

# Device to Device Network for Video Streaming

## Enable live video streaming in wireless multi-hop networks

### Fast Network Construction

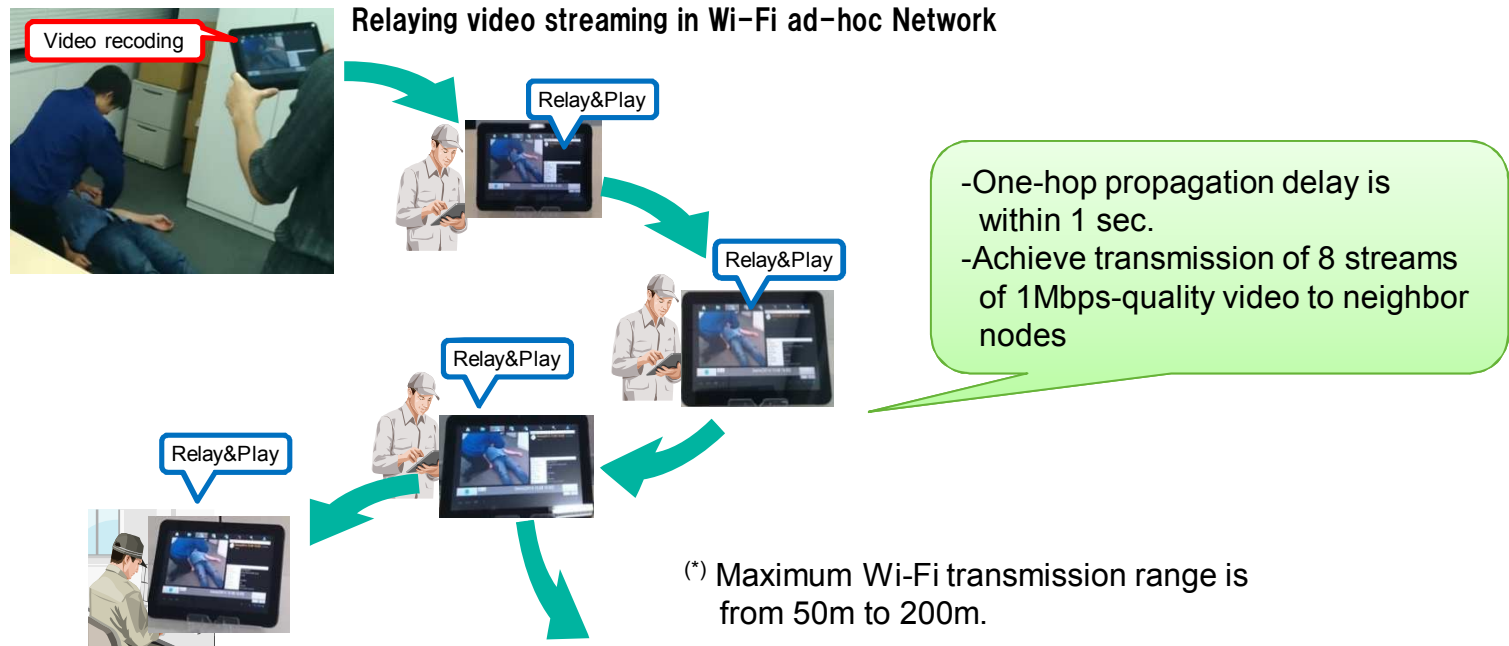
- Establish a Wi-Fi link between terminals within 1sec by caching credential

### High Capacity

- Achieve high throughput by channel switching for each relay

### Stable delivery

- Improve reachability by utilizing multiple relay devices



# Technology Features

Enabling high capacity and stable video delivery which can be implemented as software for smartphones or tablets

## Features

①  
Fast Network Construction

Establish a Wi-Fi link between terminals within 1sec

②  
High Capacity

Achieve high throughput by channel switching in each hop

③  
Stable Delivery

Improve reachability by utilizing multiple relay devices

## Merits

Reduce delay for starting video delivery

Achieve high quality live video streaming

Achieve stable delivery even when a relay device moves out of range

# Feature 1: Fast Network Construction Technology

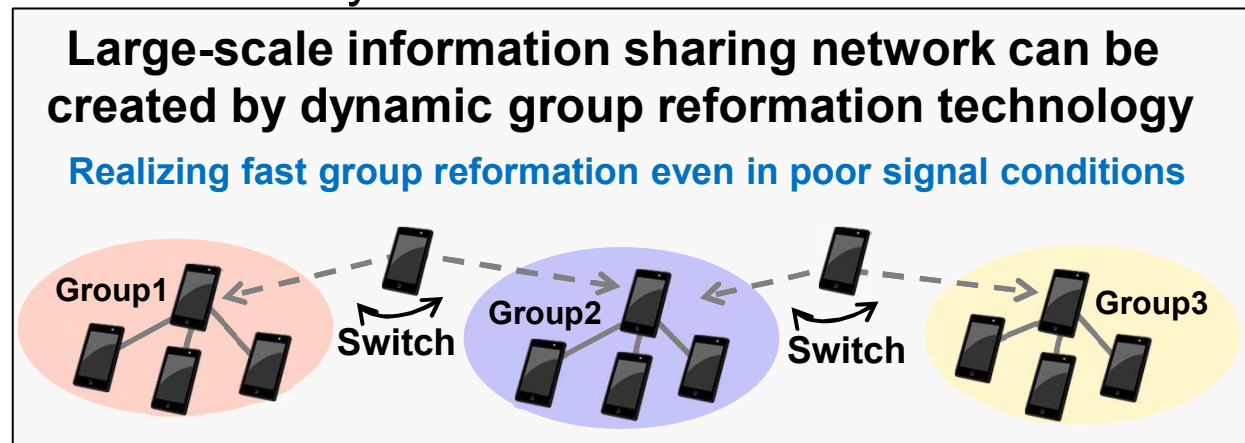
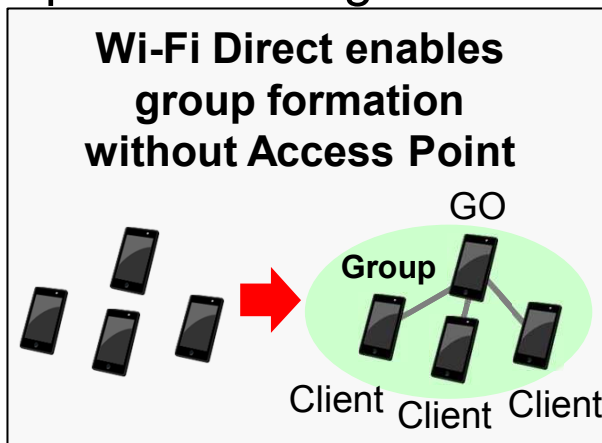
## Technical Content

Creating large-scale information sharing network by dynamic group reformation technology using secure and fast Wi-Fi Direct

## Feature

- **Sharing information between devices in different groups**

Large-scale information sharing network more than the maximum number of devices in a group can be created by switching connections of devices between groups. Fast switching can be realized by skipping authentication process using cached authentication keys



# Feature 2: Data Transfer Technology for Video Delivery

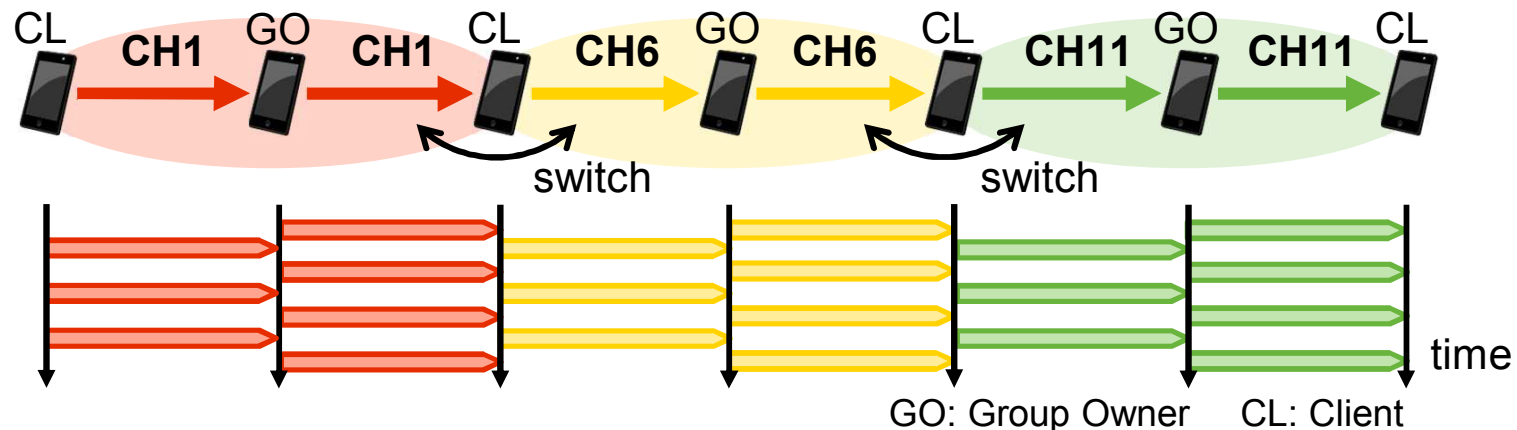
## Technical Content

Controlling timing of transmitting and receiving data among neighbor devices and suppressing congestion by using a different channel

## Feature

- High-quality video delivery is realized by improving throughput in multi-hop environments

A video is delivered by changing channels based on the number of neighbor devices. Efficient data transmission is achieved by using this autonomous distributed timing control even when different channels are used in each hop



# Feature 3: Stable Video Delivery Using Multiple Paths

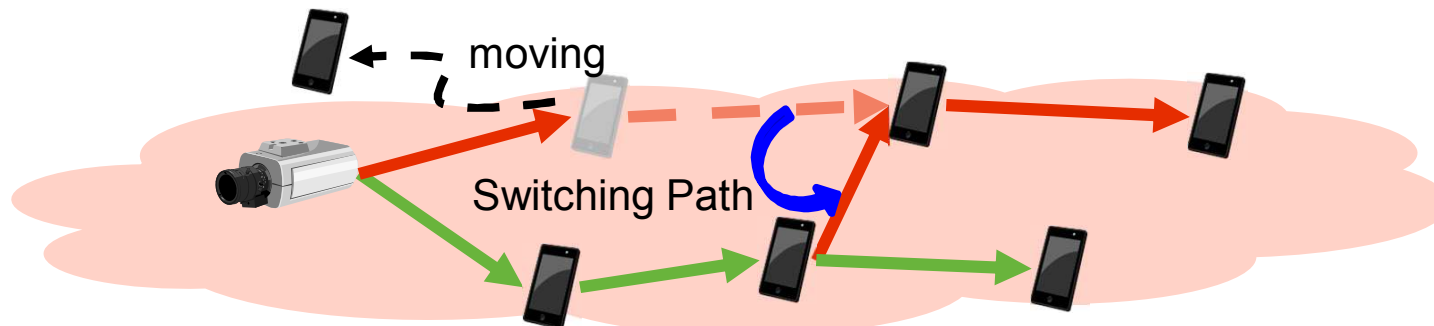
## Technical Content

Smooth video delivery by managing multiple candidate relay devices in case any relaying device moves out of communication range

## Feature

- Smooth video delivery is realized even when a relaying device on the path moves out of communication range

A device always monitors neighbor devices having the same video as candidates and manages each one's progress of received data. Smooth video delivery is achieved by selecting an appropriate path immediately when a current relaying device moves out of communication range

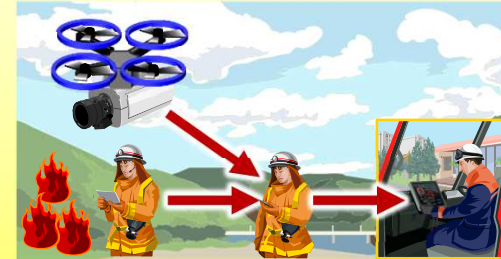


# Use Cases

Sharing live video in places where a telecom carrier network is not deployed.  
(disaster, security)



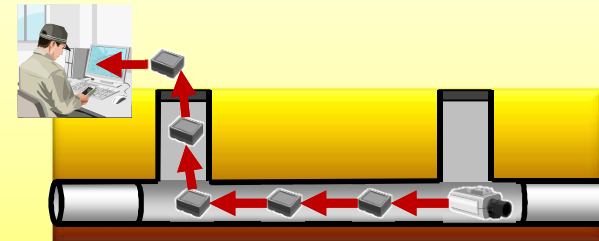
Sharing information in disaster area



Video monitoring for maintenance in places where it's difficult to deploy networks.  
(underground, mine, construction site)



Monitoring social infrastructure



Earthen pipe

Large-scale video delivery in infrastructure-less network to avoid overload in deployed networks  
(sports event, concert)



Large scale video distribution inside and outside stadium

