

Deployment of Terrestrial Wireless Systems for Disaster Recovery to Provide Customer Relief

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Abstract

NTT Access Network Service Systems Laboratories has been researching and developing new wireless systems for disaster recovery. These Feature Articles introduce the terrestrial wireless systems for disaster recovery that we have developed. They also introduce a cell and radio frequency planning tool supporting wireless system operation. This article provides an overview as an introduction to them.

Keywords: disaster recovery, wireless system, relay, subscriber, business use

1. Introduction

The NTT Group prepares for large-scale disasters according to basic disaster-recovery policies centered around improving the reliability of the network, securing critical communications, and restoring services early. Since the Great East Japan Earthquake of 2011, NTT Access Network Service Systems Laboratories has been researching and developing new wireless systems for disaster recovery. At NTT EAST and NTT WEST, use of the wireless systems developed to date has enhanced measures for achieving early restoration of communication services and early reconnection of areas cut off from communications. These Feature Articles introduce the terrestrial wireless systems for disaster recovery that we have developed with the aim of restoring a wide range of communication facilities affected by a wide-area disaster such as a Nankai megathrust earthquake or an earthquake occurring directly under the Tokyo metropolitan area. They also introduce a cell and radio frequency planning tool supporting wireless system operation (Fig. 1).

2. Terrestrial wireless systems for disaster recovery

We briefly describe here the systems developed by NTT Access Network Service Systems Laboratories that are described in detail in the Feature Articles in this issue.

- (1) Portable digital wireless system for disaster recovery with long-range operation and compact/lightweight configuration

The 11/15P-150M-N wireless system was designed to restore relay transmission paths with a maximum transmission capacity of 600 Mbit/s. The system features a maximum transmission range of 20 km and a compact and lightweight configuration on a level enabling equipment dismantling and manual transport [1].

- (2) Business radio system providing stable means of contact without dependence on other carriers' networks

The TZ-161A wireless system was developed as a means of in-house contact by configuring a network only within an NTT regional company. In addition to a voice-calling function achieved through the use of transceivers, the system includes a location-information

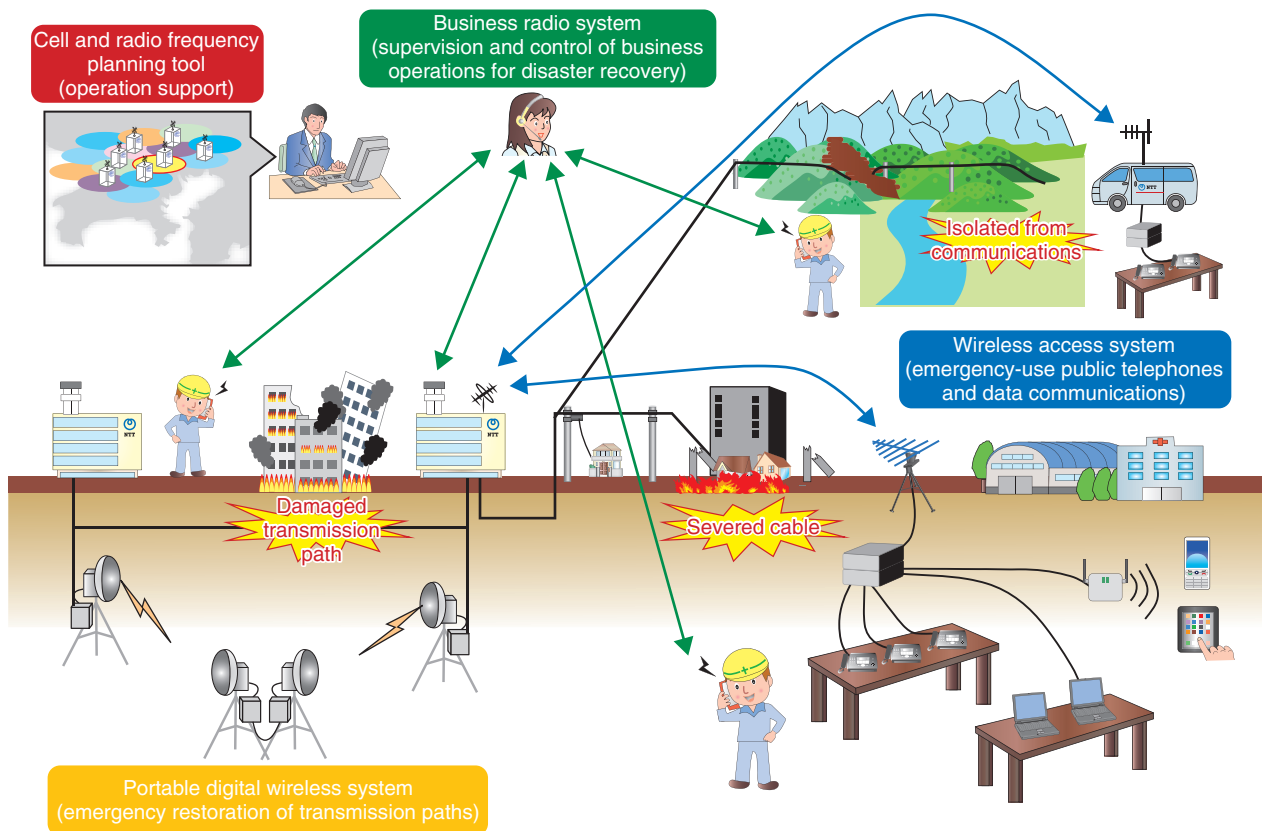


Fig. 1. Operation of terrestrial wireless systems for disaster recovery.

management function enabling efficient contact with personnel in the field [2].

(3) Wireless access system for disaster recovery providing safety and security to customers

The TZ-403D wireless system uses the 400-MHz frequency band to provide emergency-use public telephones and Internet connection services at evacuation centers and other locations that lie beyond line-of-sight with an NTT communication building [3].

(4) Cell and radio frequency planning tool supporting wireless systems for disaster recovery

This tool (software) is used to select which NTT communication buildings to use as optimal locations for installing radio equipment without having to have specialized knowledge or experience in station placement design [4].

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