

# ICT for Development and Disaster Recovery

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# ICT networks infrastructure

## » ICT network elements:

### » Centralized:

- » Central offices
- » Transmission sites/hubs
- » Head-ends
- » Data centers

### » Distributed:

- » Digital loop carrier (DLC) and FTTx cabinets
- » CATV (VoIP) amplifiers and fiber nodes
- » Cell sites (wireless base stations)

### » Customer premises:

- » Digital phones for VoIP
- » Cellular phone
- » Wireless phone
- » Computers.

# Historic perspective



During disasters  
damage does occur  
but....



Jorge Martinez



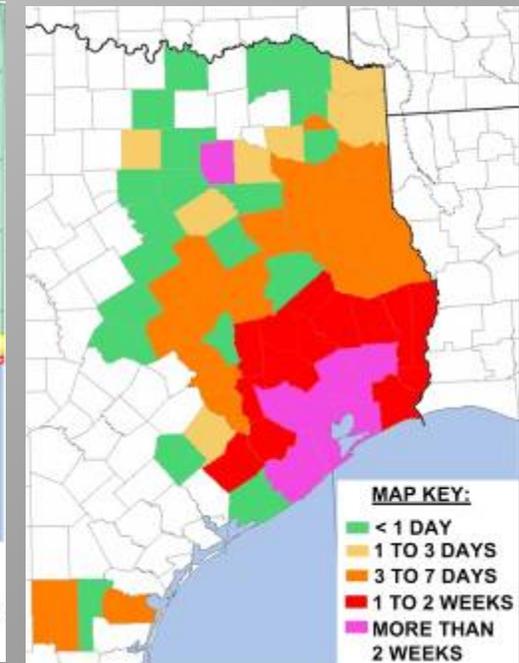
# Historic perspective

- » .... most of ICT outages originates in lack of power.
- » Two main weak points: distributed elements (DLCs, Base stations..) and air conditioning.
- » Lifelines:
  - » Power grid
  - » Transportation network



# Grid's behavior during disasters

- » Power supply issues during disasters is a grid's problem transferred to the load.
- » Power grids are extremely fragile systems.



# Grid's behavior during disasters

» Common concept of damage to the electric grid during disasters:



» Real sustained damage in more than 90 % of the area:



# Typical restoration strategies

- » At customer premises: out of ICT network operators responsibility.
- » At distributed network elements: portable gensets, portable DLCs, COWs and COLTs



# Typical restoration strategies

» At centralized network elements: portable gensets, SOWs, and DLCs

