LAYNE PERELLI, Ph.D.

OWNER,

GRAY MATTER METRICS, LLC

WHY CARE ABOUT FATIGUE?

IT'S A "*PROBLEM*"

- **ACCIDENTS AND DEATHS**

- **FINANCIAL COSTS**

- **EMPLOYEE HEALTH**

- **MORALE**

- **RETENTION**

- **PERFORMANCE**

TWO APPROACHES TO

THE FATIGUE PROBLEM

FIRST APPROACH

REDUCE THE PROBLEM

TRY TO MINIMIZE FATIGUE

BUT WHAT IF DRIVER IS FATIGUED?

HOW DO YOU KNOW?

SECOND APPROACH

IDENTIFY AND ATTACK THE PROBLEM WHEN IT OCCURS!

A VISION FOR THE FUTURE:

*A NEW TECHNOLOGY
FOR
PREVENTING ACCIDENTS
CAUSED BY
TIRED TRUCKERS*

WHAT IF . . . .?

- **EASY TO LEARN**

- **FAST**

- **LANGUAGE FREE**

- **INEXPENSIVE**

- **AVAILABLE ON ANY MOBILE DEVICE**

- **SHOWS OPERATOR'S LOCATIONS**

AND

COULDN'T BE

FAKED!

ACCURATE

RELIABLE

USEFUL

AND, WHAT IF

HIS COMPANY WAS IMMEDIATELY NOTIFIED

OF

HIS IMPAIRED PERFORMANCE

LONG BEFORE

HE CAUSED AN ACCIDENT

JUST IMAGINE . . . . . .

IF A TRUCKING COMPANY DISPATCHER KNEW

**WHENEVER** **ANY OF HIS DRIVERS WERE**

DANGEROUSLY IMPAIRED

WHAT WOULD HE DO?

IF A TEST LIKE THIS EXISTED,

WOULD A COMPANY BUY IT
?

IS SUCH A TECHNOLOGY

POSSIBLE ?

CogSpeed

. . . . . A Speedometer for the Brain

BACKGROUND

- **EASY TO LEARN**

- **FAST**

- **LANGUAGE FREE**

- **INEXPENSIVE**

- **AVAILABLE ON ANY MOBILE DEVICE**

- **SHOWS OPERATOR'S LOCATIONS**

COGSPEED ALSO DETECTS

- ## DRUGS

- ## ALCOHOL

- ## BRAIN DAMAGE/CONCUSSION

- ## AGING   PROBLEMS

COGSPEED SYSTEM

1. **ADMIN COMMAND PORTAL**

2. ***COGSPEED* TEST - MOBILE APP**

3. **MS AZURE CLOUD SERVER DATABASE**

4. **E-MAIL ALERTS**

5. **PERFORMANCE MONITORING SYSTEM**

ONE TEST FOR ALL IMPAIRMENTS

FATIGUE

ALCOHOL

DRUGS

BRAIN TRAUMA

SENILITY

ONE TEST WITH MULTIPLE APPLICATIONS

- **TRANSPORTATION INDUSTRIES**

- **HAZARDOUS ENVIRONMENTS**

- **CONSUMERS - PERSONAL USE**

- **MEDICAL MALPRACTICE**

- **DRUG EFFECTS**

- **SENIORS**

- **SPORTS - CONCUSSIONS**

- **EDUCATIONAL INSTITUTIONS**

- **RESEARCH**

- **GOVERNMENT - MILITARY**

TRANSPORTATION INDUSTRY

TRUCKING
COACH DRIVERS
BUS DRIVERS
METRO/LIGHT RAIL
MARITIME SHIPPNG
RAILROADS
AIRLINES

FEDERAL DEPARTMENT OF TRANSPORTATION

COMPANY REQUIREMENTS
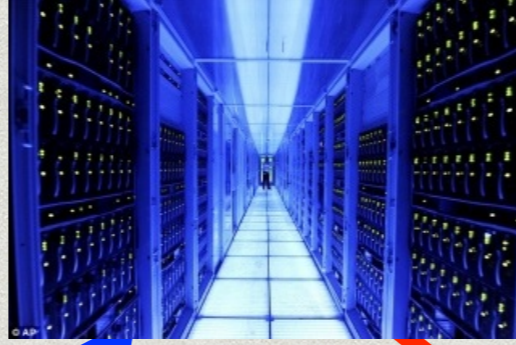
ANY MOBILE DEVICE FOR DRIVER

INTERNET CONNECTIVITY

MONTHLY FEE FOR EACH DRIVER

DESKTOP COMPUTER

BUSINESS RULES TO DEAL WITH IMPAIRED DRIVERS

GRAY MATTER METRICS

CogSpeed SCORES

ALERTS

DRIVERS

CORRECTIVE ACTION

COMPANY SAFETY MONITOR

BENEFITS

REDUCE ACCIDENTS

SAVE LIVES

SAVE MONEY

REDUCE LAWSUITS

REDUCE INSURANCE FEES

IMPROVE CORPORATE IMAGE

CORPORATE DATA ANALYSIS

"BIG DATA"

"MEASUREMENT IS THE FIRST STEP THAT LEADS TO CONTROL AND EVENTUALLY TO IMPROVEMENT.

IF YOU CAN'T MEASURE SOMETHING, YOU CAN'T UNDERSTAND IT.

IF YOU CAN'T UNDERSTAND IT, YOU CAN'T CONTROL IT.

IF YOU CAN'T CONTROL IT, YOU CAN'T IMPROVE IT."

— H. JAMES HARRINGTON

CURRENT STATUS

COGSPEED SYSTEM

1. **ADMIN COMMAND PORTAL**

2. ***COGSPEED* TEST - MOBILE APP**

3. **MS AZURE CLOUD SERVER DATABASE**

4. **E-MAIL ALERTS**

5. **PERFORMANCE MONITORING SYSTEM**

PLEASE HELP!

- **ASK QUESTIONS**

- **PROVIDE FEEDBACK**

- **SUGGEST OTHER AUDIENCES**

THANK YOU!

QUESTIONS?

The CogSpeed Test

Gray Matter Metrics

Cognitive App: CogSpeed

Welcome to Gray Matter Metric's CogSpeed App page. If you are looking to learn more about our ground breaking application to test cognitive processing, please visit GrayMatterMetrics.com

Register New User

If your company has given you an ACCESS CODE, please register here.

Register »

User Training

If you would like to learn more about how to take the test, please visit our training pages by clicking below.

Learn more »

Take the Test

To take the test on a touch-screen device, please log in here.

Log In »

Please note, you must be on a touch screen tablet, phone or other device when taking the test. The test is not designed to work on a desktop or laptop computer with a mouse and keyboard.

Privacy Policy

Terms and Conditions

Info@GrayMatterMetrics.com
Main Number is 210-209-8222
Toll Free is 888-667-5442

Gray Matter Metrics™, LLC
19914 Encino Ridge St.
San Antonio, TX, 78259

User Record
Register New User

Activation Code [   ]

First Name [   ]

Middle Name [   ]

Last Name [   ]

Users Email [   ]
Privacy Policy

Mailing List   Please add me to the CogSpeed mailing list.

phone [   ]

Gender [Male ▲▼]

Birthdate [   ]
MM/DD/YYYY

Home Zip Code [   ]

Job Title [   ]

TOS Accepted   I have read and understand the Terms Of Service.

User Name [   ]
This must be unique in the system. Email addresses work well.

Password [   ]
Must be at least 7 characters long, having both upper and lower case letters and at least 1 number. Keep this in a safe place and do not share it with anyone.

Confirm Password [   ]

[Create]

44

Gray Matter Metrics

Cognitive App: **CogSpeed**

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Toll Free is 888-667-5442

Gray Matter Metrics™, LLC
19914 Encino Ridge St.
San Antonio, TX, 78259

graymattermetrics

Select your Test Mode

Test Interval Mode   **1** 2 3 4 5 6

Performance Monitoring Mode

Standard Mode

On Demand

Ok

Time Asleep

10 45 PM

Yesterday

Time Awake

6 30 AM

Today

Hours in Bed: 7:45
Sleep Quality: Restless

Please confirm that this is the last time you slept.

Back   Confirm

Select how you feel right at this moment

7. FULLY ALERT, WIDE AWAKE

6. VERY LIVELY, RESPONSIVE, BUT NOT AT PEAK

5. OKAY, ABOUT NORMAL

4. LESS THAN SHARP, LET DOWN

3. FEELING DULL, LOSING FOCUS

2. VERY DIFFICULT TO CONCENTRATE, GROGGY

1. UNABLE TO FUNCTION, READY TO DROP

Ok

Take this test only when you're
in a safe condition to do so.
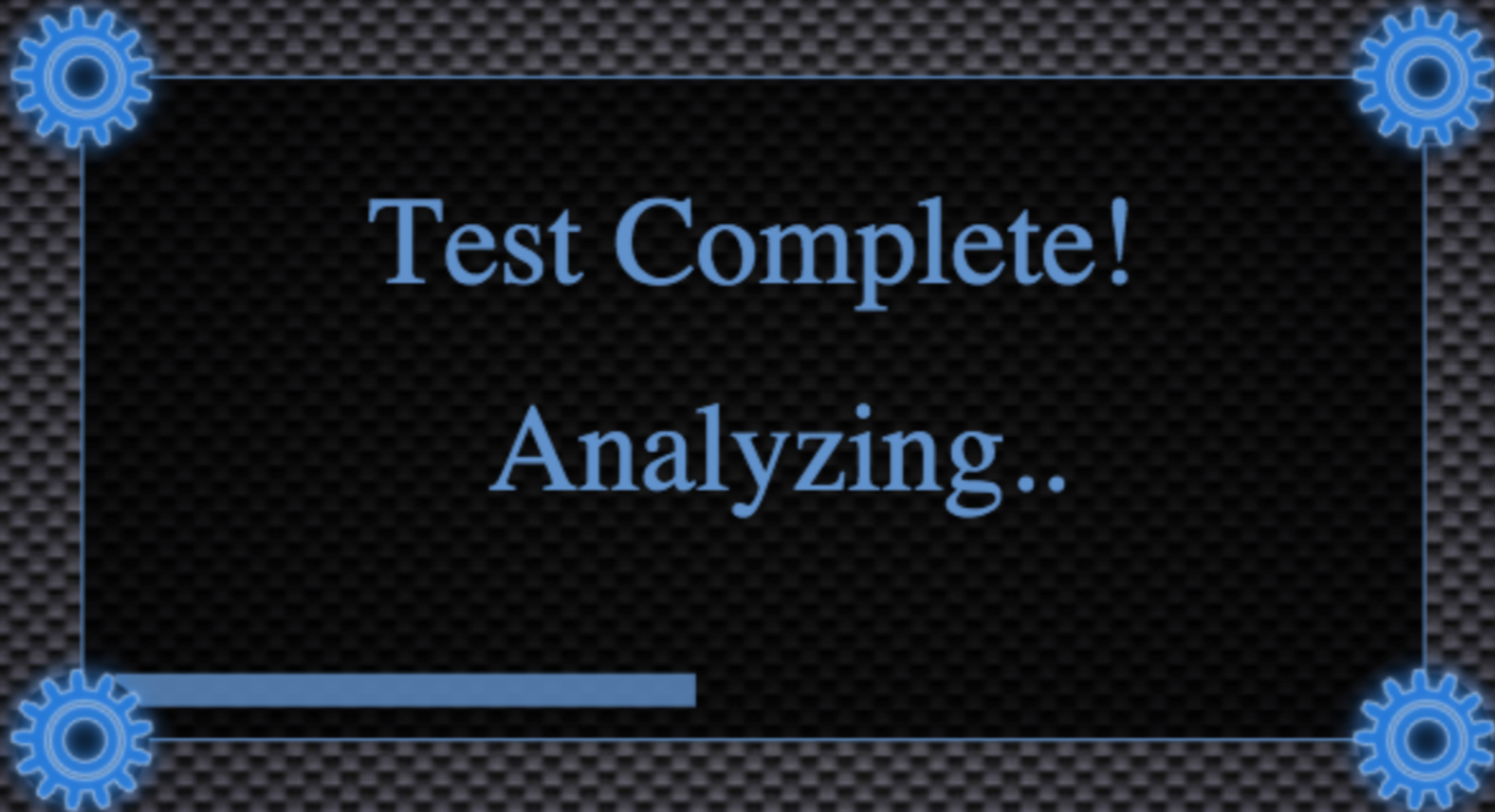
Ready?

No   Yes

Think Fast!

1   •   5   ⁙

2   :   6   ⋮⋮

3   ∴   7   ⁛

4   ⠛   8   ⣿

9   ⣿
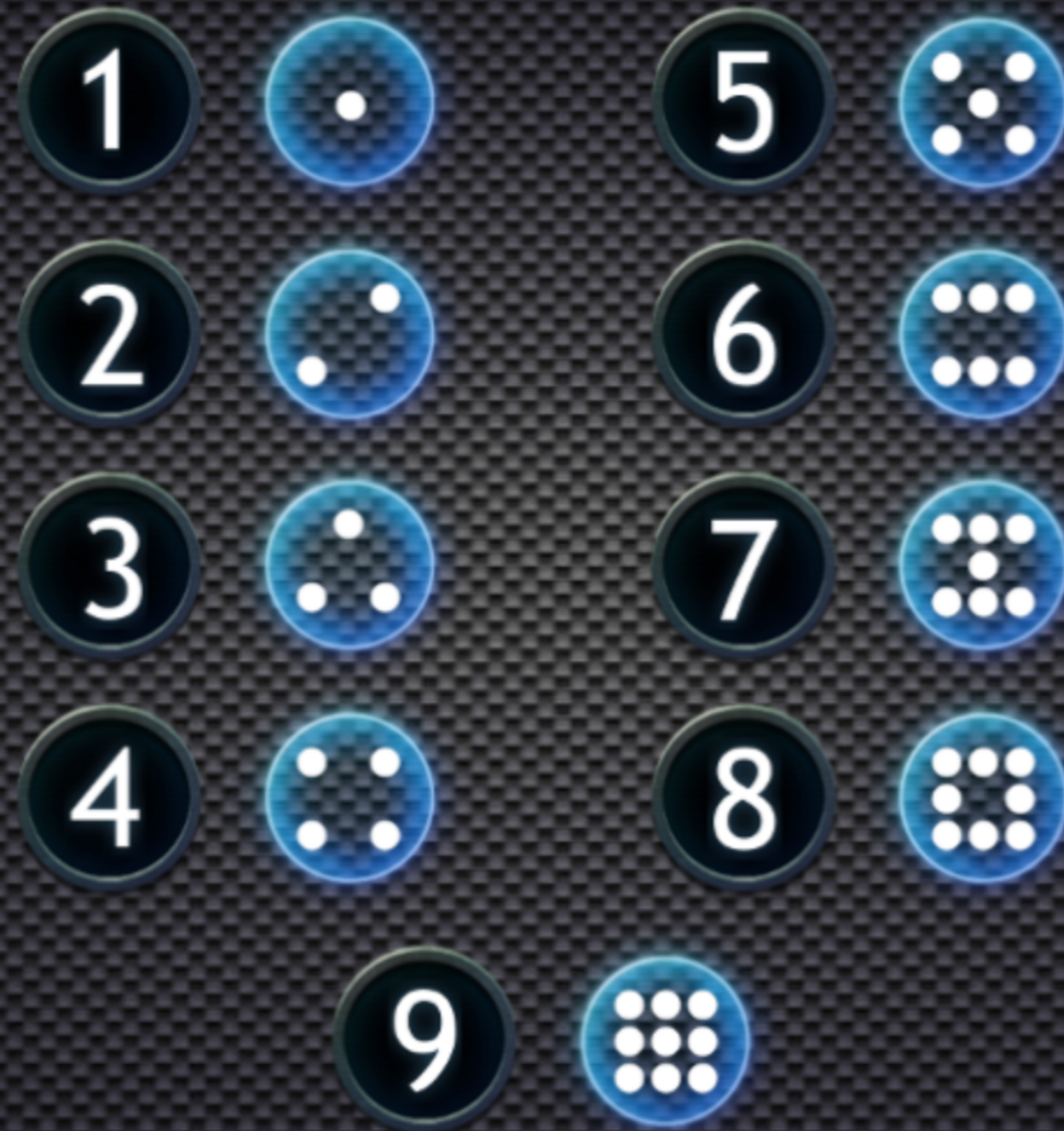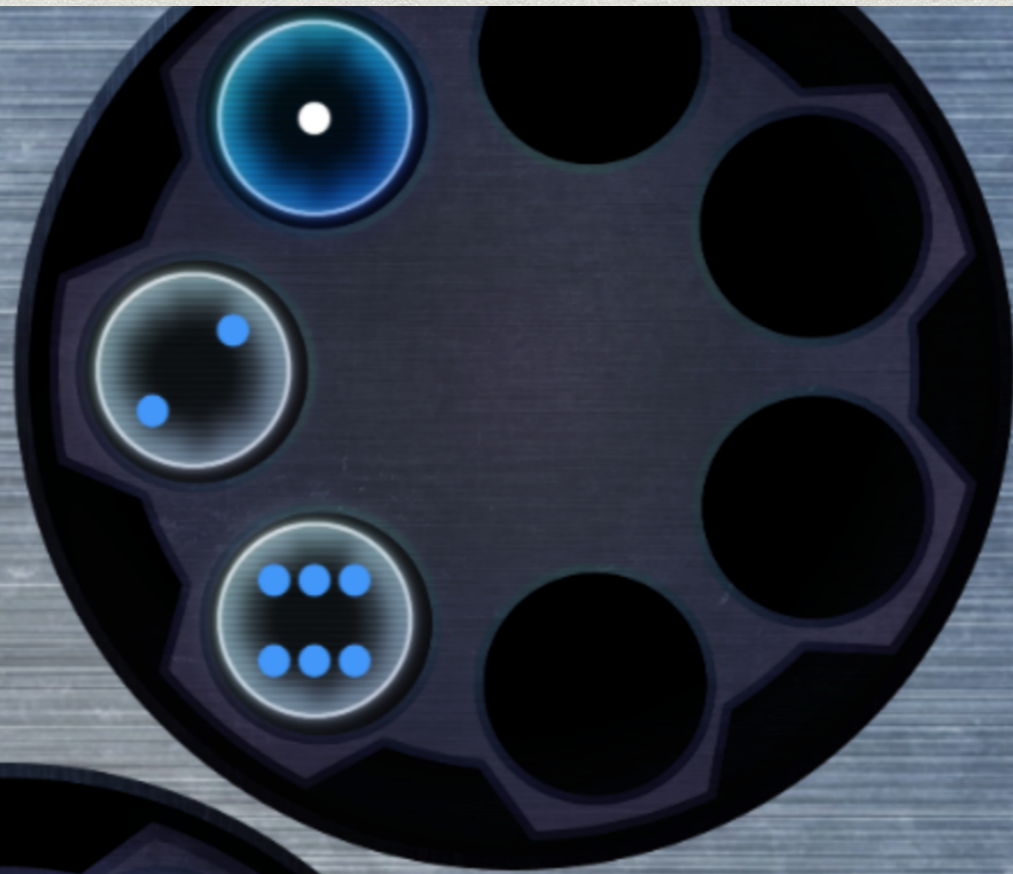
NO SCORE:

User Not Responding

Retest

Test Complete!

Success

Tap to Show Results
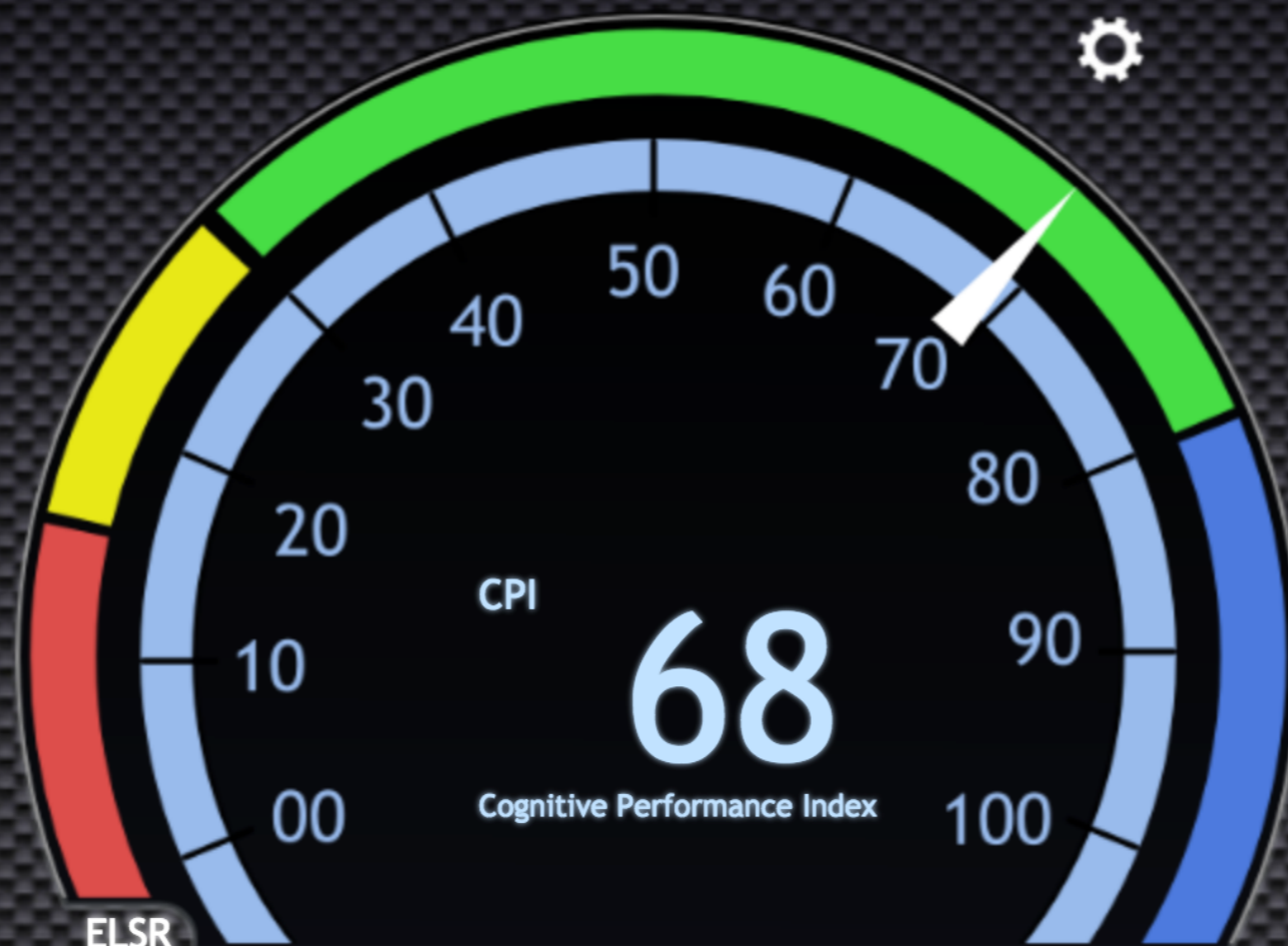
Set your timer for Next Test:

12:36 PM

Ok

notice@cogspeed.com
To: safety@a-1chemtransport.com
Alert Notice from GMM: Trucker1 scored 15

Subject: Alert Notice from Gray Matter Metrics for TRUCKER1
You have requested notification for all employees scoring below 30.

On 3/12/2015 at 10:22 PM, TRUCKER1
produced a CogSpeed score of 15.

Contact information on record:
Phone: 809-444-8796
e-mail: trucker1@a-1chemtransport.com

CogSpeed scores below 20 may indicate possible cognitive performance impairment.
It is recommended that you take any necessary corrective action in accordance with the
procedures established by your Company.

Any further dissemination of this information contained in this e-mail should be controlled
according to Company privacy policies.
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AND EXEMPT FROM DISCLOSURE UNDER APPLICABLE LAW
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prohibited. If you have received this communication in error, please notify the sender
immediately by e-mail or telephone, and delete the original message immediately. Thank you.

Gray Matter Metric, LLC
San Antonio, TX, 78259

On 3/12/2015 at 4:22 AM, TRUCKER1 produced a CogSpeed score of 15.

Contact information on record:
Phone: 809-444-XXXX
e-mail: trucker1@a-1chemtransport.com

CogSpeed scores below 20 may indicate possible cognitive performance impairment.
It is recommended that you take any necessary corrective action in accordance with the procedures established by your Company.

CogSpeed v1.00.006

User Name: trucker1
2015-01-09_16:35:20
Test Mode: INTERVAL
Screen Resolution: 600x960
Geoloc: (lat: 29.4265782, long: -98.493374)

ELSR: 5
BRD: 944.0614000007511
IPR: 1.0592531375599135
CPI: 74.56708500798847 (VALID)

Test 1
2015-01-09_16:35:20
Endcode: COMPLETE
Test Duration: 52sec
BRD: 944ms, Self Pace ms: 994ms
Block Delta: 100ms
Block Range: 100, (894 -> 994)
Block Count: 2

Correct Response Time - Mean: 522.08ms
Correct Response Time - Standard Deviation: 462.1477

000   s:0 (3),4,N,(9),5,(1) F->5   Correct This,t: 3323ms,r: n/a,d: 3325ms
         0 Time: 3324, Input:5

001   s:0 O,U,7,(5),(3),(X) S->7   Correct This,t: 1025ms,r: n/a,d: 1028ms
         0 Time: 1025, Input:7

002   s:0 5,(2),6,W,(9),(3) W->2   Correct This,t: 994ms,r: n/a,d: 994ms
         0 Time: 993, Input:2

003   s:0 6,(4),5,(X),(7),2 F->5   Correct This,t: 954ms,r: n/a,d: 954ms
         0 Time: 954, Input:5

004   s:0 3,(2),(4),X,8,(1) E->8   Correct This,t: 1056ms,r: n/a,d: 1056ms
         0 Time: 1056, Input:8

005   s:1 1,(3),2,(8),(6),O W->2   Correct This,t: 851ms,r: n/a,d: 852ms
         0 Time: 851, Input:2

006   s:1 5,7,(4),(3),(6),2 U->4   Correct This,t: 968ms,r: n/a,d: 968ms
         0 Time: 968, Input:4

007   s:1 5,2,S,(3),(7),(6) S->7   Correct This,t: 1047ms,r: n/a,d: 1048ms
         0 Time: 1048, Input:7

008   s:1 (W),S,X,N,(U),(E) 2->W   Correct This,t: 1048ms,r: n/a,d: 1048ms
         0 Time: 1048, Input:W

009   s:1 (8),(9),(1),3,5,7 T->3   Correct This,t: 1040ms,r: n/a,d: 1041ms   [1,1,1,1,1,1,1,1] (100%)
         0 Time: 1040, Input:3

010   s:2 (7),(9),(3),4,1,8 U->4   No Input,t: n/a,r: n/a,d: 1052ms,tD: 1044ms   [1,1,1,1,1,1,1,0] (87%)

011   s:2 5,(3),(7),8,4,(2) E->8   Correct This,t: 27ms,r: 0.03,d: 29ms,tD: 1044ms   [1,1,1,1,1,1,0,1] (87%)
         0 Time: 28, Input:8

012   s:2 5,(7),(1),8,(X),2 F->5   No Input,t: n/a,r: n/a,d: 1032ms,tD: 1019ms   [1,1,1,1,1,0,1,0] (75%)

013   s:2 N,F,(S),(E),(T),O 3->T   Correct Last,t: 86ms,r: 0.08,d: 86ms,tD: 1019ms   [1,1,1,1,0,1,0,1] (75%)
         0 Time: 86, Input:N

```
000   s:0  (3),4,N,(9),5,(1) F->5    Correct This,t: 3323ms,r: n/a,d: 3325ms
             0  Time: 3324, Input:5

001   s:0  O,U,7,(5),(3),(X) S->7    Correct This,t: 1025ms,r: n/a,d: 1028ms
             0  Time: 1025, Input:7

002   s:0  5,(2),6,W,(9),(3) W->2    Correct This,t: 994ms,r: n/a,d: 994ms
             0  Time: 993, Input:2

003   s:0  6,(4),5,(X),(7),2 F->5    Correct This,t: 954ms,r: n/a,d: 954ms
             0  Time: 954, Input:5

004   s:0  3,(2),(4),X,8,(1) E->8    Correct This,t: 1056ms,r: n/a,d: 1056ms
             0  Time: 1056, Input:8

005   s:1  1,(3),2,(8),(6),O W->2    Correct This,t: 851ms,r: n/a,d: 852ms
             0  Time: 851, Input:2

006   s:1  5,7,(4),(3),(6),2 U->4    Correct This,t: 968ms,r: n/a,d: 968ms
             0  Time: 968, Input:4

007   s:1  5,2,S,(3),(7),(6) S->7    Correct This,t: 1047ms,r: n/a,d: 1048ms
             0  Time: 1048, Input:7

008   s:1  (W),S,X,N,(U),(E) 2->W    Correct This,t: 1048ms,r: n/a,d: 1048ms
             0  Time: 1048, Input:W

009   s:1  (8),(9),(1),3,5,7 T->3    Correct This,t: 1040ms,r: n/a,d: 1041ms    [1,1,1,1,1,1,1,1] (100%)
             0  Time: 1040, Input:3

010   s:2  (7),(9),(3),4,1,8 U->4    No Input,t: n/a,r: n/a,d: 1052ms,tD: 1044ms    [1,1,1,1,1,1,1,0] (87%)

011   s:2  5,(3),(7),8,4,(2) E->8    Correct This,t: 27ms,r: 0.03,d: 29ms,tD: 1044ms    [1,1,1,1,1,1,0,1] (87%)
             0  Time: 28, Input:8

012   s:2  5,(7),(1),8,(X),2 F->5    No Input,t: n/a,r: n/a,d: 1032ms,tD: 1019ms    [1,1,1,1,1,0,1,0] (75%)

013   s:2  N,F,(S),(E),(T),O 3->T    Correct Last,t: 86ms,r: 0.08,d: 86ms,tD: 1019ms    [1,1,1,1,0,1,0,1] (75%)
             0  Time: 86, Input:N

014   s:2  9,(T),(O),(X),S,3 7->S    No Input,t: n/a,r: n/a,d: 1003ms,tD: 994ms    [1,1,1,0,1,0,1,0] (62%)

015   s:2  1,(9),6,7,(4),(8) E->8    Correct Last,t: 41ms,r: 0.04,d: 42ms,tD: 994ms    [1,1,0,1,0,1,0,1] (62%)
             0  Time: 42, Input:4
```

CogSpeed v1.00.006

User Name: TRUCKER1
2015-01-09_16:35:20
Test Mode: INTERVAL
Screen Resolution: 600x960
Geoloc: (lat: 29.4265782, long: -98.493374)

ELSR: 5
BRD: 944.0614000007511
IPR: 1.0592531375599135
CPI: 74.56708500798847 (VALID)

Test 1
2015-01-09_16:35:20
Endcode: COMPLETE
Test Duration: 52sec
BRD: 944ms, Self Pace ms: 994ms
Block Delta: 100ms
Block Range: 100, (894 -> 994)
Block Count: 2

Correct Response Time - Mean: 522.08ms
Correct Response Time - Standard Deviation: 462.1477

HOW DOES CogSpeed WORK

?

"A SPEEDOMETER FOR THE BRAIN"

O2

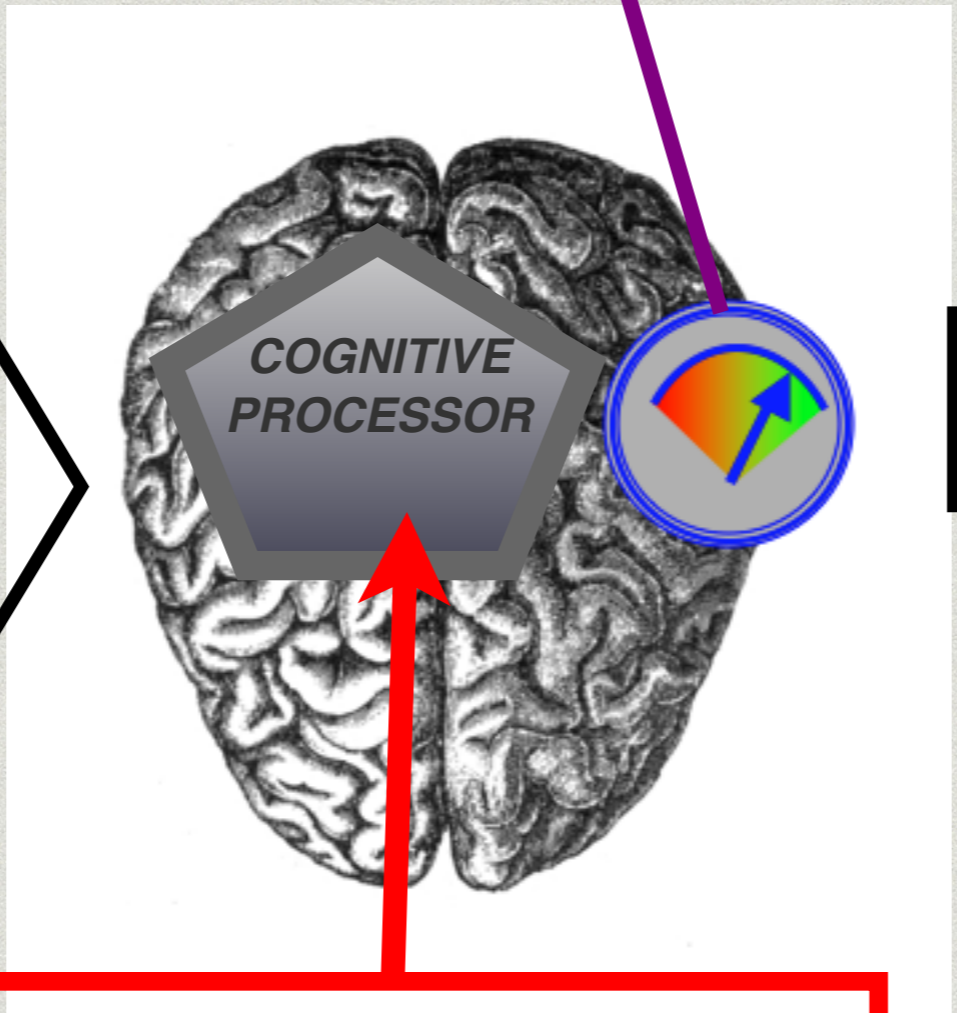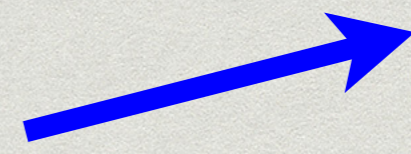IGNITION SYSTEM

FUEL

COOLING SYSTEM

LUBRICATION

RPM

SPEEDOMETER

ODOMETER

BATTER

OIL PRESS

IDIOT LIGHT

TEMP

FUEL

WHEN YOU SPEEDOMETER SAYS YOU'RE SLOWING DOWN SOMETHING IS WRONG WITH YOUR ENGINE,

CLOUD

CogSpeed™

INFO INPUT

**SENSORY
INPUT**
VISUAL   AUDITORY   TACTILE

COGNITIVE
PROCESSOR

INFO OUTPUT

**MOTOR RESPONSE
OUTPUT**

5D MODERATOR VARIABLES
**DRUNK
DROWSY
DRUGGED
DAMAGED
DILAPIDATED**
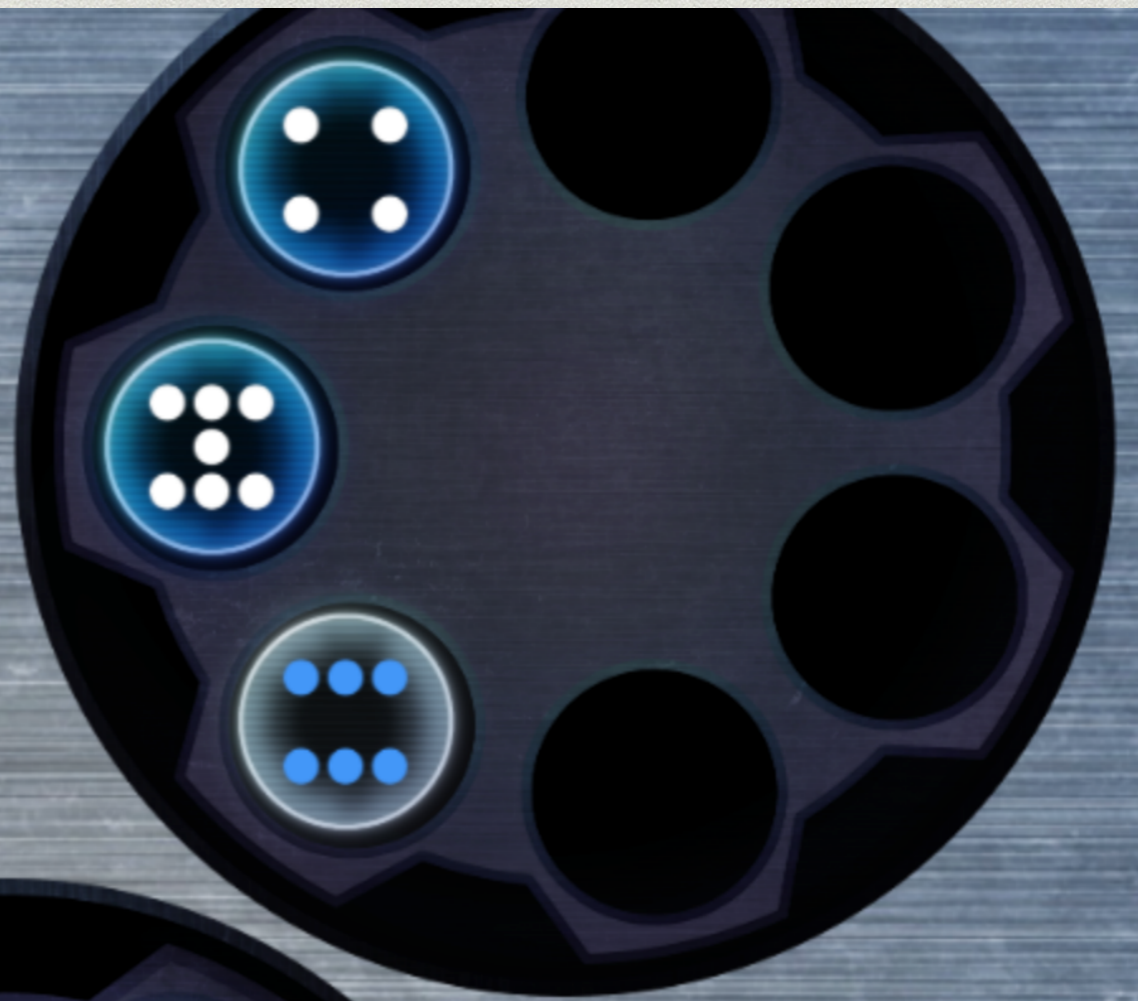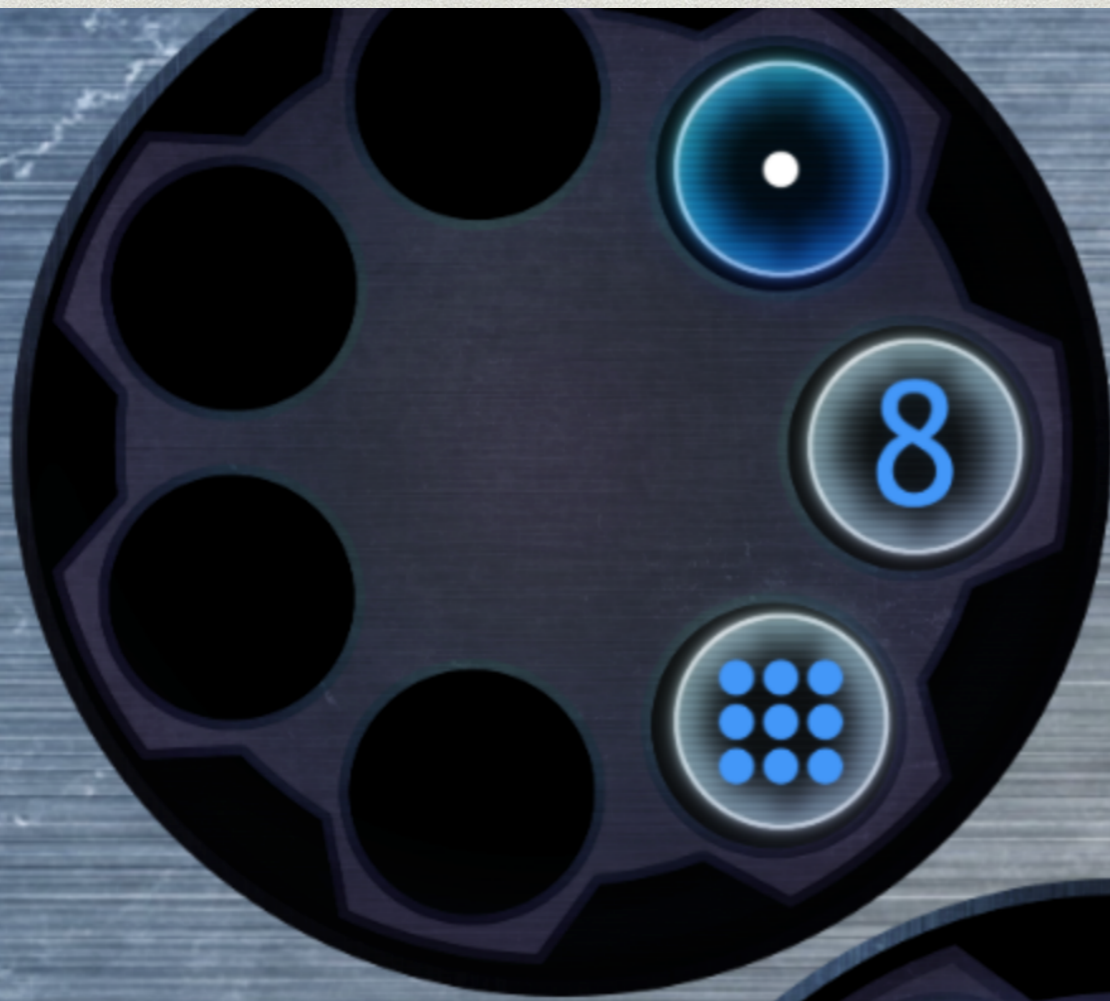
HIGH SPEED

ADAPTIVE

COMPUTER

INTERACTION

SELF-PACED STAGE

MACHINE-PACED STAGE

VERIFICATION STAGE

CONTINUAL CHECK

ERRORS

RANDOM RESPONSES

GAMING

COGSPEED TEST SCORE

FATIGUE

BLOOD ALCOHOL LEVEL

DRUGS

BRAIN TRAUMA

SENILITY

ACTUAL ABILITY TO PERFORM ON THE JOB

SUBJECTIVE FEELINGS OF COMPETENCE

END

GRAY MATTER METRICS, LLC

LAYNE PERELLI, PH D, OWNER/CEO

- **TECHNOLOGY DEVELOPMENT**

- **SCIENTIFIC RESEARCH**

- **APP DESIGN**

MIKE ROUTEN, CHIEF TECHNOLOGY OFFICER

- **SOFTWARE ENGINEER**

- **SYSTEM ADMINISTRATOR**

- **SERVER/DATA BASE DEVELOPMENT**

CHLOE LYKES, PUBLIC RELATIONS

- **WEB SITE DESIGN**

- **SOCIAL MEDIA**

INVESTMENT OPPORTUNITIES

FUNDING FOR COMPLETION

FINISH SOFTWARE DEVELOPMENT

2 SOFTWARE ENGINEERS X 3 MONTHS
~$45,000

PROTOTYPE TEST WITHOUT SPONSOR
3 MONTHS
~$40,000

~$90,000

FOLLOW-ON FUNDING

OPERATING EXPENSES
~ $15,000/MONTH X 6 MONTHS =

~$90,000

TOTAL

~$90,000

~$90,000

~$180,000

COMPANY'S INVESTMENT: $200,000

YOUR RETURN: 2-YEAR SUBSCRIPTION FOR 1,000 DRIVERS
     FULL GMM SUPPORT
     COMPLETE DATA STORAGE
     MONITORED BY COMPANY SAFETY MANAGER
     POTENTIAL INSURANCE REDUCTION
     RECOGNITION AS WORLD LEADER ADVANCING SAFE DRIVING TECHNOLOGY

$20/month per driver x 1,000 x 24 months

= $480,000

COMPONENTS
AVAILABLE
TO CREATE
AN ENTIRELY NEW INDUSTRY

REALTIME

COGNITIVE PERFORMANCE

MEASUREMENT

TREMENDOUS
SOCIETAL
AND
COMMERCIAL NEED

SAVES
LIVES AND MONEY

ENHANCES
PERSONAL
WELL-BEING

WIDE-RANGING
APPLICATIONS

AT LEAST 20
POTENTIAL
UNTAPPED
MAJOR
MARKETS

REVOLUTIONARY NEW
TECHNOLOGY

DEVELOPED
FOR MEASURING
COGNITIVE PERFORMANCE

CogSpeed

NEW CAPABILITY AVAILABLE
TO DELIVER THE TECHNOLOGY

THE iPAD
and
Tablets

WHY COGSPEED?

…………TO SAVE LIVES

OUR TECHNOLOGY ADDRESSES AN URGENT ISSUE FOR SOCIETY: IDENTIFIES COGNITIVE IMPAIRMENT CAUSED BY

- FATIGUE

- ALCOHOL

- DRUGS - PRESCRIPTION AND RECREATIONAL

- BRAIN TRAUMA/CONCUSSION

- SENILITY

HOW DOES CogSpeed WORK?

THINK OF IT AS

"A SPEEDOMETER FOR THE BRAIN"

HOW DOES CogSpeed WORK?

THINK OF IT AS A "SPEEDOMETER FOR THE BRAIN"

MEASURES COGNITIVE IMPAIRMENT,
IE DECREASED MENTAL ALERTNESS OR ABILITY TO THINK QUICKLY DUE TO
FATIGUE, DRUGS, ALCOHOL, BRAIN DAMAGE, SENILITY

HELPS VERIFY WORKERS ARE SAFE ON THEIR JOB

AN ADVANCED ADAPTIVE ALGORITHM COUPLED WITH SECURE DATA STORAGE
THAT NOBODY EVER THOUGHT OF BEFORE
VALIDATED IN MY PhD RESEARCH
PATENTED TECHNOLOGY

2-MINUTE SELF-CONTAINED TEST
- EASY TO LEARN
- HARD TO FOOL
- ACCURATE

STORES EVERY SCORE IN SECURE AZURE DATABASE

CAN SEND ANALYTICS TO MONITORING CENTERS ANYWHERE IN THE WORLD

THERMOMETER

- **SIMPLE**

- **QUICK**

- **INEXPENSIVE**

- **CAN BE USED ANYWHERE**

- **EFFECTIVE**

- **MULTIPLE DIAGNOSTICS**

**NOTHING YET LIKE THIS FOR FATIGUE
OR COGNITIVE IMPAIRMENT ASSESSMENT**

CogSpeed Cognitive Performance Measurement System

1. **Admin Command Portal**

2. **CogSpeed Reliability Test - Web App**

3. **Microsoft Azure Cloud Server - DATABASE**

4. **e-mail Alert System**

5. **Performance Monitor**

WHAT DOES COGSPEED DO FOR YOU? YOUR COMPANY?

- *PREVENTS FATIGUE-RELATED ACCIDENTS*
- *SAVES MONEY AND LIVES*
- *IMPROVES COMPANY IMAGE AS LEADER IN SAFETY*

WHAT PROBLEMS DOES COGSPEED SOLVE?

- *IDENTIFIES DRIVERS WHO BECOME UNFIT DUE TO FATIGUE, DRUGS, OR ALCOHOL, AND*
- *NOTIFIES THE TRUCKING COMPANY FOR CORRECTIVE ACTION.*

WHAT IF THERE WAS

A VERY QUICK FATIGUE TEST

A DRIVER COULD TAKE

THROUGHOUT THE DAY OR NIGHT,

ANYWHERE,

AS OFTEN AS NEEDED

TO BE EFFECTIVE

THE DRIVER WOULD HAVE TO BE

IDENTIFIED AS

IMPAIRED

BEFORE

HE PASSED OUT AND CAUSED AN ACCIDENT!