

# Human Resource Development for Eco-Drive with Messages : Based on Data Analysis

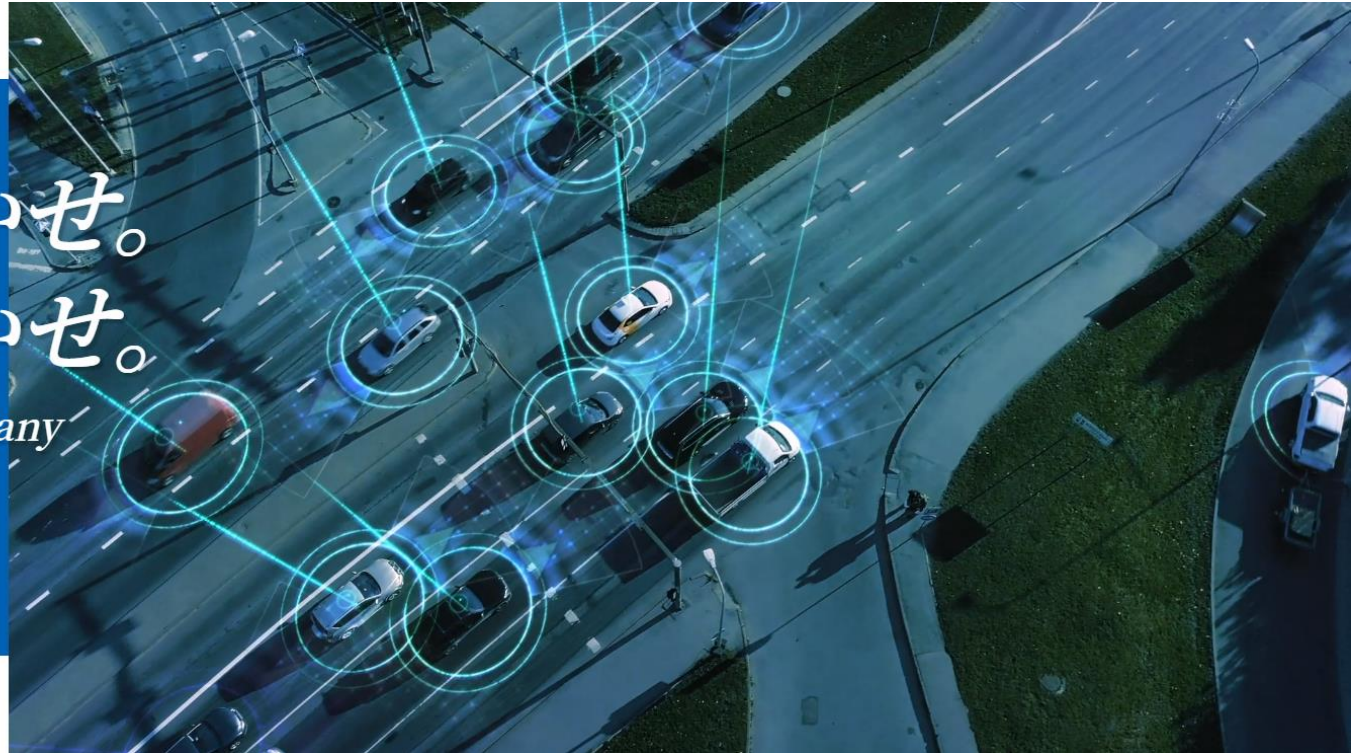
ASUA Inc. Japan



# Will autonomous cars make human training unnecessary?

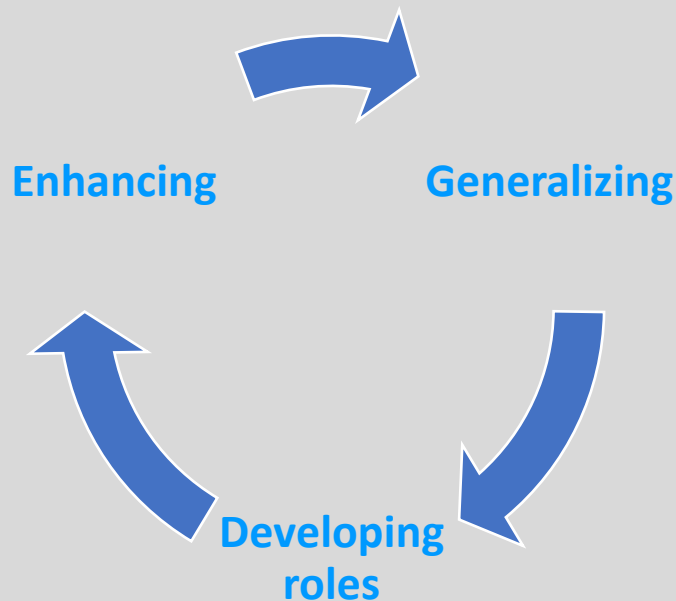
動機を動かせ。  
明日を動かせ。

*Human Relations Company*



Even if it's automated, people will still be responsible for it.

## 3 main points



1. **Developing roles of human**
2. **Enhancing with technology**
3. **Generalizing**

# 1. Developing roles of human

# Our failure experience



Companies that used our products improved fuel efficiency by an average of **15%** or more.

**Magical ceramic**, which was supposed to improve fuel efficiency.

(In fact, the effect was only within the margin of error!)



# Communication had changed their driving



The true effect is a **behavioral change; eco-driving.**

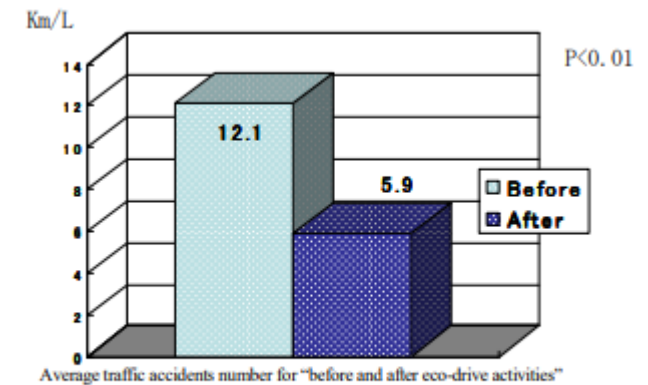
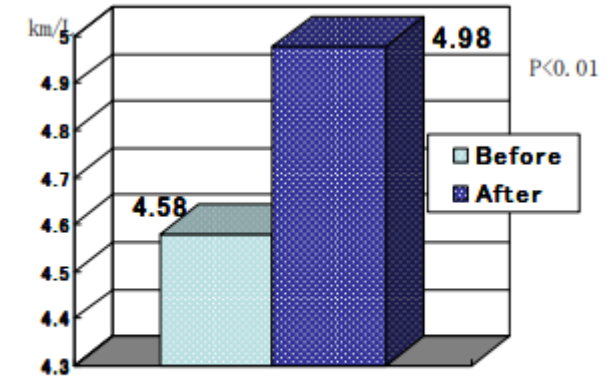
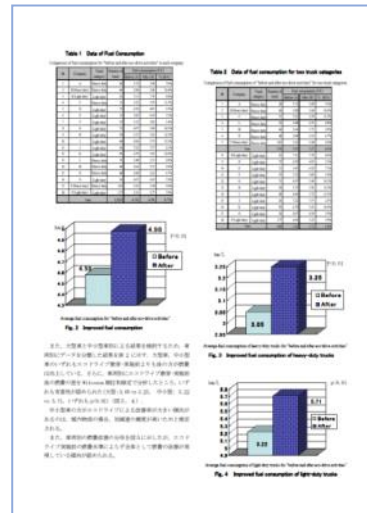
**The sources of behavioral changes were communication between...**

- Drivers and us
- Drivers and their Managers
- Driver to driver



# Eco-driving reduced fuel efficiency and traffic accidents

Our article of eco-driving  
as corporate level  
【Result of the behavioral change】  
Fuel Efficiency **8.7% Improved**  
Traffic Accidents **51% Reduced**  
(Company average. Excerpt from paper data)



Presented at the Society of Automotive Engineers of Japan Spring Meeting on May 25, 2006.

Researcher: Hiroshi Maji, ASUA Corporation, Prof. Nobuyo Kasuga, Shibaura Institute of Technology, Prof. Yasuhiro Taiseii, and Taro Ishi, Department of Science and Engineering Waseda University.

Wilcoxon rank-sum test (significant difference test for data that do not show a normal distribution)

## 2. Enhancing with technology



# Converting data into humanistic messages

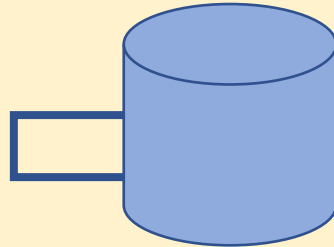
## Conversion flow

### 1. Collect (Driving data)

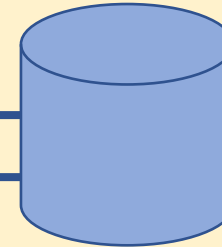


2013/04/01 100:28:00	607	5	220	99	98	100	10
2013/04/01 101:25:33	37	0	16	100	100	100	35
2013/04/01 104:59:28	432	3	163	96	93	100	24
2013/04/01 109:40:04	130	0	56	100	100	100	4
2013/04/01 109:45:54	399	4	90	100	100	100	39
2013/04/01 108:59:52	3282	19	678	97	77	100	34
2013/04/01 109:49:52	3263	20	555	97	88	100	51
2013/04/01 113:28:04	965	9	314	96	77	100	26
2013/04/01 112:52:16	523	4	168	94	83	100	40
2013/04/01 113:42:49	418	3	146	92	57	99	46
2013/04/01 123:00:47	579	5	225	99	90	100	18
2013/04/02 101:32:47	39	0	18	100	100	100	25
2013/04/02 102:52:44	647	4	199	96	84	100	14
2013/04/02 103:38:57	599	4	97	99	94	100	66
2013/04/02 104:49:53	39	0	0	100	100	100	96
2013/04/02 106:54:49	22	0	0	96	96	100	36

### 2. Analyze



### 3. Transform (Messages & other)



**エコドライブくん**  
 本気さん、本日に早いもので、今日は記念すべき12回目のメッセージです。  
 この1年間大事にしてくれて、ありがとうございます。

気象庁さんによると、12月の平均気温は5.4℃だったそうですよ。  
 (平年：7℃、最高：14.7℃、最低：-2.4℃)

11月よりも7度くらい下がりましたね。  
 さすがに氷点下は寒いですが、

燃費は気になるとは思いますが、一番大事なのは本気さんの体質です。  
 エアコンなどを過度に使いつつ、一様にエコドライブをしましょう。

では今日も12月の燃費のご連絡です♪

月間燃費：19.7 km/L  
 1km走行燃費：7.5円/km  
 (認知度 12月 最終走行ガソリン価格 1L 147円)

月間走行距離：733km  
 EV走行距離：61km  
 (EV走行率：8.3%)

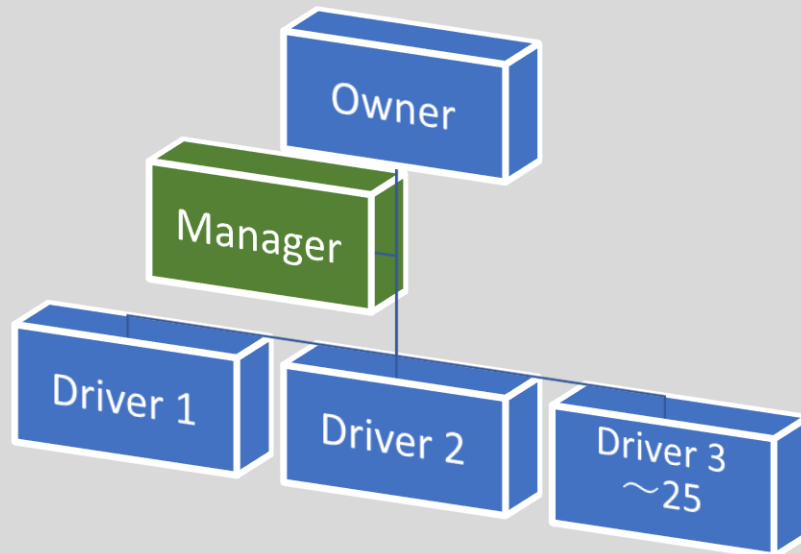
さて、ではここで、これまでの1年間を振り返ってみましょうか。



# The message system can assist transportation managers



Japanese transport company



## Obligation to assign an operation manager

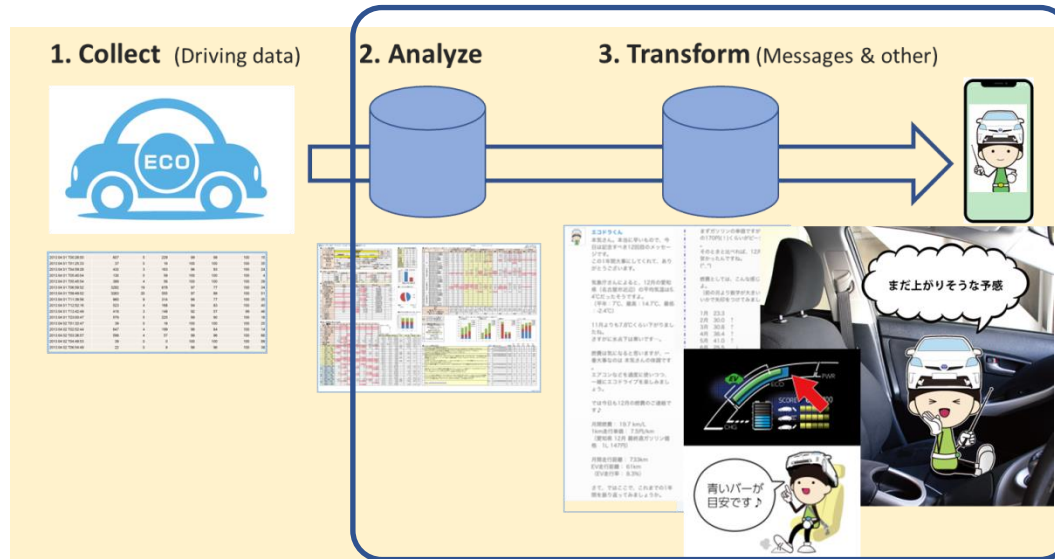
One manager must manage 25 people (maximum).

Daily **safety and energy conservation training** is also required.



# The message system can assist transportation managers

## Conversion flow



The area worth developing roles of human, while generalizing



How to look at the data

How to improve it

How to tell the facts we know

Think and express for others

This could be useful even in countries that don't have a management system or training structure.

# 3. Generalizing



## ■ Solving Problems in the Transportation Industry through Open Innovation

Transportation companies with variety of issues and companies with variety of technologies/services collaborate to solve industry problems/realize Digital Transformation.

We will contribute to the industry and society by transformation of the transportation industry into a safe, secure, and ecological social infrastructure.

## ■ Features of TDBC

- Members (as of the end of October): 150 companies from freight (trucks and dump trucks), passenger (taxis and buses), ICT, vehicle, and in-vehicle equipment manufacturers, health care, consulting, etc.
- Organize and share issues common to all businesses, hypothesize solutions, conduct demonstrative experiments, evaluate and improve, and realize them in working groups for each theme.

# Actual Achievements

## BAYLINE EXPRESS Inc.



Camera



Sensor

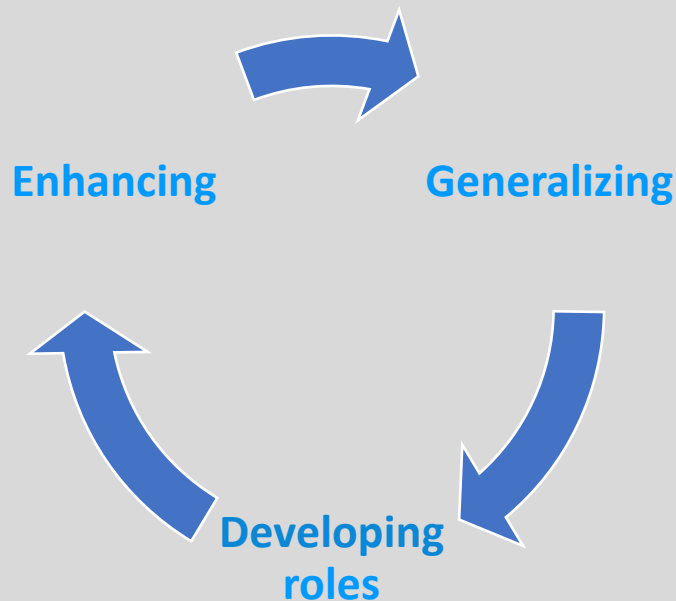


Collection of driving data

### ■ Points

- 1) **Real-time** driving data collection
- 2) Training tailored to **the characteristics of each driver**
- 3) **Maximum** utilization of data





1. **Developing roles of human**
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