

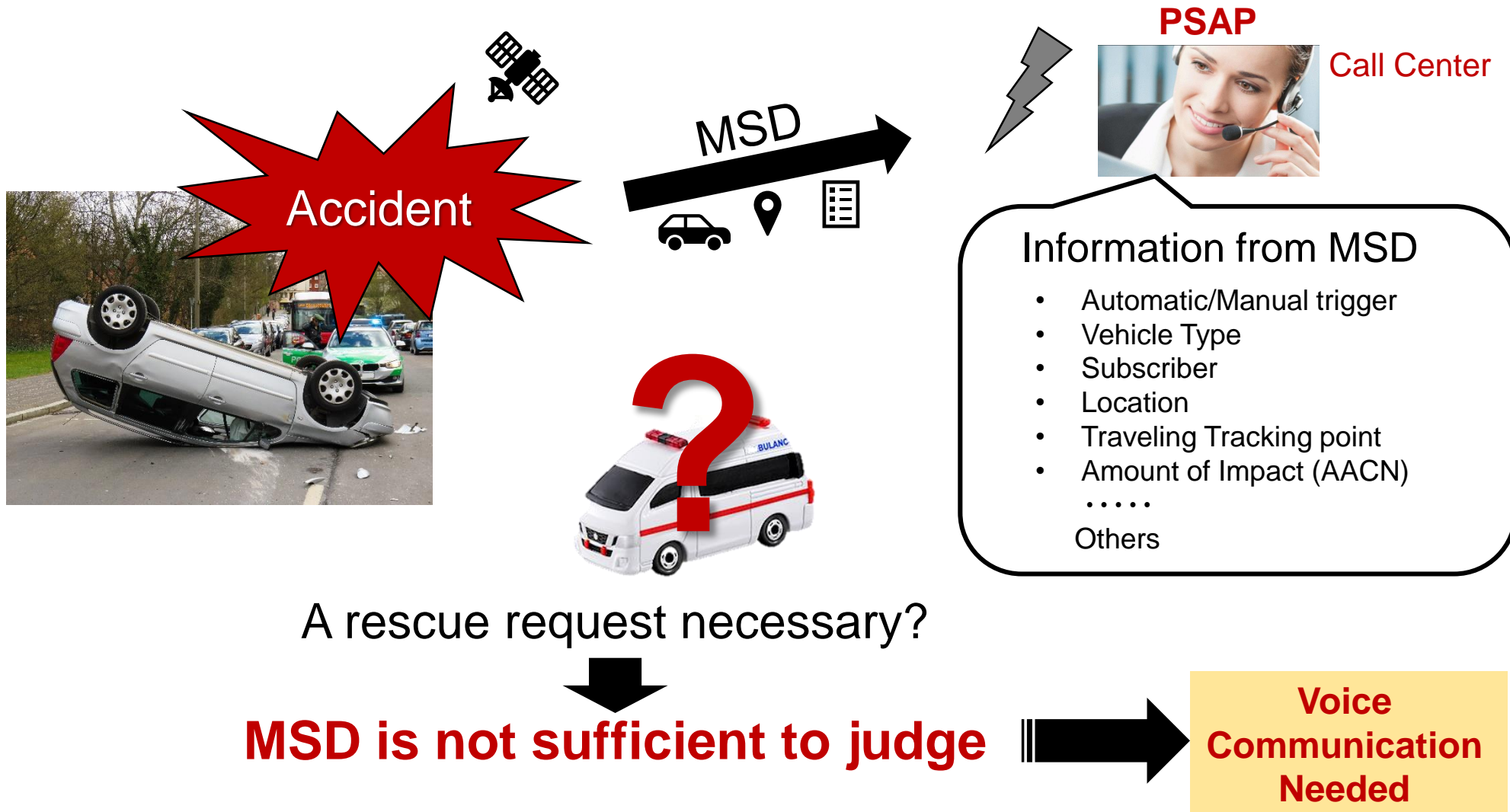
# Analysis of Voice Communication Quality at PSAPs

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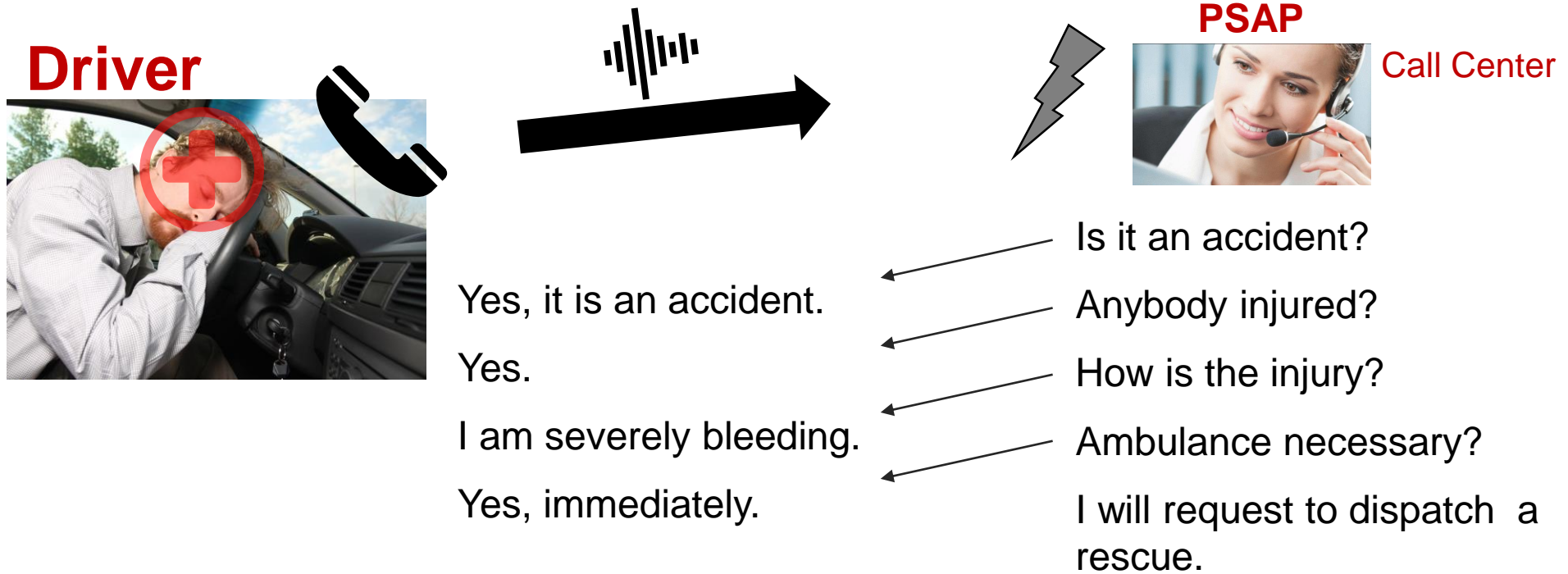
Kenji Iwamoto, Kunito Takahashi

# **Importance of Voice Communication for eCall**

# Importance of Voice Communication for eCall(1)



# Importance of Voice Communication for eCall(2)



**Voice communication is the key**



**Voice of eCall is important**



Voice Communication is helpful for :

1. **Collection of** detail information of the accident situation
2. **Quick** Actions to Request a Rescue

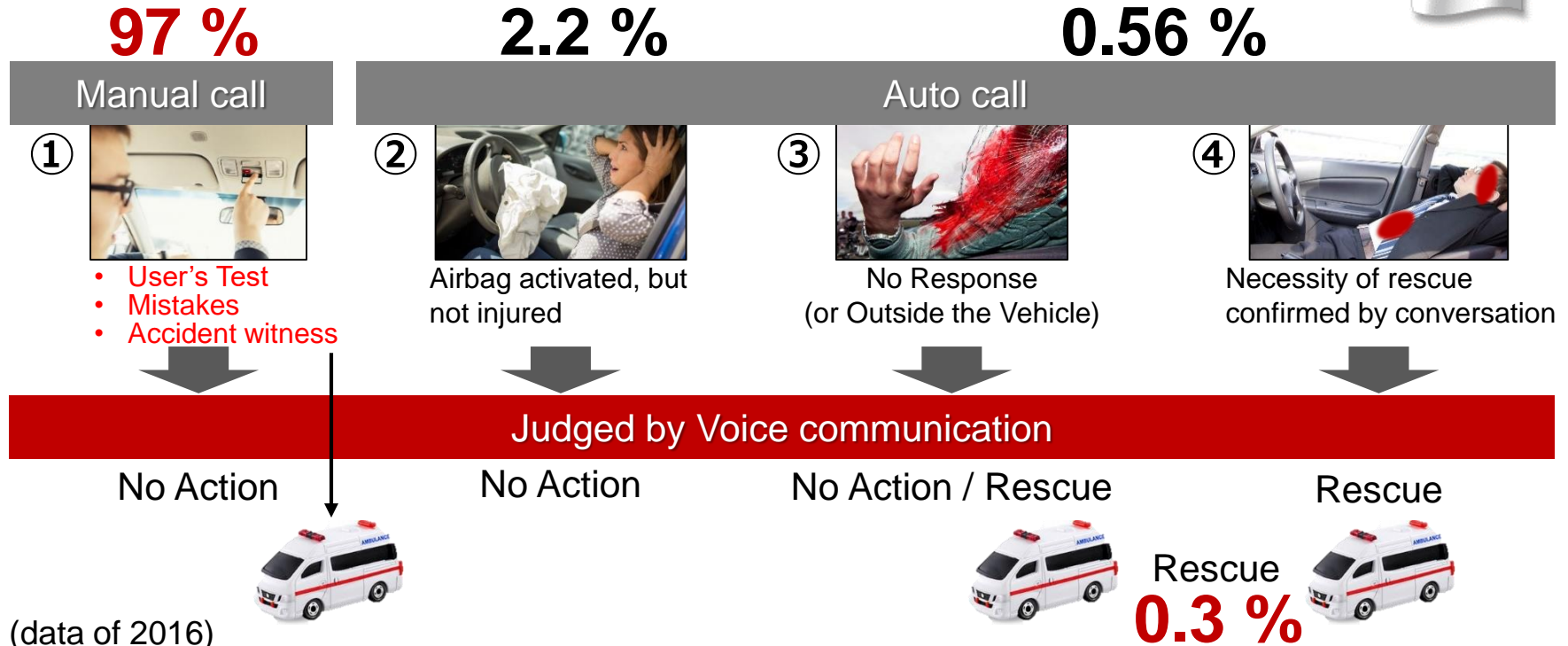


**Lower fatality Rate**

# eCall Status in Japan



Voice communication drastically decreases false call



In Japan (data of 2016)

Cars (Passenger Vehicles)	60,800,000 (All)	Auto. Calls	435 cases 2.2% / 20,000cases
Cars with eCall equipped	1,350,000 (2.2%)		└ No Response : 112 cases 0.56% / 20,000cases
<b>eCall Approx.</b>	<b>20,000</b> (1.5% Called)		└ Rescue to Hospital 63 cases 0.3% / 20,000cases

Data from Japan eCall Service 2016

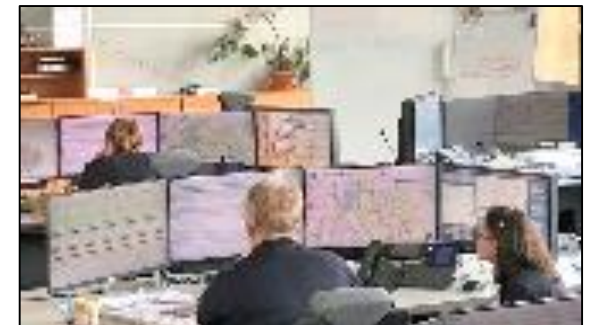
**Every eCall is assessed by conversation.**

# **Current Issues reported from PSAPs**

## What are the current issues?

Following are the issue reported from PSAPs (Praha, Russia, China and Japan) on Yamaha's visit to them.

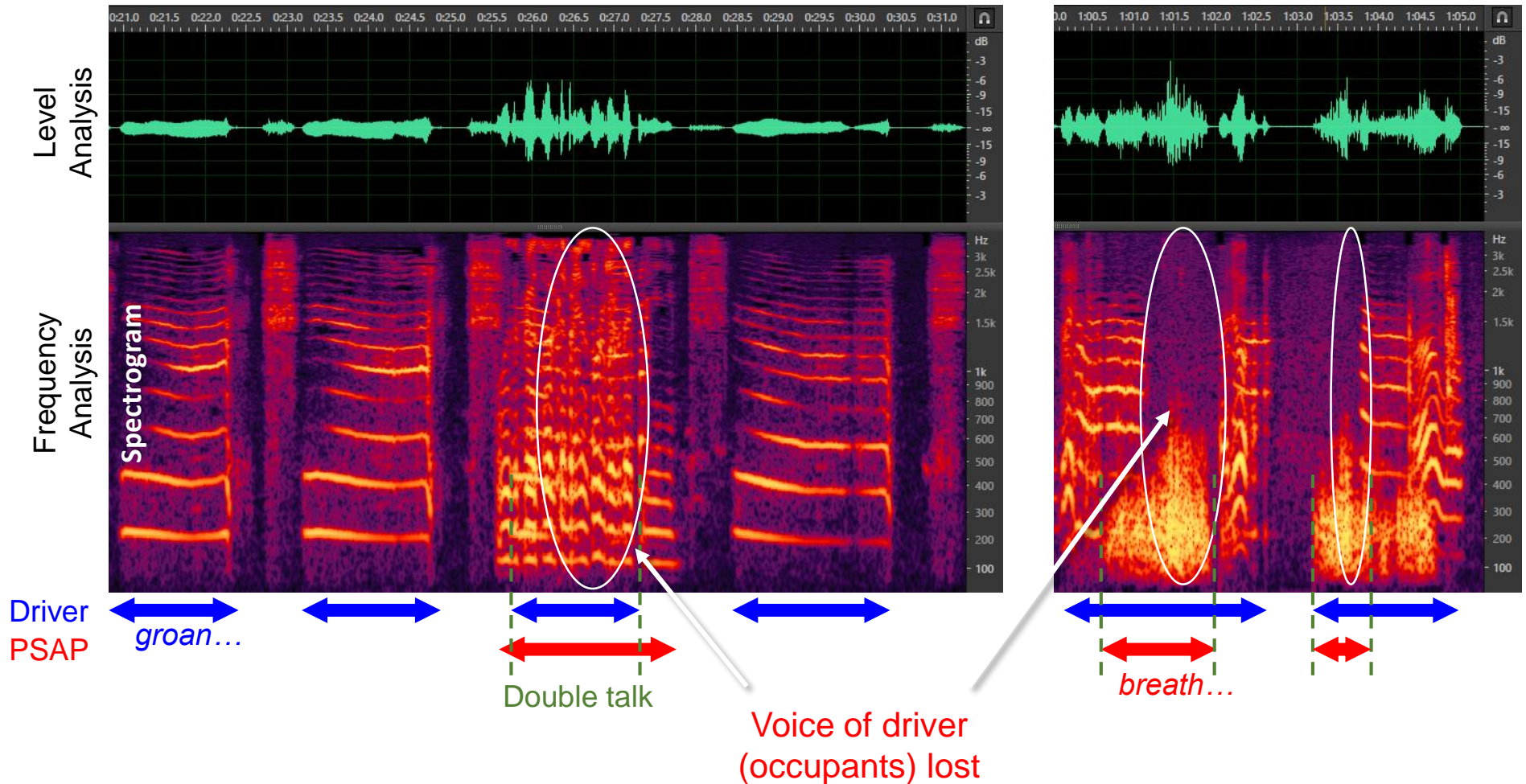
1. Voice of drivers(occupants) is too soft to recognize.
2. Voice of drivers(occupants) is difficult to recognize due to environmental noise.
3. Voice of drivers(occupants) is altered to mechanical voice.
4. Voice of drivers(occupants) is so loud as to be clipped.
5. Silent call cannot be judged as either real eCall or false call.
6. Conversation is not established due to echo.
7. Conversation is not established due to interruption of driver voice during double talk.
8. etc.



PSAP



## Example of interruption of driver(occupants) voice in double talk



## Why are there these issues for audio quality?

1. Requirement of hands-free audio performance for eCall is different from that for ordinary call
2. The audio criteria referred to (such as P.1140) is **NOT MANDATORY**.

There are some cases that voice adjusted to ordinary call criteria does not work for eCall.

### Requirement comparison

	Ordinary	eCall
Environmental Noise	<b>Suppress</b>	<b>Necessary</b>
Double Talk	Not Necessary	<b>Necessary</b>
Small / Loud Voices	Not Necessary	<b>Necessary</b>

## Current audio criteria of eCall in EU

ITU-T P.1140 is referred and recommended for Hands-free audio performance by UN-R144.

However, the audio performance in reality does not work to establish conversation good enough for PSAP operators.

## Why?

There are some OEMs who do not implement P.1140 in their eCall system because it is recommended, not regulated.

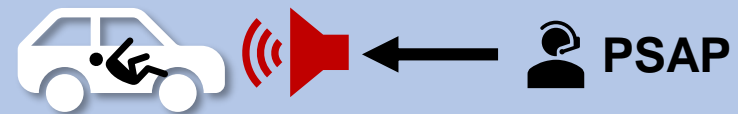
In summary, following are the important criteria for audio quality of eCall, **which is covered by P.1140.**

## Sending Voice



1. Loudness rating
2. Double talk performance
3. Environmental noise unprocessed (in silent calls)
4. Echo performance

## Receiving Voice



1. Loudness rating

**Thank you!**



# Questions?

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