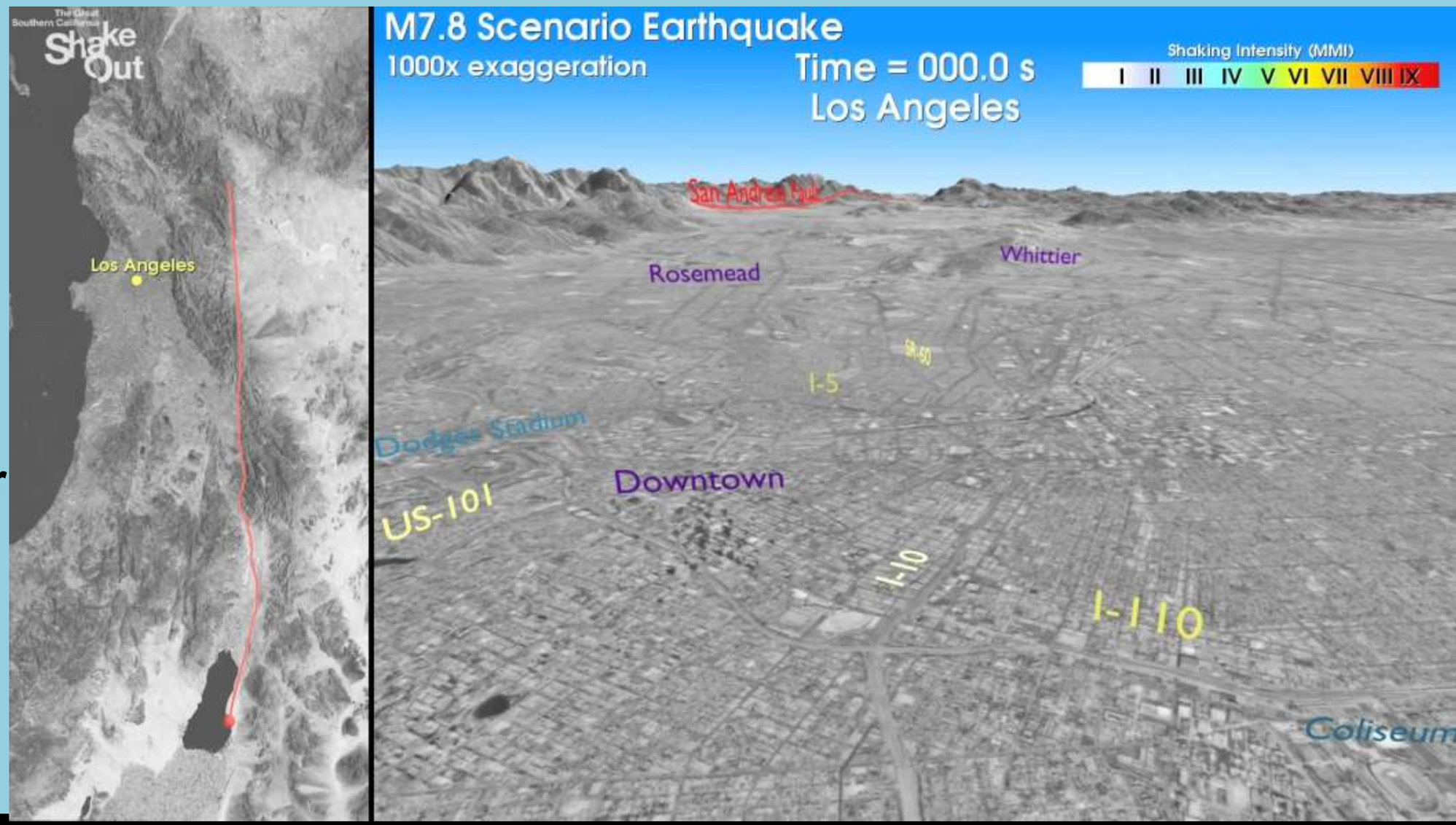
Using Comprehensive Science-based Disaster Scenarios to Support Seismic Safety Policy:

A Case Study in Los Angeles, California



Lucy Jones

Science Advisor for Risk Reduction
US Geological Survey

USGS-LOS ANGELES AGREEMENT

- Agreement for 2014
- Mayor's Science Advisor for Seismic Safety
- Address vulnerabilities in:
  - Old buildings
  - Water system
  - Telecommunications

BASED ON THE SHAKEOUT SCENARIO

Widespread Strong Ground Shaking +Shaking of Long Duration + Landslides =

- 300,000 buildings significantly damaged – 1 in 16
  - 255,000 displaced persons – 1 in 60
  - 53,000 injuries
  - 1,800 deaths
- Up to 6 months without water
  - Fires double the losses
- Business disruption doubles the losses
  - $213 billion damages

Buildings

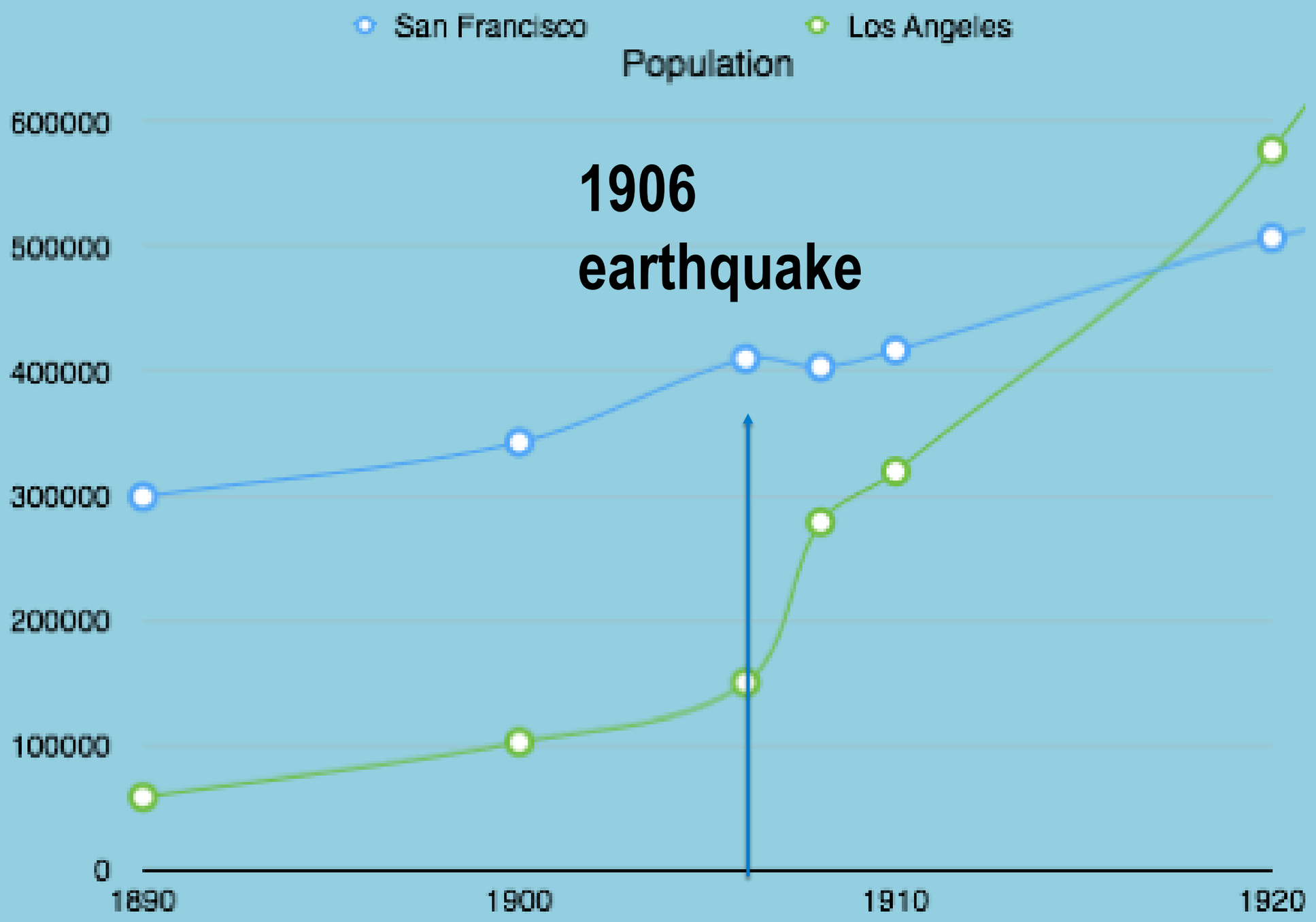
Water

Communications

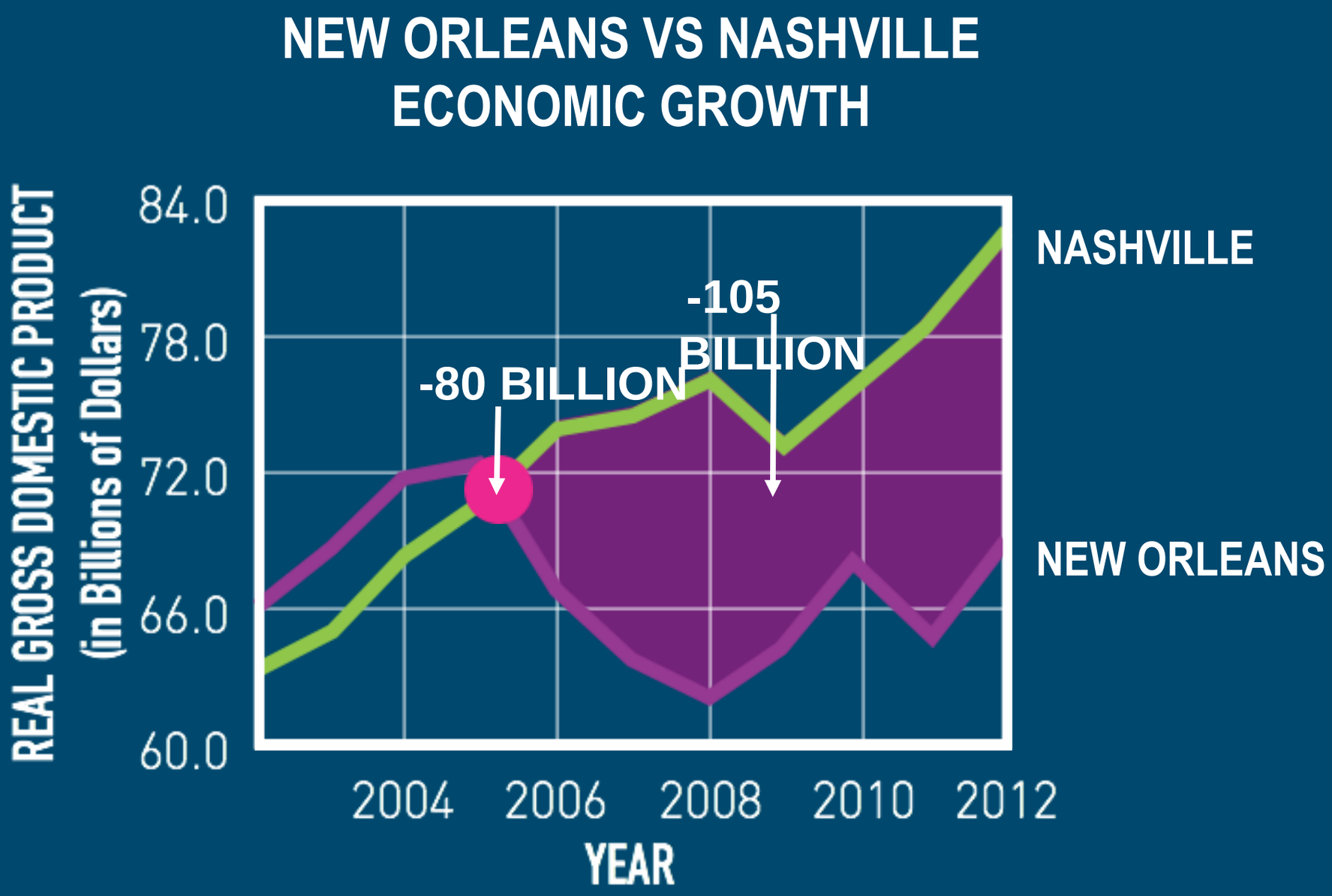
CALIFORNIA'S ONLY GREAT URBAN EARTHQUAKE

- 1906 magnitude 7.8
- Earthquake and fire destroyed most of San Francisco
- Lowered the US GDP by 1.5-1.8%

LA & SAN FRANCISCO IN 1906



ECONOMIC REPERCUSSIONS



OUR URBAN SOCIETY IS AT RISK

Goals:

Protect lives during the earthquake

Improve the City's ability to respond

Improve the City's capacity for recovery

URBAN DISASTER RESILIENCE IS A SOCIETY THAT FUNCTIONS AFTER THE DISASTER

BRING IN CITY CONSTITUENTS

- Mayor's Technical Task Force
  - Engineers from SEAOSC, Concrete Coalition, Tall Building Council, DBS
- LADWP Water Task Force
  - DWP design team
- Telecommunications Task Force
  - Four major cellular service providers

MEET WITH STAKEHOLDERS

- About 5-10 presentations each month
- Emergency services
  - Red Cross, government, corporate - partisans
- Building owners
  - BOMA, AAGLA, CAA, LA Conservancy
- Business leaders
  - Central City Association, ULI, Chambers of Commerce
- Community groups
  - Neighborhood councils

USGS
science for a changing world

NATURAL HAZARDS MISSION AREA
SAFRR Project: Science Application for Risk Reduction

Resilience by Design

STRENGTHEN OUR BUILDINGS

1. Mandatory retrofit of soft-first story buildings
2. Mandatory retrofit of concrete buildings
3. Voluntary rating system
4. “Back to Business” inspection program
5. Excessive Damage ordinance

FORTIFY OUR WATER SYSTEM

1. Water for fire fighters
2. Protected fault crossings for the aqueducts
3. Less dependence on imported water
4. Seismic resistant pipes
5. Resilience By Design Program

ENHANCE RELIABLE TELECOMMUNICATIONS

1. MOU with service providers to manage emergencies
2. More resilient power
3. Promote City-wide Wifi access
4. Stronger towers

Cell tower in Tokyo after March 2011 M9

WHAT LED TO THE SUCCESS?

- A focus on what we know, not on what we don't know
- A narrative so people see themselves in the picture
- A place for everyone in the picture
- Intelligence to see the implications of the hazard
- Courage to plan for a future

FINDING THE WAY FORWARD