Deployment Status of the New Disaster Preparedness Measures

NTT DOCOMO, INC.

February 23, 2012

Introduction

The Great East Japan Earthquake on March 11, 2011 caused extensive damage to DOCOMO's mobile network, with communication equipment being either destroyed or disrupted due to the earthquake and subsequent tsunami, optical fibers and other transmission lines being disconnected, and emergency battery power being depleted due to long blackouts.

As a result of this experience and the lessons learned, DOCOMO devised numerous new disaster preparedness measures in April 2011, all of which have been fully or almost fully implemented.

The three key points of the measures are:

- Securing communication for key areas and facilities
- Swift response to disaster-stricken areas
- Further improvement of customer convenience during disasters

New Disaster Preparedness Measures

Securing communication for key areas and facilities

e.g., administrative centers and densely populated areas

1. Install large-zone base stations throughout the nation in a total of 104 locations, covering 35% of the national population.
2. Provide base stations with uninterruptible power supply (UPS) or 24 hours of battery power, covering 65% of the national population and 50% of the hospitals in a given area (about total 1,900 stations).

Swift response to disaster-stricken areas

3. Immediate distribution of satellite mobile phones (3,000 units).
4. Quickly restore mobile phone service using satellite systems. Increase no. of satellite entrance base stations. (car-mounted type: 19 units and portable type: 24 units).
5. Broaden service recovery using microwave entrance systems (100 areas).

Further improvement of customer convenience during disasters

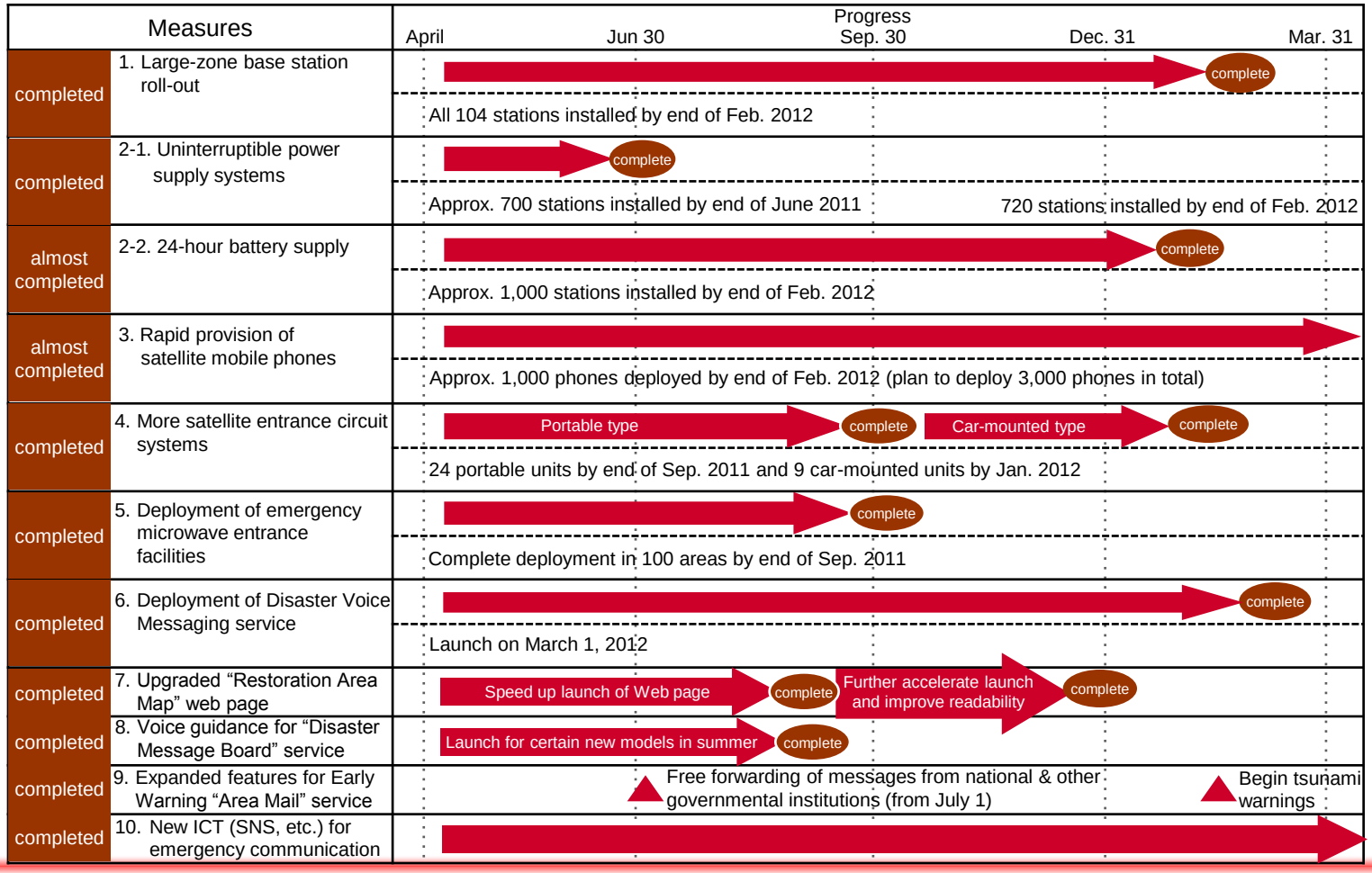
6. Provide Disaster Voice Messaging services.
7. Upgrade “Restoration Area Map” web page.
8. Voice interface for “Disaster Message Board.”
9. Expand Early Warning “Area Mail” service features.
10. Increased use of ICT (SNS, etc.) for emergency communication.

New Disaster Preparedness Measures: Breakdown

Overview		Estimated impact
		CAPEX
Securing communication for key areas/facilities	(1) Construction of base stations using large-zone scheme	¥5.0 billion
	(2) Uninterruptible power supply / 24-hour battery power	¥13.0 billion
Swift response to disaster-stricken areas	(3) Rapid provision of satellite mobile phones	¥0.1 billion
	(4) More satellite entrance circuit systems	¥0.6 billion
	(5) Deployment of emergency microwave entrance facilities	¥0.3 billion
Further improvement of customer convenience during disasters	(6) Deploy Disaster Voice Messaging services	¥1.0 billion
	(7) Upgraded “Restoration Area Map” web page	
	(8) Voice guidance for Disaster Message Board service	
	(9) Expanded features for Early Warning “Area Mail” service	
	(10) Increased use of ICT(SNS, etc.) for emergency communication	
TOTAL		¥20.0 billion

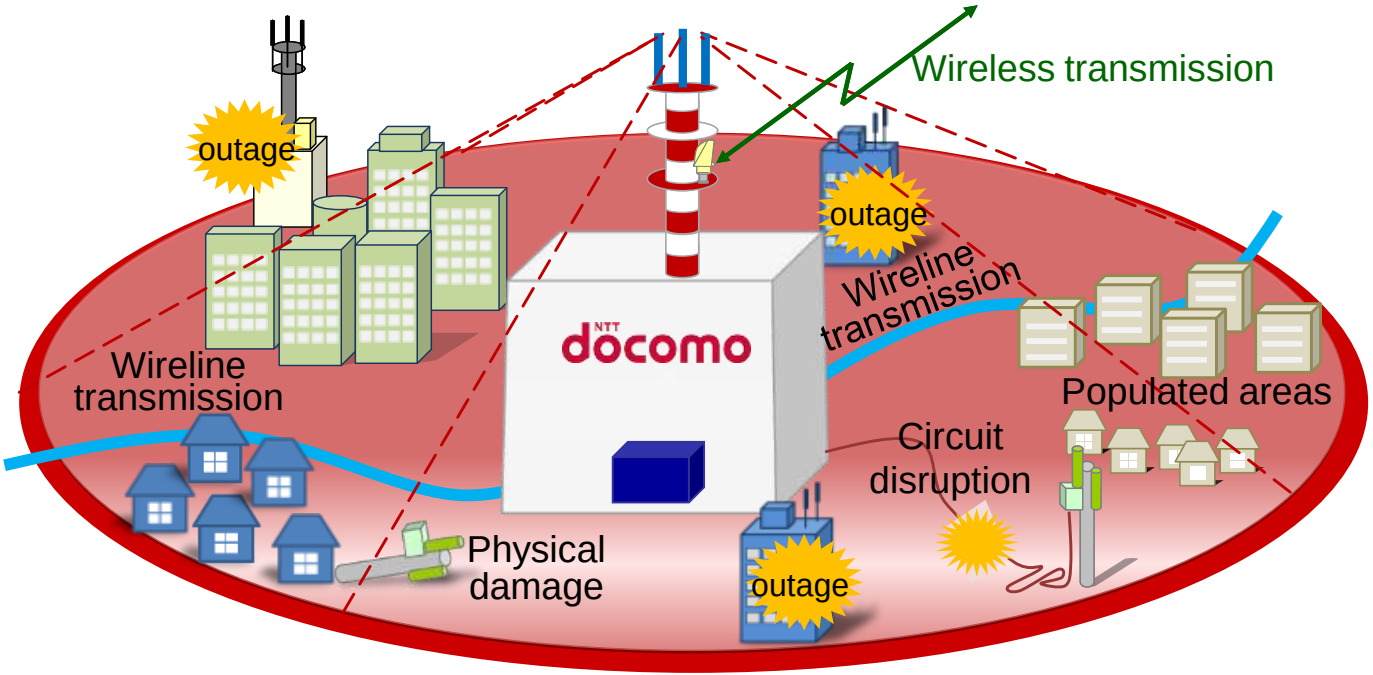
New Disaster Preparedness Measures: Progress

Most measures to be implemented by end February 2012



Construction of Large-Zone Base Stations (1)

- By the end of February 2012, DOCOMO will have installed 104 base stations with a large-zone service capability, separately from ordinary base stations, to secure communications over densely populated areas in the event of a wide-area disaster or power outage.
- Two base stations for each prefecture, except six for Tokyo and four for Osaka



7-km radius covered with 360-degree antenna directivity

(radius of ordinary base stations: few hundred meters to several kilometers)

Construction of Large-Zone Base Stations (2)

Completion in Hokkaido: Dec. 2011,
Tohoku: Feb. 2012 and Hokuriku: Jan. 2012

Hokkaido district: 3 base stations


Sapporo


Asahikawa


Kushiro

Tohoku district: 12 stations


Aomori


Hachinohe


Morioka


Oshu

Hokuriku district: 6 base stations


Kanazawa


Toyama


Fukui


Yamagata


Tsuruoka


Akita


Yokote


Hakusan


Takaoka


Echizen


Sendai


Ishinomaki


Fukushima


Iwaki

Construction of Large-Zone Base Stations (3)

Completion in Kanto-Koshinetsu: Feb. 2012

Kanto-Koshinetsu district: 25 base stations


Minato-ku


Minato-ku


Chiyoda-ku


Shibuya-ku


Sumida-ku


Tachikawa


Yokohama


Kawasaki


Sagamihara
(end February)


Chiba

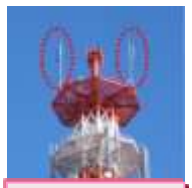

Funabashi


Saitama


Kawaguchi


Mito


Tsukuba


Utsunomiya


Koyama


Maebashi


Takasaki


Kofu


Kai

Construction of Large-Zone Base Stations (4)

Completion in Tohoku: Nov. 2011 and Kansai: Jan. 2012

Kanto-Koshinetsu district: 25 base stations


Nagano


Matsumoto


Niigata


Nagaoka

Tokai district: 10 base stations


Nagoya


Toyohashi


Shizuoka


Numazu


Hamamatsu


Kakegawa


Gifu


Ogaki


Tsu


Yokkaichi

Kansai district: 14 base stations


Osaka


Osaka


Osaka


Sakai


Kyoto


Fukuchiyama


Nara

Construction of Large-Zone Base Stations (5)

Completion in Chugoku: Jan. 2012 and Shikoku: Nov. 2011

Kansai district: 14 base stations


Yamatotakada


Kobe


Himeji


Otsu

Chugoku district: 10 base stations


Hiroshima


Fukuyama


Okayama


Kurashiki


Tottori


Yonago


Izumo


Matsue


Yamaguchi


Shimonoseki

Shikoku district: 8 base stations


Nagahama


Wakayama


Tanabe


Takamatsu


Niihama


Matsuyama


Zentsuji

Construction of Large-Zone Base Stations (6)

Completion in Kyushu: Jan. 2012

Shikoku district: 8 base stations


Kochi


Kami


Tokushima


Naruto

Kyushu district: 16 base stations


Fukuoka


Kurume


Kitakyushu


Saga


Nagasaki


Sasebo


Kumamoto


Yashiro


Oita


Beppu


Miyazaki


Miyakonojo


Kagoshima


Kirishima


Naha

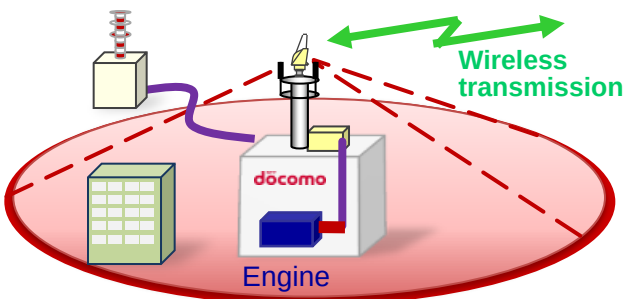

Okinawa

Provision of base stations with uninterruptible power supply / 24 hours of battery power

Securing mobile communication capability for prefectural and municipal government offices and other important facilities: almost completed by end of Feb. 2012

Uninterruptible power supply via engine

nearly finished by end of June 2011
(Feb. 2012: approx.720 stations, approx. 99%)

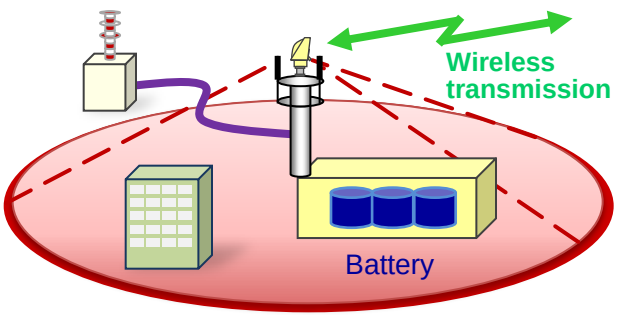


Prefectural and municipal government offices, etc.

Engine

24-hour power supply

Almost completed by end of Feb. 2012
(Feb. 2012: approx. 1,000 stations, approx. 87%)



Prefectural and municipal government offices, etc.

Battery unit

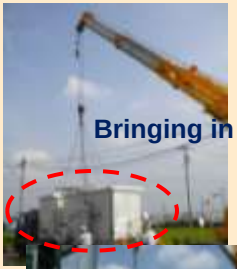
Battery

24 Hours of Battery Power Supply (1)

Overview of installation process (4 to 6 months)

Planning/Consultation — Construction

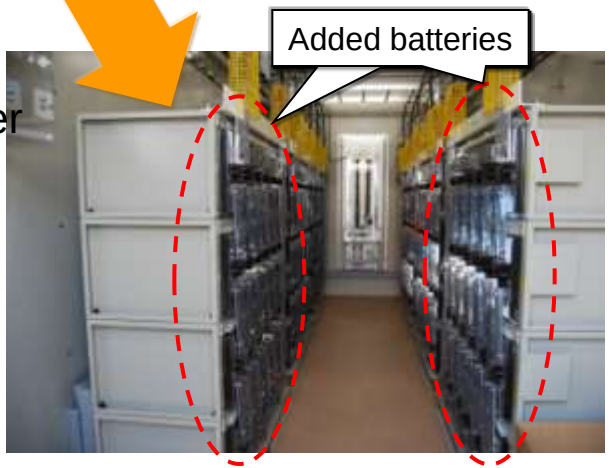
3-5 months	2 weeks	1 week	1 week
Confirm required battery capacity (select equipment, design structure and layout, etc.)	Basic construction (preparing site, base construction, etc.)	Battery delivery (setup, etc.)	Battery Installation (installation, connection, testing, etc.)	Completion (after inspecting for fire code compliance)



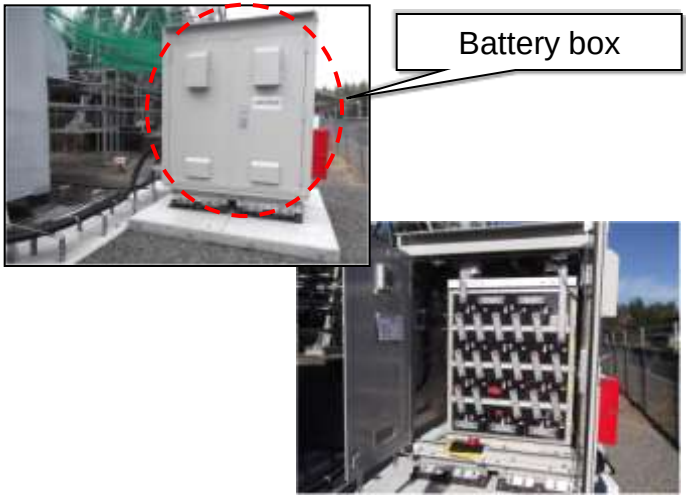
24 Hours of Battery Power Supply (2)

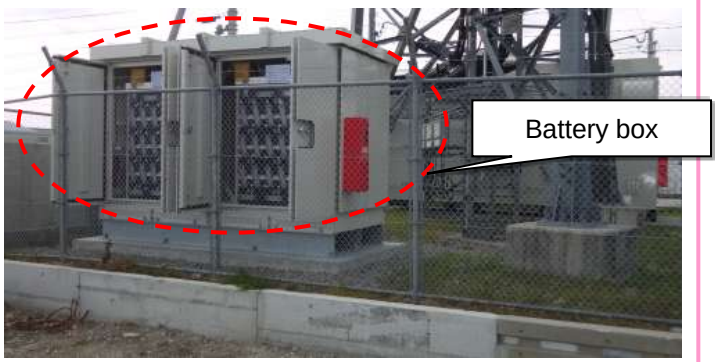
Pattern 1 (locate in existing space)

After



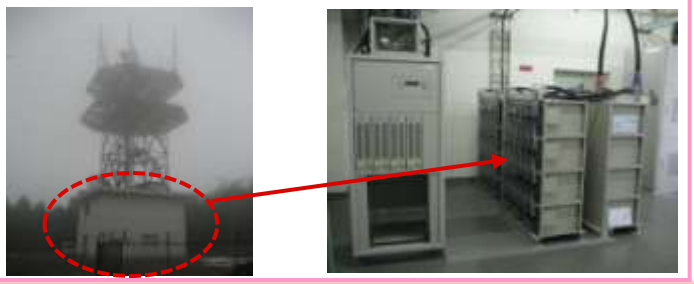
Pattern 2 (locate in new battery box)





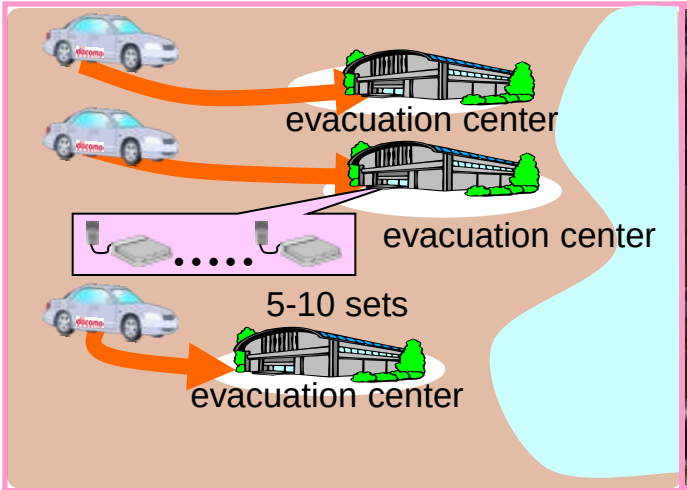
24 Hours of Battery Power Supply (3)

Battery configuration depends on base station and available space



Prompt Supply of Satellite Mobile Phones

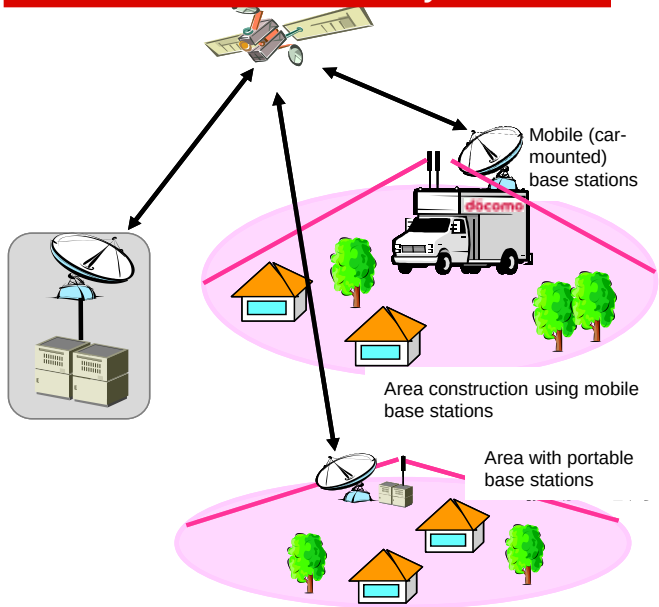
- Provide mobile communication immediately after disaster by providing satellite mobile phones to evacuation centers, etc.
- Deploy 3,000 phones during major disasters (1,000 now ready to deploy)



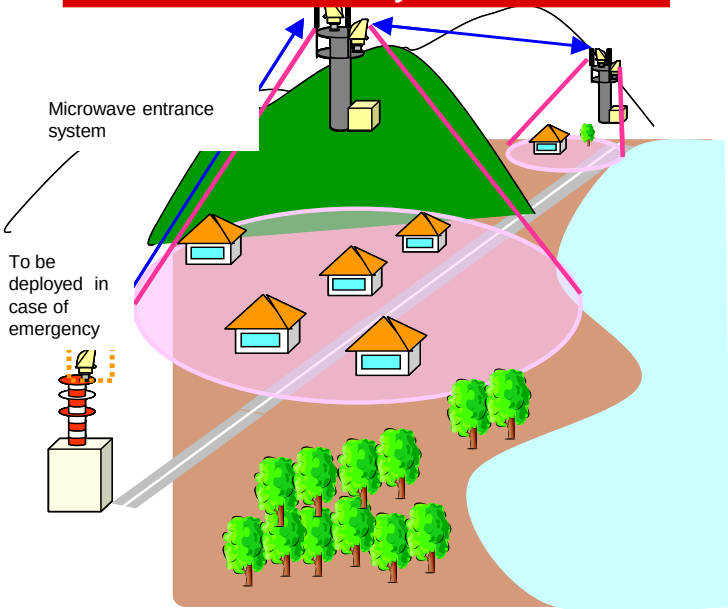
Increased Deployment of Satellite and Microwave Entrance Systems (1)

- Effectively utilize rapidly deployable, highly mobile satellite and microwave systems to ensure early restoration of communication in affected areas
  - Increase the number of satellite-entrance mobile base stations (19 car-mount units and 24 portable units)
  - Deploy emergency microwave entrance systems (100 areas)

Utilization / expansion of satellite entrance systems



Utilization of microwave entrance systems



Increased Deployment of Satellite and Microwave Entrance Systems (2)

- Increase no. of car-mounted satellite entrance base stations
- 9 new mobile base stations (brings existing total to 19)


Hokkaido


Tohoku


Chuo


Hokuriku


Tokai


Kansai


Chugoku


Shikoku

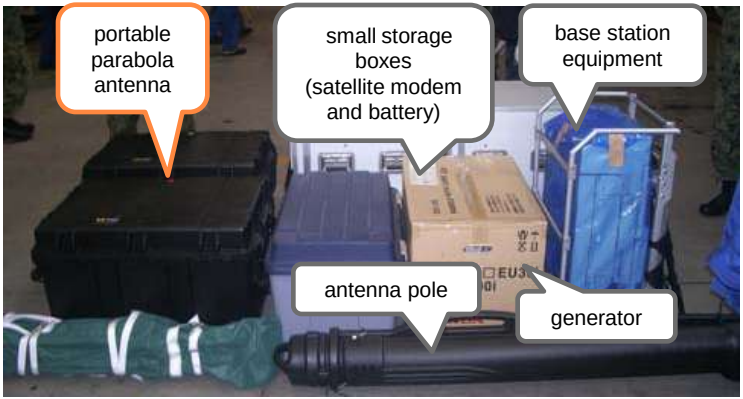

Kyushu

Increased Deployment of Satellite and Microwave Entrance Systems (3)

- Deployment of portable-type satellite entrance base stations
- Self-Defense Forces training exercise for delivery of portable base stations from DOCOMO's Hokkaido office by helicopter on Nov. 21, 2011

SDF helicopter

Unloading cargo



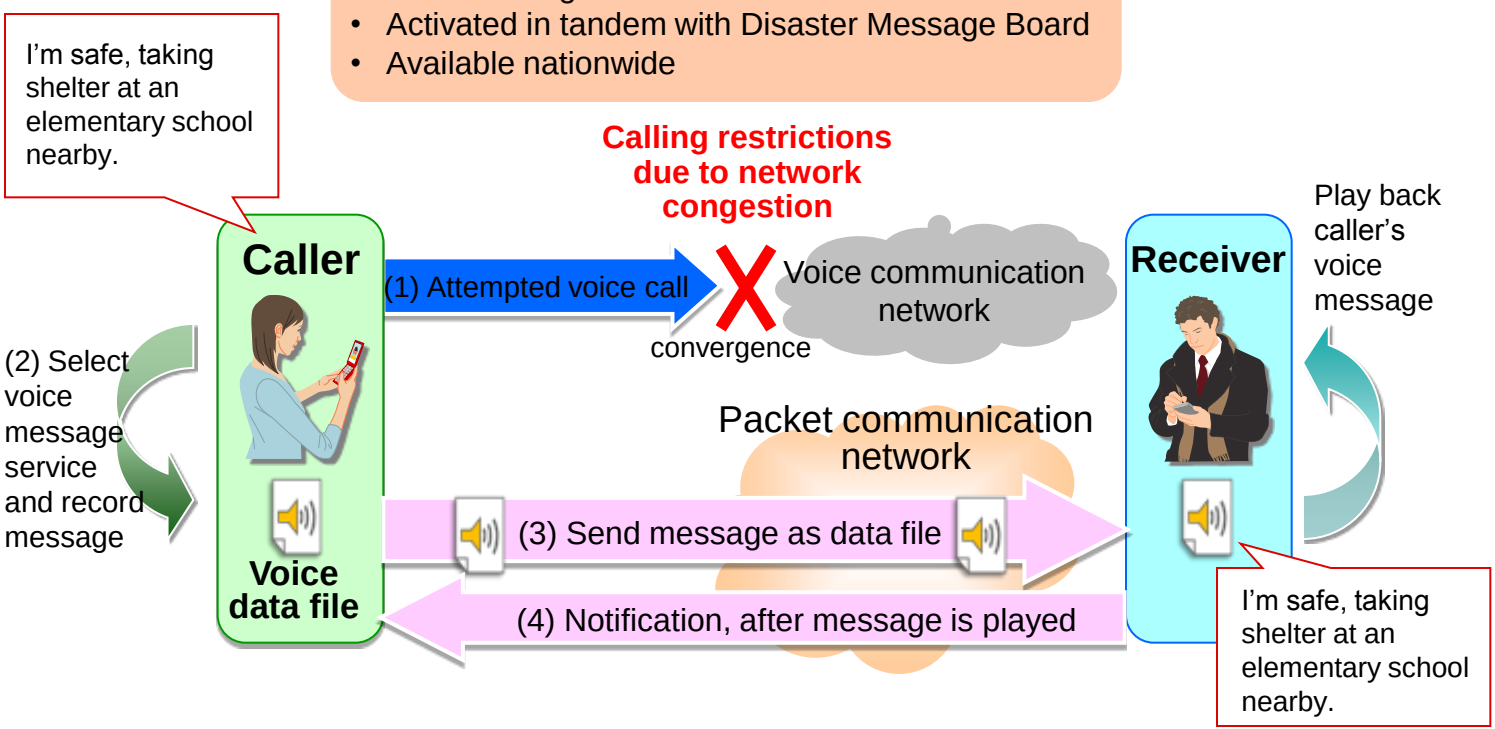
Cargo for delivery

Deployment of Disaster Voice Messaging Service

- Disaster Voice Messaging service (starting March 1, 2012) enables people to send messages as data files when voice calls become restricted due to a disaster
- Trial usage of the service will be possible until March 31, 2012

Key Features of Service

- Free of charge
- Activated in tandem with Disaster Message Board
- Available nationwide



Upgraded “Restoration Area Map” Web Page

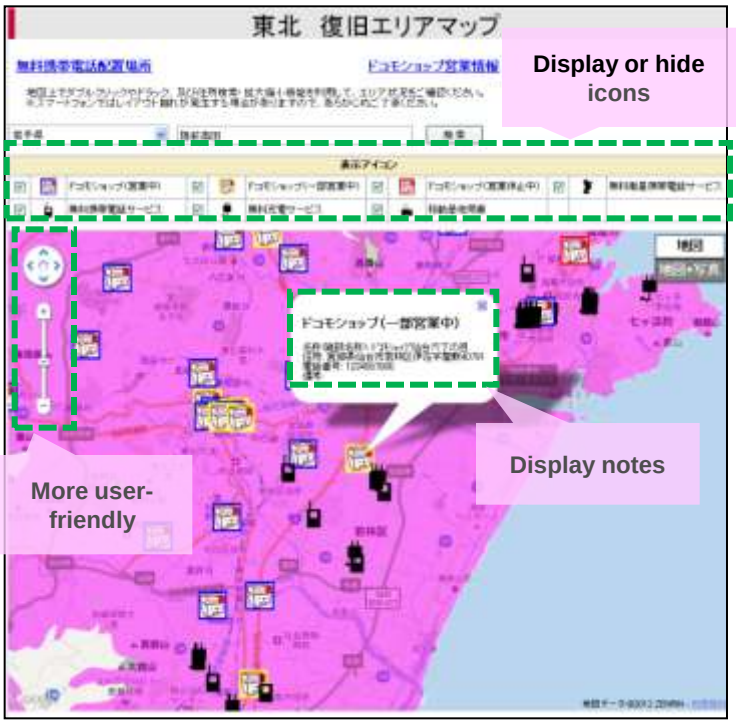
- Improvements including faster launch of service and enhanced legibility (from December 23, 2011).

Map shows progress of mobile service restoration by area

improved

Faster launch after disaster

Enhanced legibility



Voice Guidance for Disaster Message Board service

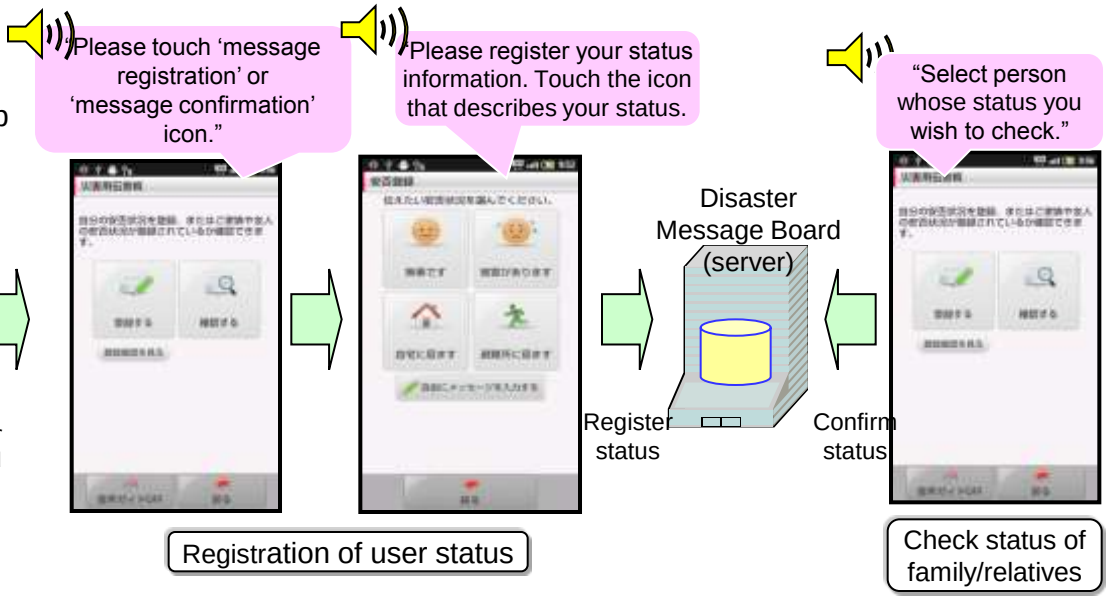
- Disaster message board app can be activated by voice (Japanese only), as well as touchscreen operation
- Easy to register/confirm messages by voice, or by touch

Compatible models

- Select handsets in the 2011 Summer lineup
- All smartphones in the 2012 Winter/Spring lineup

1. Activate app

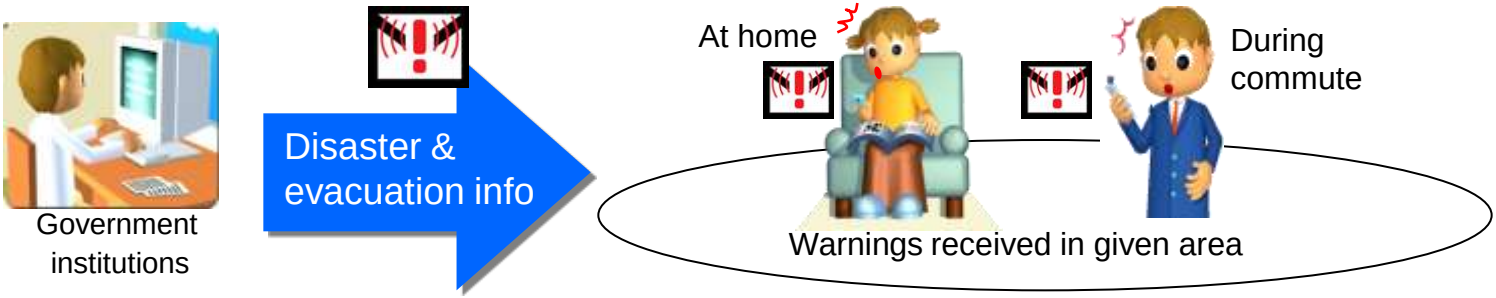
2. Follow voice guidance for easy operation



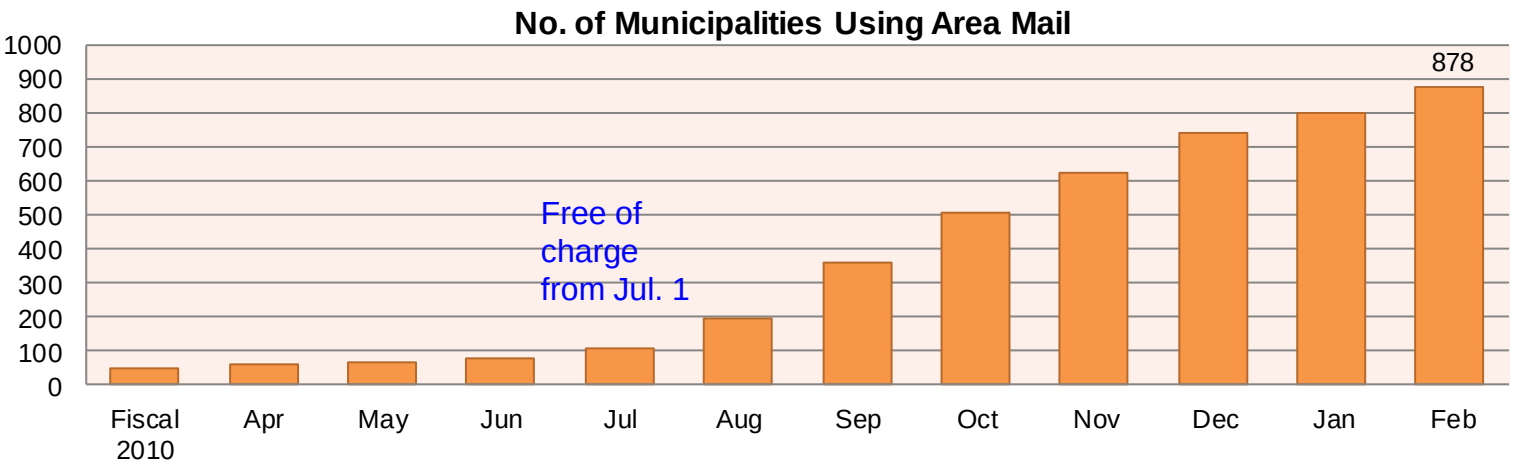
- Activating the app by voice requires use of smartphone’s voice-input function.
- Previous app, Disaster Message Board, must be updated to use this new service.

Expansion of Early Warning "Area Mail" Service (1)

- Provides early warnings of strong earthquakes from Japan Meteorological Agency and disaster/evacuation information from national and regional public institutions.
- On July 1, 2011, Area Mail became a completely free service for national and other government institutions.



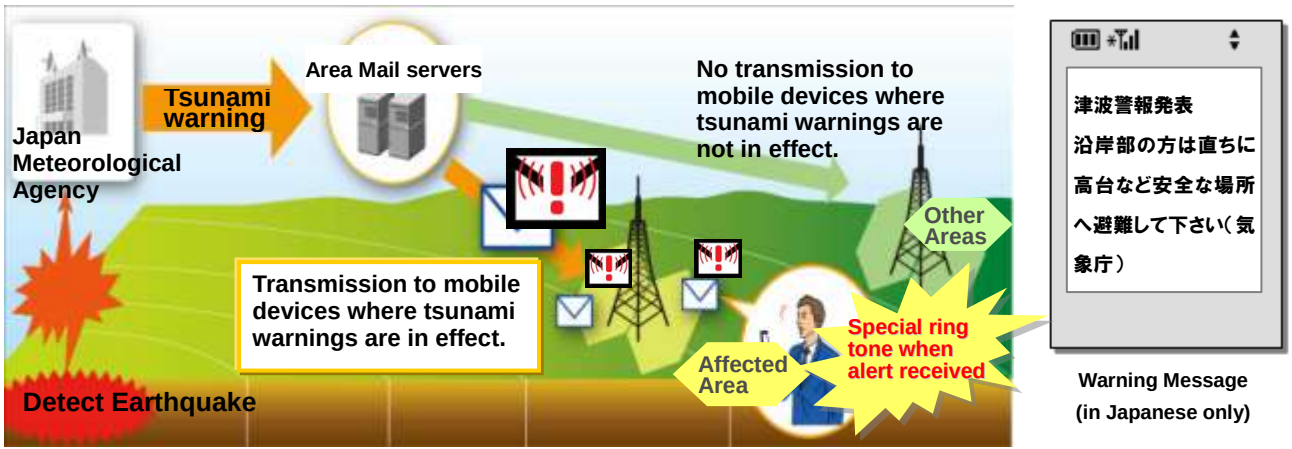
■ 878 municipalities had introduced the service as of February 17, 2012



Expansion of Early Warning “Area Mail” Service (2)

Tsunami warnings issued by the Japan Meteorological Agency for 66 coastline areas will be transmitted to mobile devices via DOCOMO’s Early Warning “Area Mail” disaster information service beginning February 24.

When	Immediately after a potentially hazardous tsunami is forecast. Includes “major tsunami” expected to reach or exceed three meters and “tsunami” expected to reach up to two meters. Tsunami advisories are not covered.
Areas	66 coastline areas
What	Tsunami warnings (“tsunami” and “major tsunami”)
Compatible models	Early Warning “Area Mail” service compatible models launched from/after November 2007

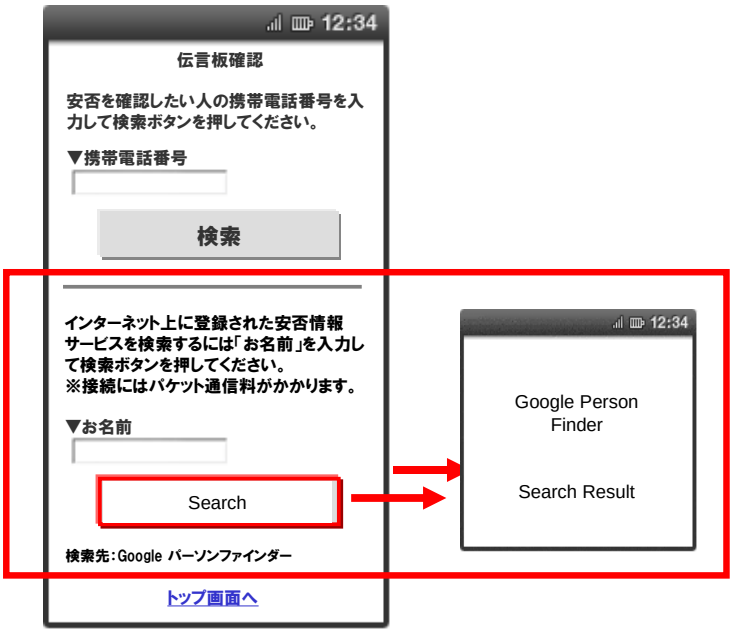


Increased Use of ICT for Emergency Communication

- View Google Person Finder registry/messages on Disaster Message Board screen of mobile devices
- DOCOMO's dmenu (smartphones) and i-menu (other phones) portals display disaster-related tweets from national/local governments and mass media, etc. for easy collection of disaster related information.

Integration with Google Person Finder

(From the end of March 2012)



Integration with Twitter

(From Feb. 2012)

Disaster related Twitter accounts

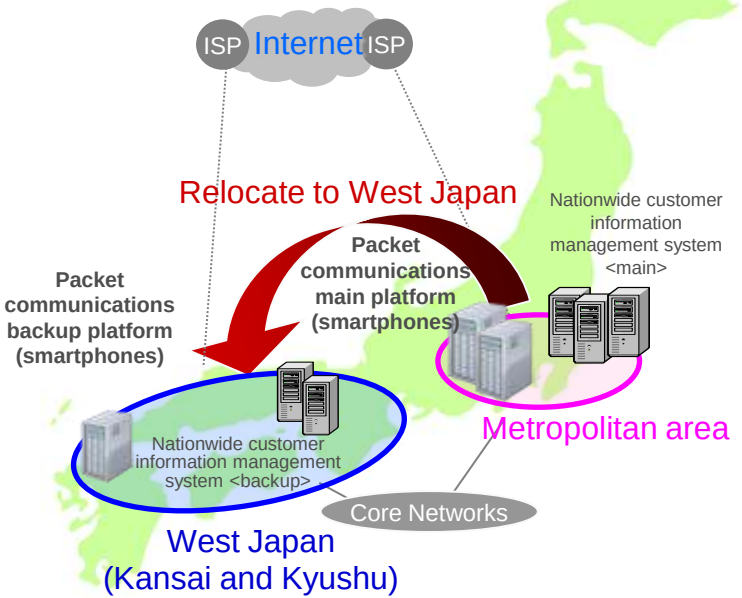
- Government
- Infrastructure
- Newsmedia

Additional Disaster Preparedness Measures

Future initiatives for increased network safety and reliability

Dispersal of critical facilities (concept)

As a precaution for the possibility of a major earthquake centered on Tokyo, DOCOMO plans to decentralize critical facilities now concentrated in the capital region, relocating some of them to Kansai and Kyushu areas within fiscal year 2012.



Disperse very-most critical facilities required for service continuity

Green base stations

Eco-friendly power control technology	
Secure electric power supply	• Introduce solar panels and lithium-ion batteries • Control with high-efficiency DC conversion • Use base station battery data for operation
Electric power savings	• Reduce commercial batteries by using solar panels • Leverage peak shifts by using nighttime electricity
Visualization	• Determine real-time power needs of base stations • Install equipment for collecting battery data

Other related initiatives

- Established office to coordinate reconstruction assistance in Tohoku area (December 1, 2011)
- Revised manual for disaster procedures, including business continuity plan (BCP)
- Implemented emergency drills and training in how to communicate in disasters
- Tightened partnerships with various institutions, including Self Defense Force