

Customer Case Study



MIMOSAKA DISTRICT FIRE DEFENCE COMMAND CENTRE

Mimisaka District Command Centre

Mimosaka District Fire Defence Command Centre (referred to as “Command Centre”) is a firefighting control tower that receives and coordinates all emergency calls in the district.

Established in April 2012, Tsuyama Firefighting Association, oversees the emergency services in three cities and five neighbouring towns.

AIMS & OBJECTIVES

- Increase the number of lives saved by using a “Smart-telecaster”
- Video streaming from a moving ambulance to a hospital doctor
- Life-saving efforts can start earlier to improve survival rates
- Ability for hospital staff to properly grasp the patient’s condition using live stream broadcasting
- Enable appropriate guidance and instructions, including selecting the best hospital for that patient’s needs
- Efficiently improve the survival rate of patients at the scene of an emergency
- Transmit electrocardiogram information and identify deadly arrhythmias at an earlier stage by viewing the physician’s findings

GOALS

Mimosaka district Command Centre improves operational structure.

Mimosaka District Fire Defence Command Centre (hereinafter referred to as “Command Centre”) is a firefighting control tower that receives and coordinates all emergency calls in the district. Established in April 2012, Tsuyama Firefighting Association, oversees the emergency services in three cities and five neighbouring towns.

When emergency calls are taken, depending on the disaster situation and location, appropriate command personnel are dispatched from the three districts, upon the directive of the Command Centre. In order to maximize the sophistication and efficiency of facility facilities, we intend to strengthen firefighting disaster prevention and emergency life-saving systems throughout the Mimosaka district. Attempts to jointly operate firefighting directive services for the first time in the Chugoku and Shikoku region have attracted great attention from other municipalities.

In the Command Centre, centralized staff use the latest system technologies to unify emergency transport information for the whole district. They have created a pioneering wide-area, emergency support system. Smart-telecasters are deployed in each of the three districts, in other emergency services vehicles. To support these initiatives they use on-site live video streaming



devices from Soliton Systems. This high definition video relay system is called a Smart-telecaster. The on-site officials can relay live footage of the disaster sites to other regions. By sharing this information accurate instructions can be given, such as requesting back-up and further manpower to help.

In addition, each department in the three districts has Smart-telecasters installed in a high standard ambulances, which are used for seriously ill patients. They can deliver prompt and accurate operational disaster relief and select the optimal medical institution for patients.

In the Okayama prefecture, we officially started a research organization at the 14 fire department headquarters in the prefecture in 2006. Since July 2009 a joint research group was established with 3 firefighting headquarters in the Mimasaki district.

Mr Morikazu Ikeda worked as the Fire Chief at the headquarters of the Tsuyama area firefighting association. He led the project to establish the Command Centre. He saw new possibilities to improve the Command Centre by utilizing live broadcasting equipment.

Mr Morikazu Ikeda explains: "At an early stage, Tsuyama Chuo, the Hospital Director of Emergency and Life Support Centre, pointed out the benefits of utilizing video at the emergency medical care centre. The benefits were strongly appealing, so we analysed the effects of introducing video transmission equipment. We set up a working group with the three fire department headquarters. Together we defined the specifications for video transmission technology. With the contents of the national field demonstration experiments, we can broadcast video and transmit multiple images in the ambulance at the same time. We specified requirements such as quality of sound transmissions in the bidding process."

Improve survival rates by shortening diagnosis time and acting earlier, through using real-time, high definition video technology.

The specific operation method is as follows:

Firstly, when the Command Centre receives the emergency call, the emergency teams send an order to dispatch. If the patient is expected to be in a serious condition, they give priority to select the ambulances equipped with Smart-telecasters. Concurrently, the Command Centre contacts the Emergency Medical Centre and notifies the attending doctor.

Once the patient is in the ambulance, the current state of the patient is broadcast with a movable CCD camera and transmitted to the emergency life centre. The doctor visually assesses the patient's condition and the magnitude of the injury. The doctor arranges for the hospital to prepare for the appropriate treatment. At the same time, the doctor advises the ambulance crew until they finish transporting the patient to hospital.

"In the Mimosaka district, doctors now give advice and guidance in real time, or after verifying the selection and suitability of emergency life-saving measures at each hospital site, etc. They efficiently improve patient's care and therefore prognosis and improve patient's survival rates." Mr Ikeda said "We are promoting the targeted "Regional Emergency Medical Control", but I believe that the images of Smart-telecaster are used effectively."

A picture can say a thousand words. Seeing the state of the patient helps communicate the severity of the situation and supports doctors to judge through more than words alone.



“Traditionally, the doctor’s consultation to an ambulance crew depended solely on verbal descriptions by telephone. This meant it was time consuming to explain and difficult to accurately describe the location of injuries and the state of affected organs through words alone. Smart-telecasters were introduced to show, live images of the patient’s injuries and state. Since sharp images of the affected body parts can also be photographed with the CCD camera, the doctor can grasp the state of the patient objectively, not only relying on what he’s heard, but also seeing the high-quality images. This enables him to issue the right treatment planning and instructions for this patient. In order to give the best patient care, it became possible to change which hospital they were taken to. I feel that this change in patient care is very important. ”

Depending on the patient’s condition, it may be necessary to request the ambulance helicopter to dispatch and then transfer the patient to a different hospital, which is better equipped for this incident. If destination can be judged right first time, by using real-time video from the ambulance, it will lead save more lives.

Mr Wataru Yamamoto is a first chief firefighter of the Tsuyama area firefighting department and is qualified as an emergency life-saver. He says: *“The important thing is to deliver the patient to the appropriate hospital as soon as possible. The patient’s situation deteriorates as time passes, and there are many cases that can not be judged only by personal subjectivity. By seeking appropriate judgment from a doctor who is in-house, it is possible to minimize transfer between hospitals and increase the survival rate. Mr Yamamoto said that peace of mind that sharing judgment with doctors is very great. The Smart-telecaster video and audio transmission technology has become their “eyes and ears”.*

In the ambulance there is limited space amongst the various medical equipment. Soliton Systems designed a special case to install the Smart-telecaster in the clearance space, with a movable camera for electrocardiogram shooting. A CCD camera was installed to improve patient display and electrocardiogram display.

“Even experienced ambulance crew find it difficult to determine the presence or absence of a lethal arrhythmia by monitoring the waveforms of the electrocardiogram. There is nothing more encouraging than to check the electrocardiogram findings with an experienced doctor.” (Mr Yamamoto)

Actively utilize Smart-telecaster as a tool to protect citizen’s lives.

Currently, one ambulance per city is equipped with a Smart-telecaster transmitter and each city also has a set of portable Smart-telecaster transmitters. In the future I plan to increase that number. Ultimately, it makes video relay possible with all ambulances possible. By adding video laryngoscope and position information together with other vital information such as blood pressure value and oxygen concentration in blood to multi screens, it will allow us to more accurately judge the situation. This will further improve the emergency life-saving rate.

Mr. Yamamoto said *“The high-definition and short delay video relay technology of Smart-telecaster has the possibility to be used in many situations. It is our task as an emergency life-saving person to think about how best to use it.”*

In the future, Mr. Ikeda talks about ideally letting hospital physicians freely operate and zoom with cameras mounted in ambulances. *“Smart-telecaster are a citizen’s life. We think that is a very effective system and tool to save lives and we will proactively utilize it”* he says, thereby enhancing collaboration between each function of the Command Centre and Soliton’s Smart-Telecaster.