

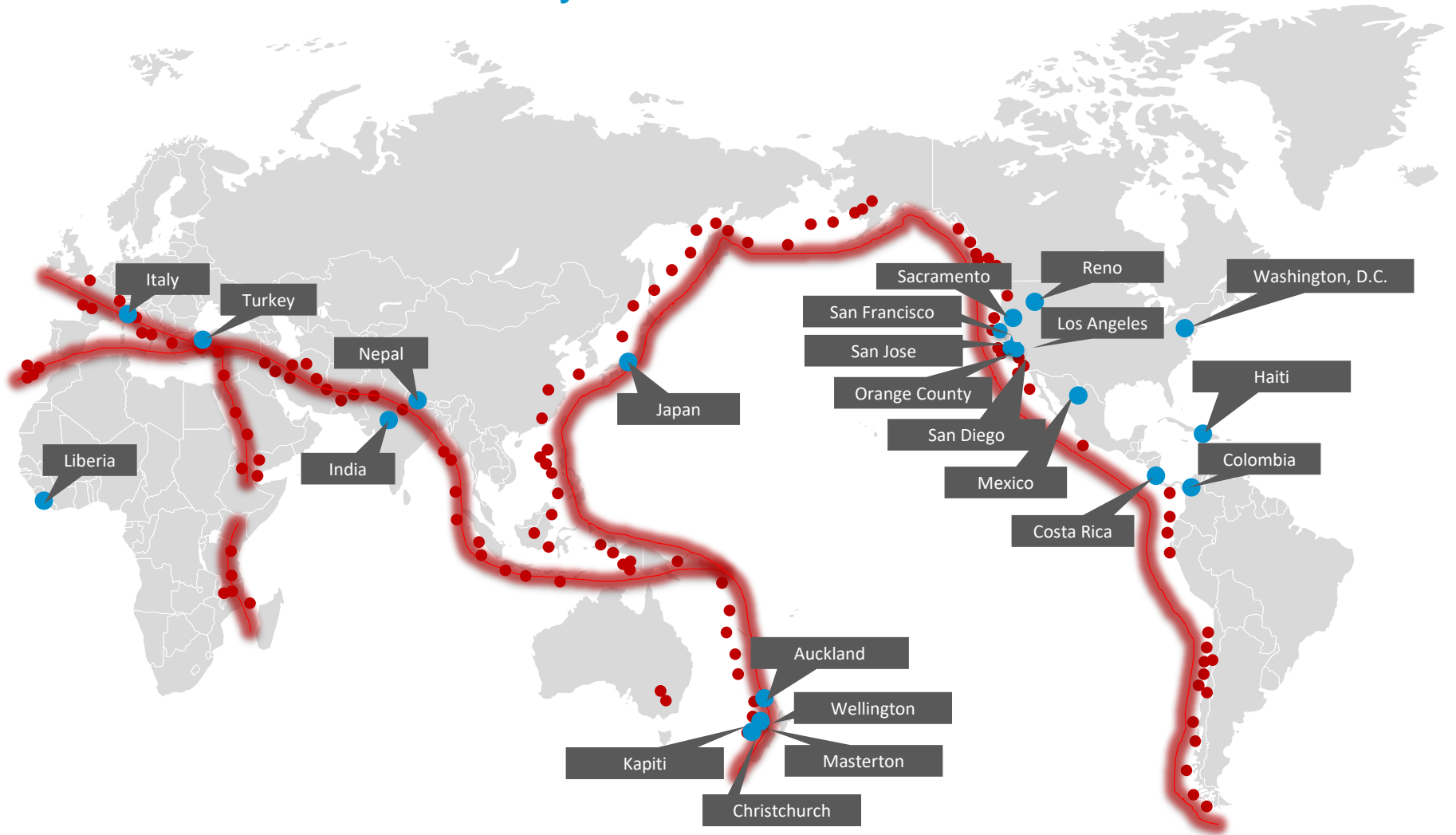
# Disaster Resilient Housing Construction

Dr. H. Kit Miyamoto

Miyamoto International  
California Seismic Safety Commissioner

**miyamoto.**

# Miyamoto International



Nepal 2015













# New Zealand 2011







miyamoto.



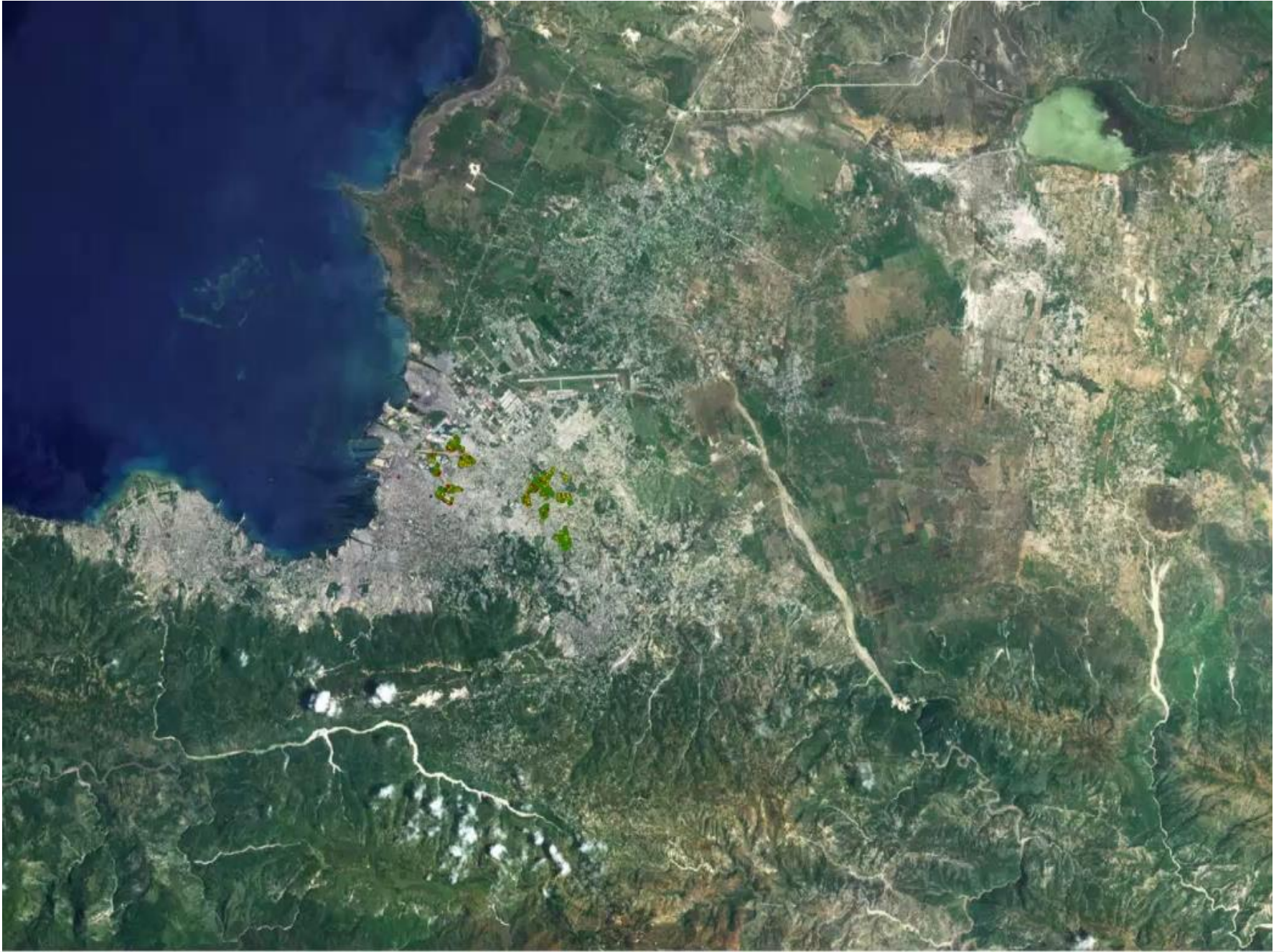




Haiti 2010







miyamoto.

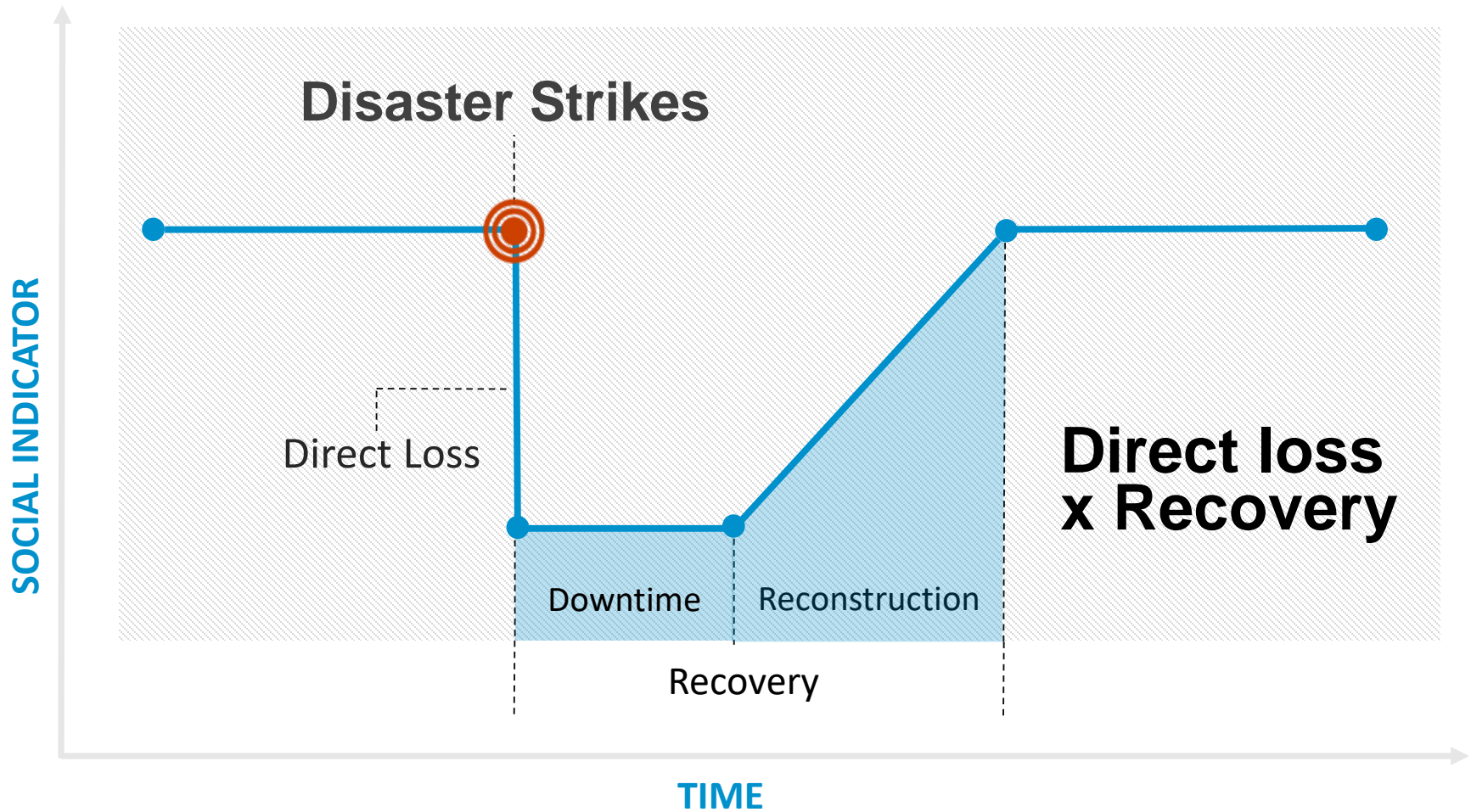


Mexico City 2017

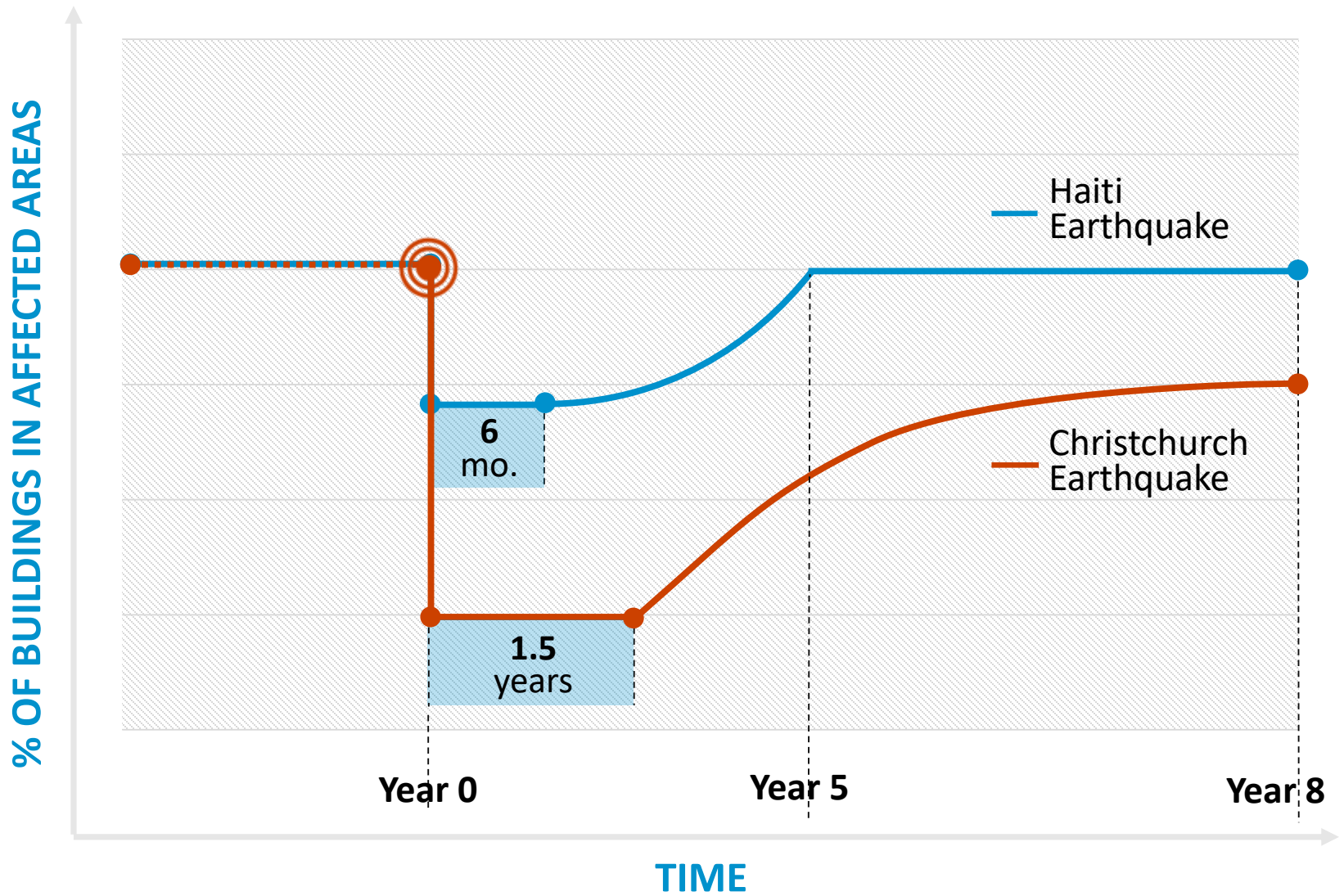




# What RESILIENCE Means?









# What is meeting code?

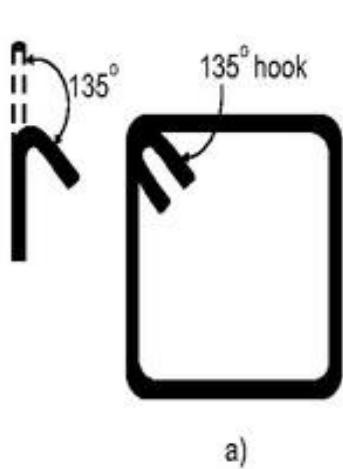




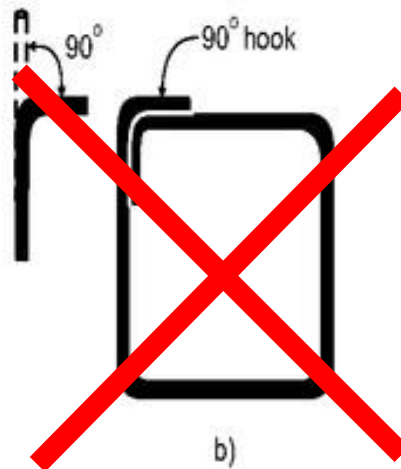




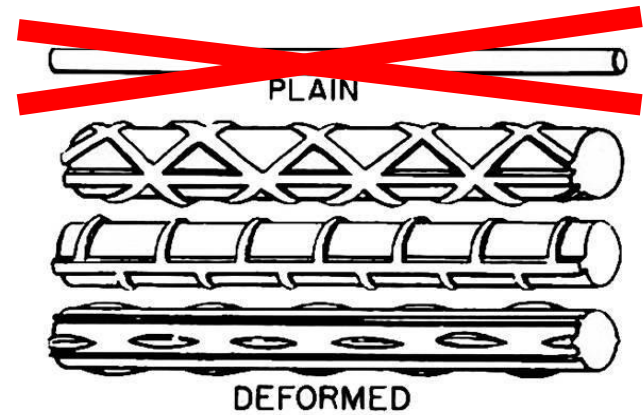
# Reinforcement bars



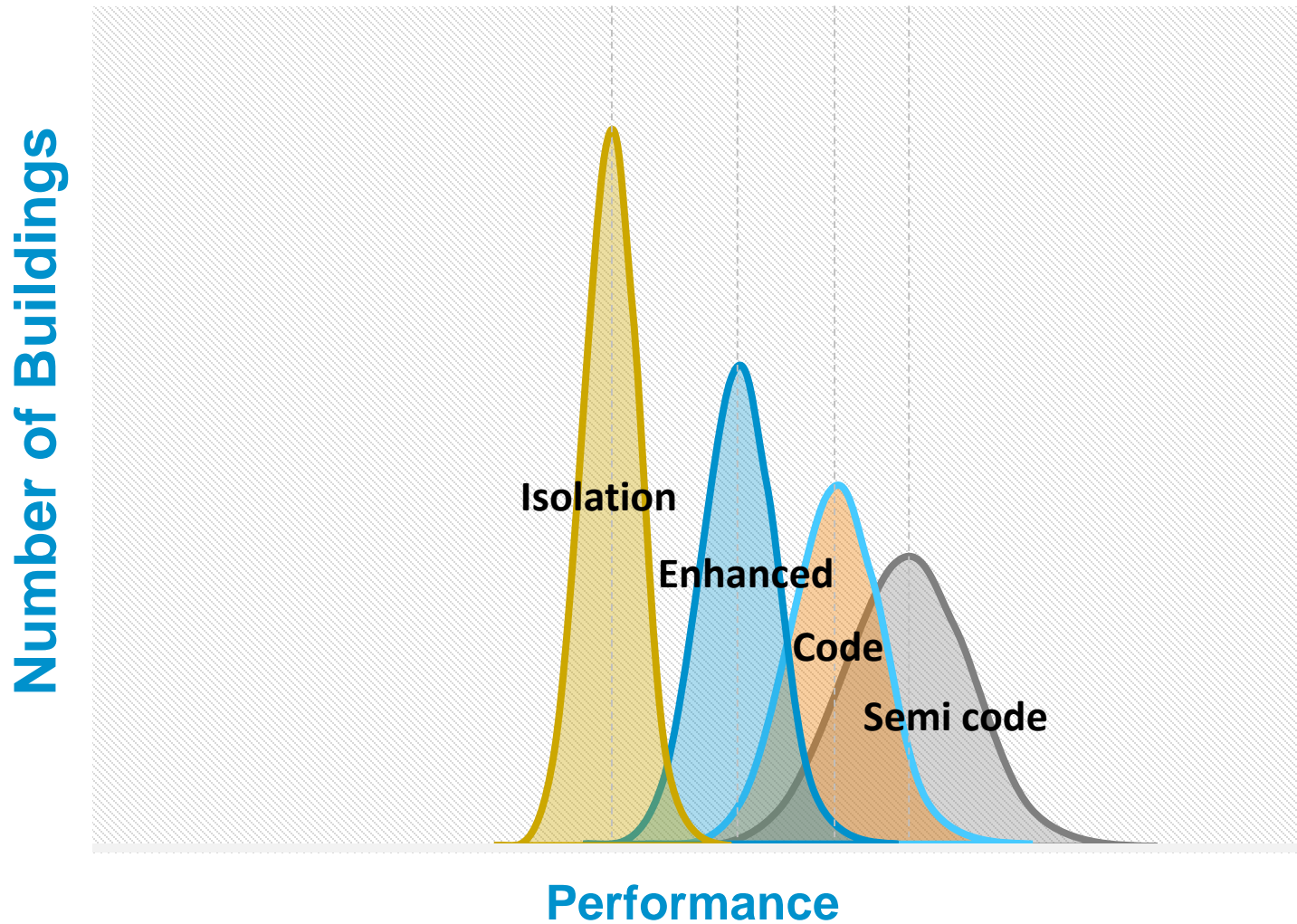
a)  
Deformed bars with  
135-degree hooks



b)  
Smooth ties with 90-degree hook

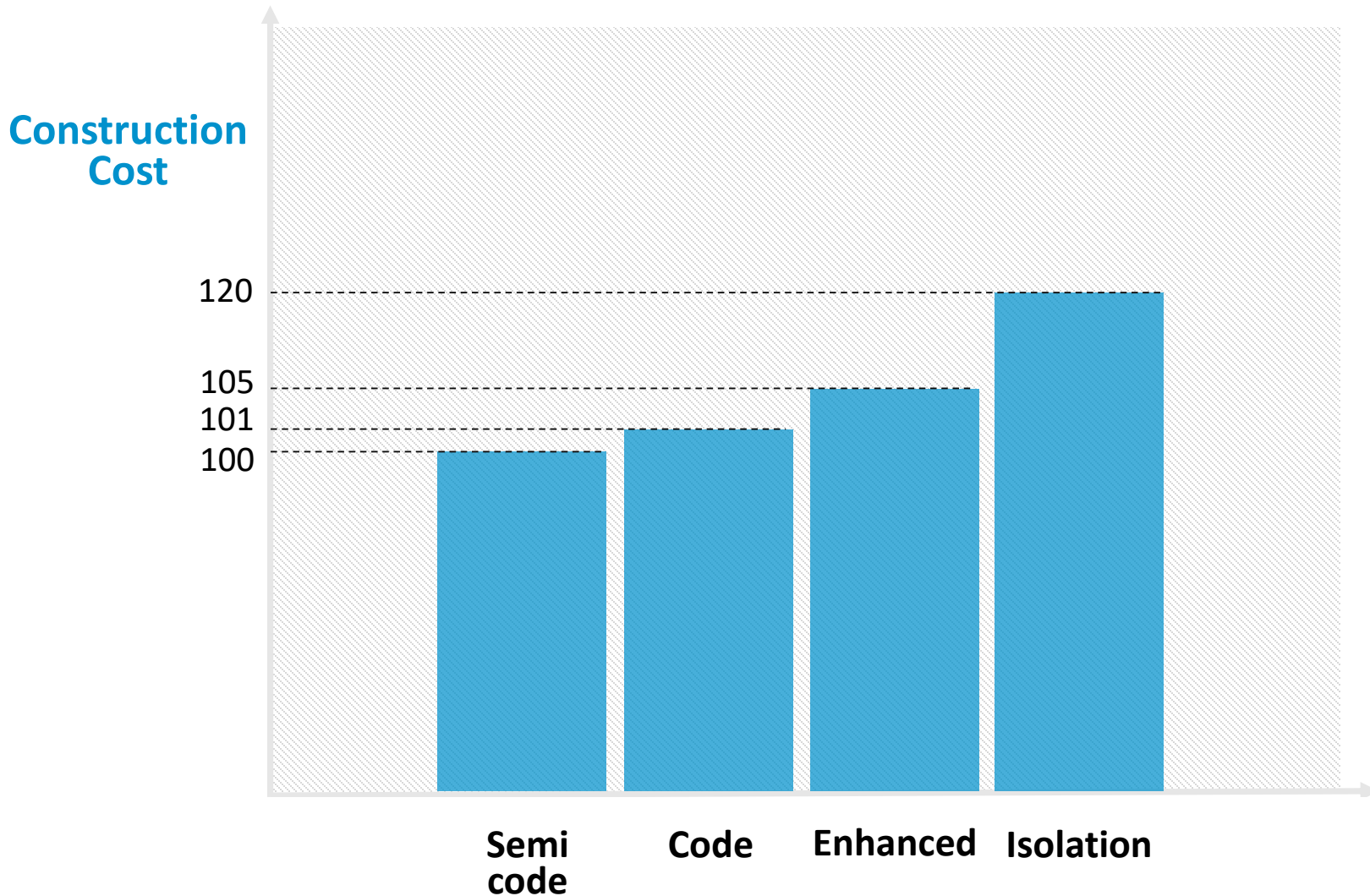


# What Code performance means?

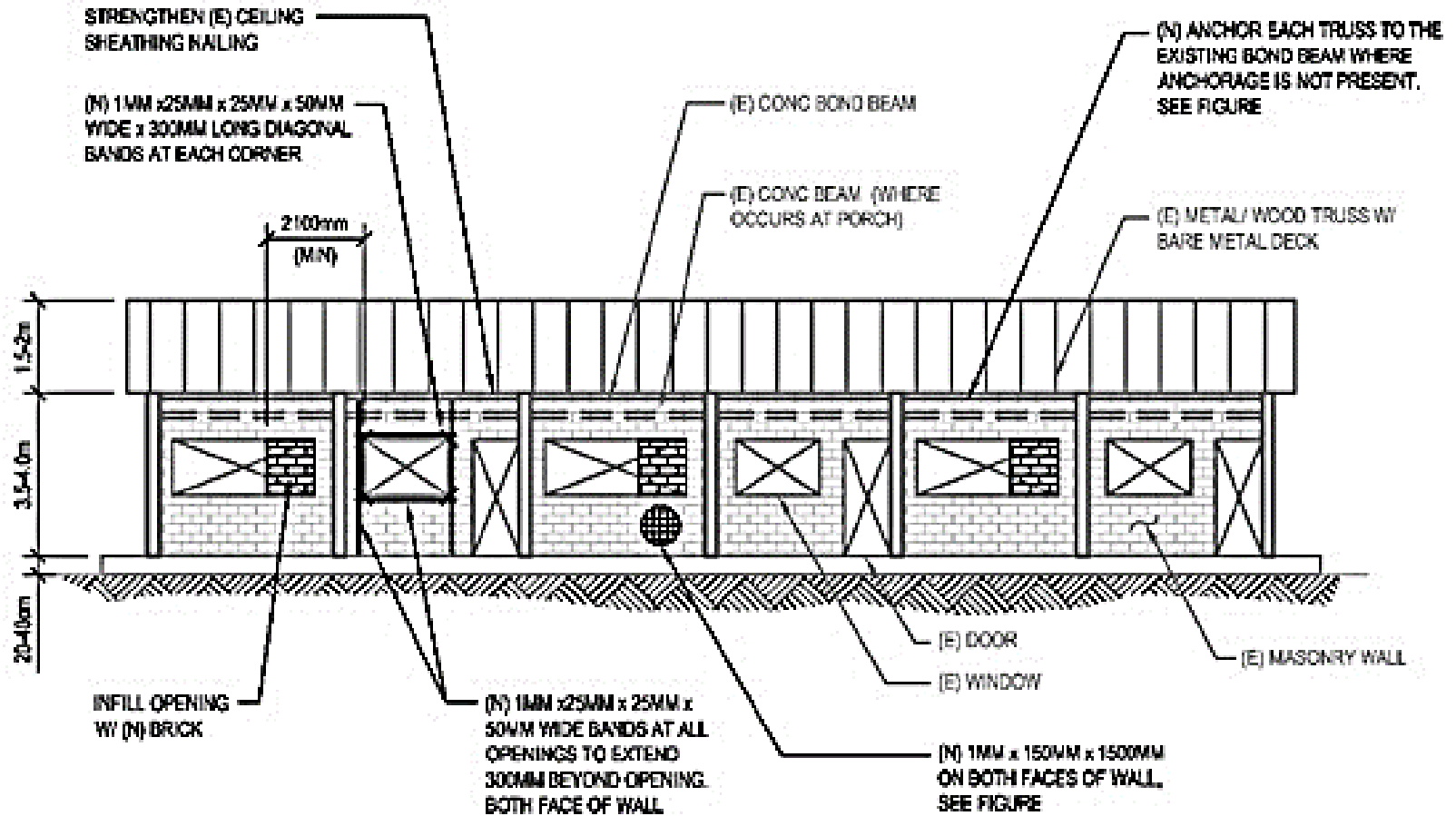




# Construction Cost Differences



# Earthquake Retrofit makes sense?





Nepal 2015



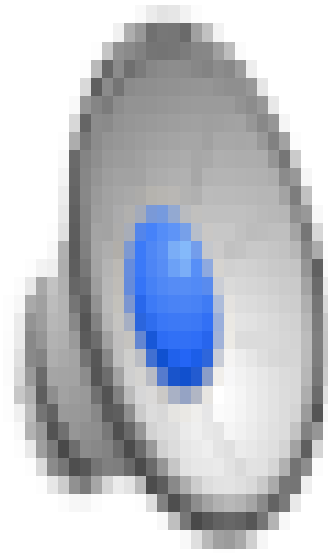


# Timber bands

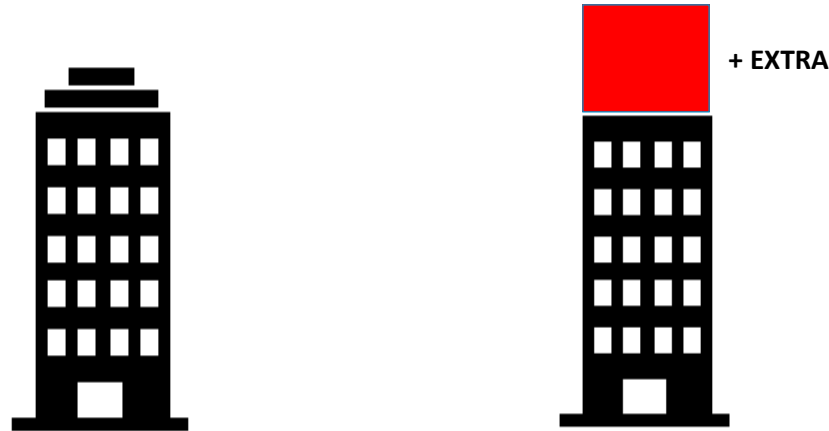




# Timber bands



# Mexico City Reconstruction Law



Pre Earthquake

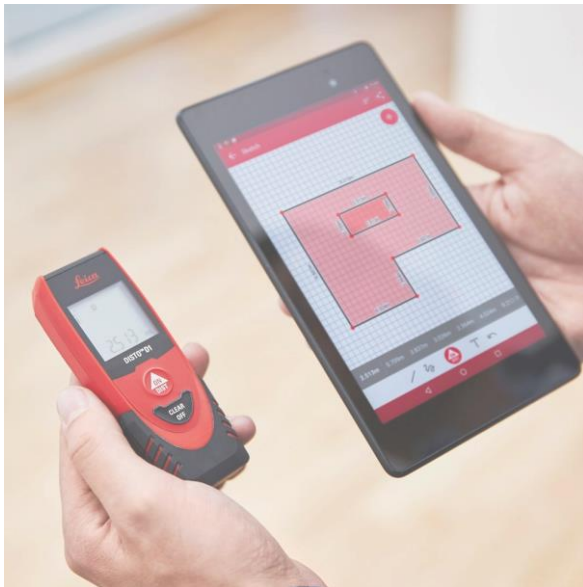
Reconstructed

- The building has been approved to have 35% of additional construction area.
- The sale of this +35% should be used to pay for the construction of the building.



# Innovation in Quality Control

- What? FAST REMOTE CONSTRUCTION MONITOR (FRCM)
- Why? Ensure inspection quality by empowering engineers
- How? Document quantity, quality in Cloud



Remote observation

Field Engineers

Contractors

# Preset inspection schedule and locations

- Foundations, Floors at critical locations and time







Data collected and photos taken will be uploaded to  
the ECP via App

# Public Recognition of Good Construction

- When the building is done per FRCM, then “Gold Star”
- Gold Star buildings will be shown on a map that is open to the public.







Haiti 2018

miyamoto.







# Capacity Building is a Critical Part of it.

- Massive reconstruction effort affected today's construction quality
- Extensive mason training programs and public outreach programs







**make the world a better, safer place.**