ICT for Disaster Management including Movable and Deployable ICT Resource Unit (MDRU)

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Hideo IMANAKA
Vice-Rapporteur of SG2 Q5
Advisor of MIC, Japan
Many disasters in the world
- eg. Great East Japan Earthquake in March of 2011
  - In disaster areas, no network resources were available soon after the disaster other than the cellular network.
  - Many victims couldn’t use even mobile phones due to congestion in cellular network.

Lessons learned that disasters render it impossible to provide basic ICT services.

Importance of ICT for disaster management

Movable and Deployable ICT Resource Unit (MDRU)
  - Instant provision of local ICT services in disaster areas
  - Flexible configurations for adapting to demand changes
ICT plays an important role in any phases of disaster management.

ICT for disaster management consists of disaster relief and network resilience and recovery.

- Disaster detection
- Emergency alert
- Evacuation assistance
- Safety confirmation
- SNS analysis
- Healthcare
- Network resilience
- Emergency telecommunication
- Telecommunication in disaster area
- Network restoration
- Disaster recovery
Telecom need in disaster

- **Emergency recovery period**: Real-time communication demand increases explosively because of need to confirm status.
- **Tentative recovery period**: Data communication demand increases because of information gathering by local governments and enterprises.

<table>
<thead>
<tr>
<th>Time</th>
<th>Disaster</th>
<th>Change in real-time communication (Telephone)</th>
<th>Use duration of resource unit</th>
<th>Change of communication for official and business activities</th>
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<tbody>
<tr>
<td>2 ~ 3 days</td>
<td></td>
<td>Explosively increased soon after disaster occurs</td>
<td></td>
<td>Data communication increases because of disaster recovery and business recovery</td>
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<td>1 week ~ 1 year</td>
<td></td>
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*Provide minimum service in disaster area*
MDRU in disaster area

- When any telecommunication ways are not available, MDRU provides users local (internal) phone call by WiFi connection with ordinal telephone numbers.
- If MDRU connects outside telecommunication lines, users can call outside and internet access.

Application example: Communication between staff and evacuees at the local relief base, disaster site, disaster headquarters.

[Diagram of MDRU in disaster area with staff, evacuees, and communication lines]
Types of MDRU

【Container type】

【Automobile type】

【Rack mount type】

【Portable type】
Activities in ITU related to MDRU

- **ITU project** of MDRU feasibility study in Philippines from 2014 to 2015
  - San Remigio Municipal damaged area

- In 2016, **ITU-T Recommendation L.392**: Disaster management for improving network resilience and recovery with movable and deployable information and communication technology (ICT) resource units

- During WSIS-17, MIC announced Japan provides three sets of MDRU to ITU. ITU will bring up them to disaster affected countries with Satellite mobile phones when disaster occurs in the world.
Summary

- **Lessons learned from the Grate east Japan earthquake**
  - Wide variety of ICT solutions in disaster management such as emergency alerting, evacuation guidance, safety confirmation and disaster prevention.

- **MDRU (Movable and Deployable ICT Resource Unit)**
  - Instant provision of local ICT services, such as telephone calls
  - Suits not only disaster situations but also normal situations, such as rural areas and event sites.

- **Future work**
  - Capacity building and emergency drills using MDRU
  - Cooperation with other ICTs such as WiFi adhoc network and safety conformation
Thank you for your kind attention.

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