# Internet of things (IoT). Evolution of video surveillance systems in transport. Expectations and limitations



### **1. What is IoT**

# Unlimited possibilities of Machine to Machine and Machine to Human communications



# **2. Example of the use of IoT in transport**



- Live Tracking Map
- Daily Route History
- Event Playback
- Geo-Fences
- Daily Safety Reports
- On-Demand FullHD video playback

And many others functions

## **3. Mobile DVRs without IoT**



### **Only local video**

# 4. Type of transmitted data







## **5.** A tip for IOT device development **1**

#### **Difference between IP camera and IOT device**



**3G/LTE Network is one way direction: From Vehicle camera to Server** 

#### How to deliver the server command



Server cannot send a command to a vehicle camera.

The only way to deliver a command from server to recorder is a "response".

When server response against "LiveTrack" API, server inserts a command at the response.

A server command response speed is related with "LiveTrack" API Interval.

# 7. An example of communication with server

#### Firmware over the air sequence



If you have any technical question, please send an email to dteg@d-teg.com.

### 8. Expectations

### **<u>1. Predictive Analytics</u>**

Event review and analysis and reporting Identify unsafe and inefficient driving behaviors

### 2. Video Based coaching

Improving driver behavior (Reduce unsafe driving behaviors)



**3. Results** 

Reduce

Claims costs

Fuel use

Insurance costs

Minimize risk

Vehicle maintenance cost

### 9. Success story – Smiling Road by motor insurance company

One of largest motor insurance company in Japan launched "smiling road" program 3 years ago.

3G telematics camera model: BX2000 and TX1000D



Source: <a href="http://www.sjnk.jp/hinsurance/smilingroad/pc/">http://www.sjnk.jp/hinsurance/smilingroad/pc/</a>

This program is only for their fleet customer with have 10 or more car. They supplied around 60,000 3G telematics cameras.

### **10.** Success story – Smiling Road by motor insurance company

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#### Visualize driver's driving situation

Drive recorder with communication function enables both driver and administrator to objectively and quantitatively grasp driving situation.

### Feedback to the driver by the application etc.



It is compatible with smartphones / conventional mobile phones / PCs.



#### Understand driver situation

For each driver, you can grasp the driving situation such as driving diagnosis result and dangerous driving information.





### Real-time report of dangerous behavior images

The situation can be grasped with the image at the time of detecting the dangerous behavior and at 2 seconds before and after.





## **11.** Success story – Smiling Road Results



Since the number of accidents is influenced seasonally, it is compared with the same period of the previous year during the introduction period. (Example) When installed in April 2015, it is compared between April and October 2014 and April to October 2015

Source: General Insurance Japan Japan Koa Corporation and Sompo Japan Nipponkoa Risk Management Co., Ltd. released article at 17 December 2015

### **12.** Limitations & Solutions

#### <u>Data Cost</u>

Module is changing From 3G to LTE Need more better quality videos

#### Minimize the false alarm

Collison recognition

#### Network disconnection

Roaming area when switching service provider Outside of coverage

#### **Big Data Analytics**

Different needs by clients

#### **Data Security**

Need to find more effective way against hacking

#### **Health recovery process**

Reduce recovery time

#### **Precise Analysis Algorithm**

Enhanced data analytics technologies and techniques

#### **Data Encryption**

Use communication Security code http digest authentication



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