

# Virtual Emergency Control Centers

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**Abstract:-** The COVID-19 pandemic has changed the way we live, work, and communicate. This has emphasized the importance of flexibility and resilience, forcing us to overcome business continuity challenges.

Digital transformation has played a key role in this, from remote meetings to employees working at home to virtually engaging with customers and business partners. COVID-19 has acted as an accelerator to an already accelerated change of pace in the digital realm. Another way it has changed the way we do business is in the way we plan and respond to emergencies.

Virtual Emergency Control Centers (VECC) move traditional ECCs into a digital environment where a variety of systems and collaborative tools can be deployed. Some of these tools are already enabled for remote access (video conferencing, telephony, and live stream), while others (such as radio) will take some time to be integrated into mobile phones and tablets for remote access. However, once that process is completed, the VECCs will enhance the efficiency of these centers while preserving their main functions.

## I. INTRODUCTION

Through this paper, we will discuss how Information Technology can virtualize a traditional ECC by accommodating it with different virtual systems and collaboration tools to handle its operations more efficiently. Therefore, utilizing these technologies will enhance the performance of virtual systems from their counterparts, increase the efficiency of these centers and preserve the ECC's primary functions, including alerting, control, communications, coordination & documentation.

Virtual ECCs will give access to individuals from Executive Management, Incidents Commanders, and concerning elements to make the necessary communication & collaboration in case of emergency. These services include Video Conferencing, Live Streaming, Emergency Board Systems, Telephony, and Radio through their Mobiles, Tablet gadgets, and Workstations from any area inside or outside corporate premises. Besides, building a Virtual Emergency Control Center (VECC) will quickly react during crisis and calamity circumstances, guaranteeing business activities progression at the affected primary areas.

## II. ECC PRIMARY FUNCTIONS

ECC is a conference room where members of Executive Management, Incidents Commanders, and concerning elements attend it during emergencies to tackle efficiently through the emergency preparedness process. This personnel carries out several primary functions through this ECC as the command, planning, operations, and documentation.

### A. Alerting

Alerting is one of the primary functions of ECC, and once an incident occurs, concerning parties respond based on these incidents' levels. In response to this alert, Executive Management, Incidents Commanders, and a concerned entity will be contacted to attend the assigned ECC. The person on the site will send an alert through the ECC integrated device, and an authorized person will receive it.

### B. Command

During an emergency or major incident, the officers responsible for immediate response shall meet at an agreed-upon location to command and control the situation. The officers will have dynamic communication and coordination to provide a centralized meeting, planning, and reporting committee. In response to the alert, the officers responsible for mitigating emergencies and experienced officials will join a video conference.

### C. Operations

In the video conference, the officials will decide the best course of action to mitigate the disaster. Upon effort agreed with action items within the ECC committee, every officer manage the deployment of personnel and resources of disaster mitigation, preparedness, response, and recovery in the field. The officers will convey their messages and strategies to the disaster mitigation team through radio. All of the commands and operations will take place through the radio. As the situation during the incidents is continuously changing, response teams have to be connected with the ECC to cope with changes and action item updates.

### D. Documentation

At the time of action, the ECC will make sure to log the data of each incident separately, and each log will be time stamped. The data will have alerts, messages, commands, operations, video, and audio feeds. Furthermore, this will allow future evaluation of what was achieved and what did not to define "lesson Learned" to enhance and develop policies and procedures.

## III. VECC ESSENTIAL IT SERVICES

These are the services that the Virtual Emergency Control Center (VECC) will be providing:

### A. Emergency Notification System:

This tool is one of the essential IT services in any ECC, which allows the organizations to push emergency notification during incidents and disasters to all concerned personnel to respond to the ECC. It can support the VECC once it is hosted on cloud service so authorized personnel can access it from anywhere and through any desktop or portable computing devices and mobiles. The user will send an alert or a message, and the authorized person will get a notification on the virtual emergency control system.

### B. Emergency Management Documentation System:

Ideally, documentation should begin immediately upon notification of an emergency and continue until post-incident reviews have been completed. The VECC supports an AI algorithm that gathers all the actions performed on the system during a disaster and logs the information. These logs can occur in many forms, but most organizations have developed such systems to record the required detailed information that emergency procedures stated to document. The data will consist of alerts, messages, commands, operations, video, and audio feeds. The virtual emergency control system will save all the data received in an emergency on a cloud.

### C. Video Conference System

A video conference and tele presence systems are essential tools for disaster recovery communications because it enhances virtual communication and connects individuals or teams who are separated by distance. Video conferencing systems will work on cross-platform devices, including mobile phones, tablets, and workstations, to provide more flexibility.

### D. Radio Communication Services

Radio communication services are the most important tool when it comes to ECC and industries have a long-standing trust in the advantage of using this type of service during emergencies. The integration of radio services with the Data network will enable the VECC to continue using this service virtually. The officers will access from anywhere to command and operate the team on their handheld and desktop radios.

### E. Telephony Communication Services

This service is most commonly used in the real world by law enforcement and other emergency units. The VECC will have an integrated VOIP service through which the officers will be able to contact the disaster mitigation team through mobile phones or desktop systems.

The VECC will avail all required application systems to be accessible from anywhere. Users can utilize business laptop, tablet or their smart phones to access all provided communications services virtually.

## IV. CONCLUSIONS

The digitization of ECC is essential because it will enhance the rate of accuracy in real-time. Adding the video feed feature using modern techs like mobile phones, tablets, and cameras will help control situations from a distance without any risk of life. The virtual emergency control system can be accessed by the authorized personnel on the devices assigned to them, including Mobile phones, Tablets, and workstations. The application will access the CCTV cameras in the targeted area. It will also receive alerts and messages from the user application. The system will receive a radio transmission from a specific frequency. The system will also receive calls from a unique number assigned specifically for emergencies.

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