ICT and Disaster Management

July 9, 2011

Director for North America, Europe and ITU Affairs
International Policy Division
Ministry of Internal Affair and Communications, Japan

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content

1) Outlook of the Great East Japan Earthquake
2) Disaster Response in Japan
3) What we have learned from the 3.11
4) Utilization of ICT
5) Future perspective
Outlook of the Great East Japan Earthquake
The Great East Japan Earthquake (1)

- Date and Time: 11 March 2011 14:46 JST
- Magnitude: 9.0 *(the largest earthquake in history recorded in Japan)*
- Hypocenter: N38.1, E142.9 (130km ESE off Oshika Peninsula) Depth 24km* (*: interim value)
The Great East Japan Earthquake (2)

<table>
<thead>
<tr>
<th>Location</th>
<th>First tsunami</th>
<th>Maximum height of tsunami</th>
</tr>
</thead>
<tbody>
<tr>
<td>Miyako (Iwate)*</td>
<td>March 11, 14:48 JST +0.2m</td>
<td>March 11, 15:26 JST +8.5m&lt;</td>
</tr>
<tr>
<td>Ofunato (Iwate)*</td>
<td>March 11, 14:46 JST -0.2m</td>
<td>March 11, 15:18 JST +8.0m&lt;</td>
</tr>
<tr>
<td>Ishinomaki (Miyagi)*</td>
<td>March 11, 14:46 JST +0.1m</td>
<td>March 11, 15:25 JST +7.6m&lt;</td>
</tr>
<tr>
<td>Soma (Fukushima)*</td>
<td>March 11, 14:55 JST +0.3m</td>
<td>March 11, 15:51 JST +9.3m&lt;</td>
</tr>
<tr>
<td>Oarai (Ibaraki)</td>
<td>March 11, 15:15 JST +1.8m</td>
<td>March 11, 16:52 JST +4.2m</td>
</tr>
<tr>
<td>Kamaishi (Iwate)*</td>
<td>March 11, 14:45 JST -0.1m</td>
<td>March 11, 15:21 JST +4.1m&lt;</td>
</tr>
<tr>
<td>Mutsu (Aomori)</td>
<td>March 11, 15:20 JST -0.1m</td>
<td>March 11, 18:16 JST +2.9m</td>
</tr>
<tr>
<td>Nemuro (Hokkaido)</td>
<td>March 11, 15:34 JST slight</td>
<td>March 11, 15:57 JST +2.8m</td>
</tr>
<tr>
<td>Tokachi (Hokkaido)*</td>
<td>March 11, 15:26 JST -0.2m</td>
<td>March 11, 15:57 JST +2.8m&lt;</td>
</tr>
<tr>
<td>Urakawa (Hokkaido)</td>
<td>March 11, 15:19 JST -0.2m</td>
<td>March 11, 16:42 JST +2.7m</td>
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</tbody>
</table>

(source: Japan Meteorological Agency)

* Maximum height of tsunami cannot be retrieved so far due to the troubles.
Actual maximum height might be higher.
# The Great East Japan Earthquake (3)

## Damages

<table>
<thead>
<tr>
<th>Category</th>
<th>Details</th>
<th>Source</th>
</tr>
</thead>
<tbody>
<tr>
<td>Casualties</td>
<td>Dead: 14,728</td>
<td>(source: National Police Agency)</td>
</tr>
<tr>
<td></td>
<td>Missing: 10,808</td>
<td></td>
</tr>
<tr>
<td>Property Damages (houses)</td>
<td>Total Collapse: 62,342</td>
<td>(source: National Police Agency)</td>
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<tr>
<td></td>
<td>Half Collapse: 25,193</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Partially Damaged: 200,135</td>
<td></td>
</tr>
<tr>
<td>Evacuees</td>
<td>135,795</td>
<td>(source: Prime Minister of Japan and His Cabinet)</td>
</tr>
</tbody>
</table>
Offers from 143 countries and regions, and 39 international organizations
Condoences expressed by more than 180 countries and regions,
and more than 60 international organizations

As of April 25, 2011, survey by Ministry of Foreign Affairs Japan
Rescue teams from countries in the Asia-Pacific region

Rescue team from Mongol
Source: Singapore Civil Defence Force

Rescue team from Korea
Source: NEWSIS

Rescue team from Singapore
Source: Singapore Civil Defence Force
Rescue teams from countries in the Asia-Pacific region

Rescue team from New Zealand
Source: Kyodo/Reuters

Rescue team from Australia
Source: The Australian

Rescue team from China
Source: Sankei News
Emergency assistance utilizing satellite communications equipment from International Telecommunication Union (ITU)

- ITU deploys a total of 153 satellite communications equipment units for free and does not charge a communication fee.
  - 78 Thuraya satellite phones
  - 13 Iridium satellite phones
  - 62 Inmarsat Broadband Global Area Network terminals.

- Those are gradually lent out free of charge to Local governments, etc. via MIC.
Major Damages in ICT

(i) Fixed-line services
- Approximately one million lines (nearly 1/3 of all network in the devastated area) were disconnected on March 13.
- Nearly 1% of those lines are still disconnected.

(ii) Mobile phone services
- Approximately 15,000 mobile base stations were out of service on March 12. (due to not only the earthquake but also shortage of fuel supply)
- 1.1% of those base stations are still out of operation.
Disaster Response in Japan
Earthquakes Information Gathering System

- Seismometers are installed at more than 300 sites around Japan.
- Japan Meteorological Agency (JMA) aggregates the data.
- JMA transmits information to TVs and Mobile Phones, etc. instantaneously.
  - Earthquake early warning
  - Tsunami warning and advisory
  - Earthquake and tsunami information
Simultaneous Warnings Transmission to Mobile Phones

- No monthly fee or telecommunication fee is charged.

Detection of earthquake

Japan Meteorological Agency

Earthquake Early Warning

Process message delivery

Mail Center

Disaster/ Evacuation information
From state/ local governments
Connecting national administrative organs, designated public corporations, prefectures, and municipalities through a radio communication system to transmit information among administrative institutions, and to spread the information to local residents.

* Out of the total 1750 local Government offices, about 92% have established an Emergency Municipal Radio communication system (as of the end of March 2010)
Types of the safety confirmation services

I. Disaster Emergency Message Dial ("171")
   - Fixed/public telephone, Mobile phone and PHS terminal
   - Voice messages
   - Provided by NTT Communications (System operation: NTT EAST/WEST)

II. Disaster Emergency Message Board ("web171")
    - PC, Mobile phone and PHS terminal using the Internet
    - Voice messages, text messages, still pictures and motion pictures
    - Provided and operated by NTT EAST/WEST

III. Disaster Message Board (for cell-phones/PHS)
    - Mobile phone, PHS terminal and PC using the Internet
    - Text messages
    - Provided and operated by five cell-phone and PHS companies
What we have learned from the 3.11
## Needs for information

- There has been a great need for "information"
  
  (Daily analysis of the needs trend for Insufficient thing)

<table>
<thead>
<tr>
<th></th>
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<td>物資</td>
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<td>ガソリン</td>
<td>物資</td>
<td>食料</td>
<td>Information</td>
<td>食料水用容器</td>
<td>電力</td>
<td>ボランティア</td>
<td>土のう袋</td>
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<td>TV</td>
<td>紙おむつ</td>
<td>ガソリン</td>
<td>水</td>
<td>燃料</td>
<td>懐中電灯</td>
<td>エネルギー</td>
<td>Information</td>
<td>電力</td>
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<td>6</td>
<td>News</td>
<td>赤ちゃん用</td>
<td>TV</td>
<td>Information</td>
<td>避難所</td>
<td>トイレットペーパー</td>
<td>Information</td>
<td>TV</td>
<td>ガソリン</td>
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<td>燃料</td>
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<td>軽油</td>
<td>医師</td>
<td>避難所</td>
<td>野菜</td>
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<td>機器</td>
<td>TV</td>
<td>地図</td>
<td>紙オムツ</td>
<td>水</td>
<td>ブルーシート</td>
<td>ヘリ</td>
<td>食料</td>
<td>TV</td>
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<td>避難所</td>
<td>水</td>
<td>水</td>
<td>ビニール</td>
<td>TV</td>
<td>保存食</td>
<td>内科</td>
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<td>食料</td>
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<td>News</td>
<td>紙おむつ</td>
<td>フリース</td>
<td>自動車</td>
<td>ガソリン用携行缶</td>
<td>水</td>
<td>燃料</td>
<td>Information</td>
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<td>避難所</td>
<td>燃料</td>
<td>生地</td>
<td>店</td>
<td>電力</td>
<td>血管</td>
<td>運動</td>
<td>運動不足</td>
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<td>電源不足</td>
<td>運動</td>
<td>店</td>
<td>電力</td>
<td>水</td>
<td>おにぎり</td>
<td>水</td>
<td>燃料</td>
<td>電化</td>
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<td>病院</td>
<td>血液</td>
<td>Communication</td>
<td>医療</td>
<td>トイレットペーパー</td>
<td>ガソリン</td>
<td>看護師</td>
<td>自動車</td>
<td>車</td>
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<tr>
<td>14</td>
<td>救援</td>
<td>コンビニ</td>
<td>店</td>
<td>紙オムツ不足</td>
<td>暖房</td>
<td>TV</td>
<td>運動不足</td>
<td>おにぎり</td>
<td>トイレットペーパー</td>
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<td>店</td>
<td>運動</td>
<td>交通</td>
<td>TV</td>
<td>糖質不足</td>
<td>水</td>
<td>水</td>
<td>燃料</td>
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<td>自動車</td>
<td>電池</td>
<td>糖尿病</td>
<td>食事</td>
<td>無洗米</td>
<td>牛乳</td>
<td>運動</td>
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<td>コンビニ</td>
<td>News</td>
<td>血液</td>
<td>かゆ</td>
<td>衣類</td>
<td>紙おむつ</td>
<td>食事</td>
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<td>18</td>
<td>場所</td>
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<td>救援</td>
<td>交通</td>
<td>懐中電灯</td>
<td>洗面所</td>
<td>紙オムツ</td>
<td>自転車</td>
<td>果物</td>
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<td>19</td>
<td>懐中電灯</td>
<td>自動車</td>
<td>血液</td>
<td>避難所</td>
<td>毛布</td>
<td>入院患者</td>
<td>下着</td>
<td>News</td>
<td>店</td>
</tr>
<tr>
<td>20</td>
<td>Mobile Phone</td>
<td>場所</td>
<td>赤ちゃん用</td>
<td>医薬品不足</td>
<td>運動</td>
<td>無洗米</td>
<td>避難所</td>
<td>医薬品不足</td>
<td>水分</td>
</tr>
</tbody>
</table>

Information to 26th place

Using key word “lack”, METI retrieved about 1000 Tweet by Google each day on March 12-15 and about 1500 Tweet by visualization engine on March 16-26.
### Means of safety confirmation

#### Contact method to acquaintance and family

<table>
<thead>
<tr>
<th>Method</th>
<th>Tried to use</th>
<th>Did not try to use</th>
<th>Did not Know how to use</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed</td>
<td>63</td>
<td>37</td>
<td>20</td>
</tr>
<tr>
<td>Mobile</td>
<td>90</td>
<td>10</td>
<td>10</td>
</tr>
<tr>
<td>Mobile mail</td>
<td>84</td>
<td>15</td>
<td>10</td>
</tr>
<tr>
<td>PC mail</td>
<td>30</td>
<td>69</td>
<td>10</td>
</tr>
</tbody>
</table>

#### Connection conditions

<table>
<thead>
<tr>
<th>Method</th>
<th>No problem</th>
<th>A few problems</th>
<th>Not work at all</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fixed</td>
<td>15</td>
<td>40</td>
<td>45</td>
</tr>
<tr>
<td>Mobile</td>
<td>32</td>
<td>66</td>
<td>10</td>
</tr>
<tr>
<td>Mobile mail</td>
<td>10</td>
<td>60</td>
<td>30</td>
</tr>
<tr>
<td>PC mail</td>
<td>42</td>
<td>34</td>
<td>25</td>
</tr>
</tbody>
</table>

For Disaster Emergency Message dial:

- Fixed
- Mobile
- PC
Natori Saigai(disaster) FM

The Studio of “Natori Saigai(disaster) FM” established in Natori City office building, Miyagi prefecture
Utilization of ICT
Person Finder provides a registry and message board for survivors, family, and relatives affected by a natural disaster to post and search for information about each other's status.

Person Finder: 2011 Japan Earthquake

What is your situation?

- I'm looking for someone
- I have information about someone

Currently tracking about 621200 records.

Short URL: http://goo.gl/sagas (Mobile OK)
Additional Partners (including NHK)
Other Resources

PLEASE NOTE: All data entered by you will become publicly available, and viewable and usable by anyone. Data in the Person Finder includes data entered by users and data entered based upon publicly available information and certain other sources. Google does not review or verify the accuracy of the data.

Embed this tool on your site - Developers - Terms of Service
Posted photos of evacuee lists
Traffic Information in Disaster Area

On the previous day
- Road with traffic record: Blue
- No-traffic record: Gray
- Vehicle congestion: Red

22 March

6 May

(Source: website of ITS Japan)
Some examples of the information provision by the government sector on Twitter

【Responses of Government and Information for Public (e.g.)】

【Updated Information on the Homepage (e.g.)】
【Information and Contents of Statement (e.g.)】
Future perspective
Launch of a Task Force in light of the Great East Japan Earthquake

- Communication infrastructure: an essential infrastructure for the lives of the people and the industrial economy
- In the event of disasters, it is indispensable to secure important fundamental communications for the purpose of emergency reports, safety confirmation, the police and the disaster prevention in order to protect the lives and property of the people and maintaining function of the government.
- MIC (Ministry of Internal Affairs and Communications) launched a task force to examine how to secure the communications in the event of an emergency, considering the Great East Japan Earthquake caused congestion of communications infrastructure and lost of communications reach over a broad area.

Items to be studied

The task force examines issues for each of the following items such as 1) issues to be addressed immediately for the restoration of damaged communications infrastructure, 2) issues to be addressed based on the current systems and technologies in preparation for the similar emergency in the future, 3) issues to be addressed based on the technological innovation.

- How to address congestion of communications infrastructure in case of emergency
- How to secure communication method in case base stations and relay stations are damaged
- The Future of network infrastructure based on experiences of this disaster
- Utilization of internet based on experiences of this disaster etc.

Past track record

1st Meeting: held in April 8th 2011
Thank You