect the headset also allows the driver to realistically turn the head to change the viewing angle in order to check the mirrors, blind spots or rear view while going backwards. A video showing our current preliminary pilot in action is available at: https://youtu.be/HdToLSAJcqc

Figure 5. Virtual Reality Preliminary Pilot Setup and Car Interior

The current pilot would need to be further developed to include other road users: cars, pedestrians, cyclists, etc. We would also need to develop multiple scenarios with these road users that would be suitable for reaching our objectives. Examples of scenarios that we plan to build include: pedestrians crossing the road while staring at their mobile phones, cars driving in the user's blind spots, cars changing lanes without indicating, etc. In order to build such scenarios we will investigate available crash data and will conduct interviews with drivers.

Significance of the Proposed Project

Through the development of the virtual reality driving training program we expect that many drivers will be able to avoid road accidents and, therefore, will avoid the risk of serious health damage or death and will also reduce such risks for other road users. Therefore, this project will address the 9^{h} Science and Research Priority (Health) from the list of those identified by the Australian government. In particular, it will be tackling the issue of improved prediction, identification, tracking, prevention and management of emerging local and regional health threats.

The ii-DRIVE training solution differs from conventionally accepted driver training and extant training platforms through the use of **advanced simulation within the framework of a holistic training model**.

ii-DRIVE is testing a **pilot model to demonstrate the effectiveness** of the system whilst targeting the most at risk people in the community and improving road safety outcomes over the next 12 months.

The **model can be rapidly expanded** to form the basis of a revolution in driver training led by and based out of NSW utilizing Australian technology

Benefits of Simulation for Driver Education to Government

- NSW Government could broadly leverage simulation as a positive driver training solution for the NSW public.
- An innovative approach to driver education provides many opportunities for the NSW Government;
    - To be a **national leader** in innovation and road safety
    - To be **active and visible** in finding road safety solutions which are proven effective
    - To provide targeted road safety training that **reduces high risk behaviors** such as drunk and drugged driving and mobile phone use whilst driving
    - To enable a **reform program for repeat road offenders** that targets the individual driver and makes the community safer without the need for incarceration
    - To **prioritise** *at risk* communities
    - To support economic development in NSW through the development of **new technology** and **job growth**
    - The ii-DRIVE training system which is **independently tested**, a research based platform developed in conjunction with Western Sydney University.
    - To expand programs to include provide solutions for **testing and evaluation of international and elderly drivers.**

Our Team

Our team consists of the ii-Drive (a Proprietary Limited Company owned and operated in Sydney NSW) and Western Sydney University (WSU) (represented by researchers specializing in virtual reality and artificial intelligence) and support from Western Sydney Regional Organisation of Councils (WSROC).

ii-Drive is represented by:

Mr. Peter Hill, Chairman - Simulation expert with 35 years industry experience including project management delivering complex computer based systems for materials handling, defence and simulation projects. Peter has been the President of the Simulation Industry Association of Australia. Peter has Degrees in Computer Science and Electrical Engineering as well as an MBA.

Mr. Dean Vince, CEO – Served 21 years in the Australian Regular Army and 10 years in Australian Army Reserves. Senior level operational logistic experience involving international contract negotiations. He has held the national role for training policy and training management for the Army Reserve. On leaving the Regular Army he spent a number of years in senior Logistics Operations and Supply Chain Management positions with leading general aviation and health care companies. He has extensive Project Management, Leadership, OH&S and Human Resource Management experience. Dean holds a Graduate Diploma of Logistic Management and an MBA through Deakin University.

Mr. James Ward, Director – Extensive leadership experience at the senior executive level within large corporations including 17 years with Johnson & Johnson Inc, entrepreneurial enterprises and not-for-profit organisations. He has over 35 years experience with international multi-discipline businesses, including initiating New Product Development, Marketing and Sales Management programs, General Management and Managing Director responsibility in the FMCG and Services industries. James is a Director of the Crusader Union, Australians largest youth camping organisation and a Director of **NBRS**Architecture. James has a Degree in Industrial Design and a Masters in Marketing and a Member of the Design Institute of Australia.

Mr. Scott Holmes, Director – Operations manager with 10 years industry experience in operations management, project management and strategic planning. Scott is a qualified project manager, a Graduate of Royal Military College Duntroon, holds a Degree in Professional Studies and a Masters of Emergency Management.

Western Sydney University is represented by

Dr Anton Bogdanovych and **Dr Tomas Trescak**, who are experts in virtual reality simulations as well as in using such simulations for educational purposes. For the use of the gaming/simulation techniques in his teaching Dr Bogdanovych has been awarded the ICT Higher Education Educator of the Year 2015 by the Australian Computer Society and the International Educator of the Year 2016 by South East Asia Regional Computer Confederation (SEARCC). Both Dr Bogdanovych and Dr Trescak have published widely in the areas of virtual reality and artificial intelligence and have received multiple academic and industry awards for their research.

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Advocating for the people of Western Sydney

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