Triaging Healthcare Facilities for Emergency Operations

California Office of Statewide Health Planning & Development

Michael O'Neill, Michael Byrne, Scott Christman
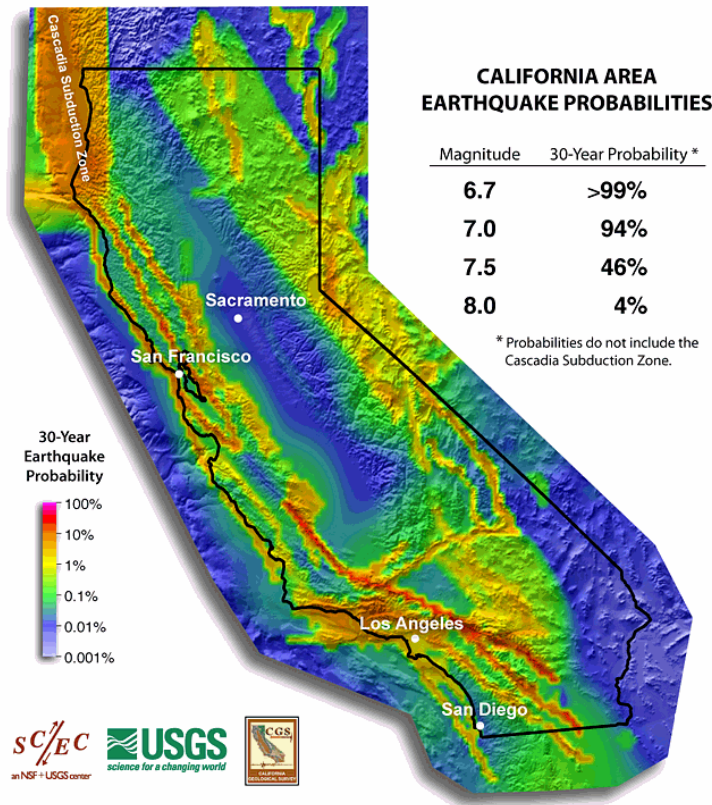

1979 – Imperial County Services Building

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When? - Not if.

UCERF: Map of California Area Earthquake Probabilities

CALIFORNIA AREA EARTHQUAKE PROBABILITIES

Magnitude	30-Year Probability *
6.7	>99%
7.0	94%
7.5	46%
8.0	4%

* Probabilities do not include the Cascadia Subduction Zone.

30-Year Earthquake Probability
- 100%
- 10%
- 1%
- 0.1%
- 0.01%
- 0.001%

- >**99%** probability of M6.7+ in CA within 30yrs[1]

- **62%** probability of M6.7+ in SF Bay region within 30yrs[2]

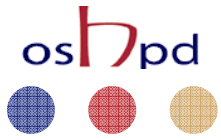ESRI International User Conference

1971 "Sylmar" Earthquake
(San Fernando Fault Zone)
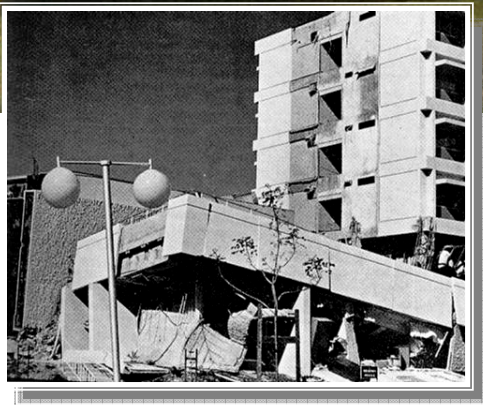
- Magnitude M_w 6.6
- Avg Displacement 3 ft.
- 65 dead
  - Most in V.A. Hospital
- $500M damages

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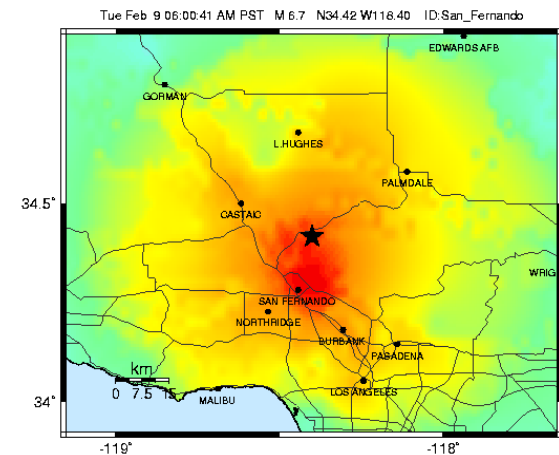
Responsibility - OSHPD
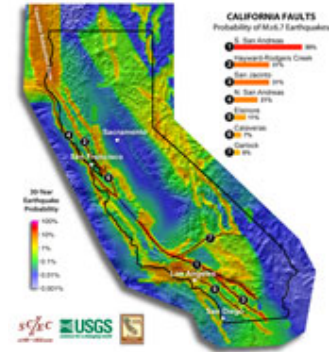
○ Facilities Development Division (FDD)

○ To respond to all significant *earthquakes* & verify <u>hospital</u> and <u>skilled nursing facility</u> building safety after an earthquake event.

- Not 1st responder.
- See <u>Health & Safety Code</u>, Section 130025.
- Inspect buildings for safety & tag red, yellow, green.

○ Staff inspect buildings regularly for permitting.

EOC Information System, background

- **How do you triage the facilities??**

- Extended existing <u>CA Healthcare Atlas</u>
  - Browser-based .NET web application
  - Proof of concept (of EOC functionality)
  - Small budget
  - Short development time
  - Cross-references facilities ⟷ events

- Target User ⇒ OSHPD Emergency Staff
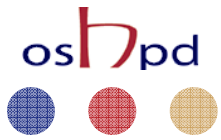
Typical Event Scenario
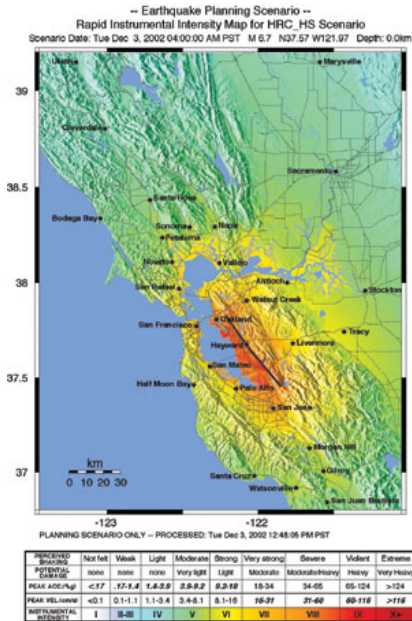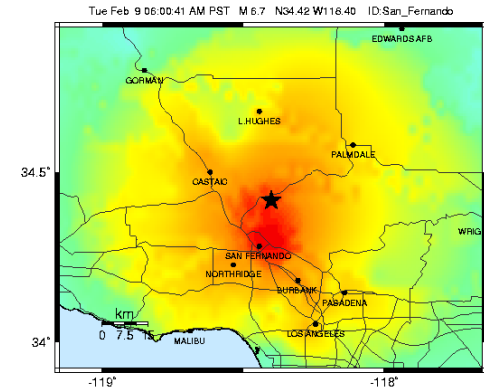
- Earthquake Happens
- USGS Data Consumed (automatically)
- E.O.C. Team Activated (or not)
- Triage & Investigate
  - Atlas-EOC web application
  - ArcGIS Desktop
  - Other non-GIS applications
- Manage the Event

System Overview

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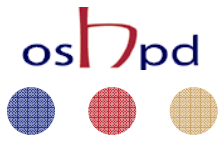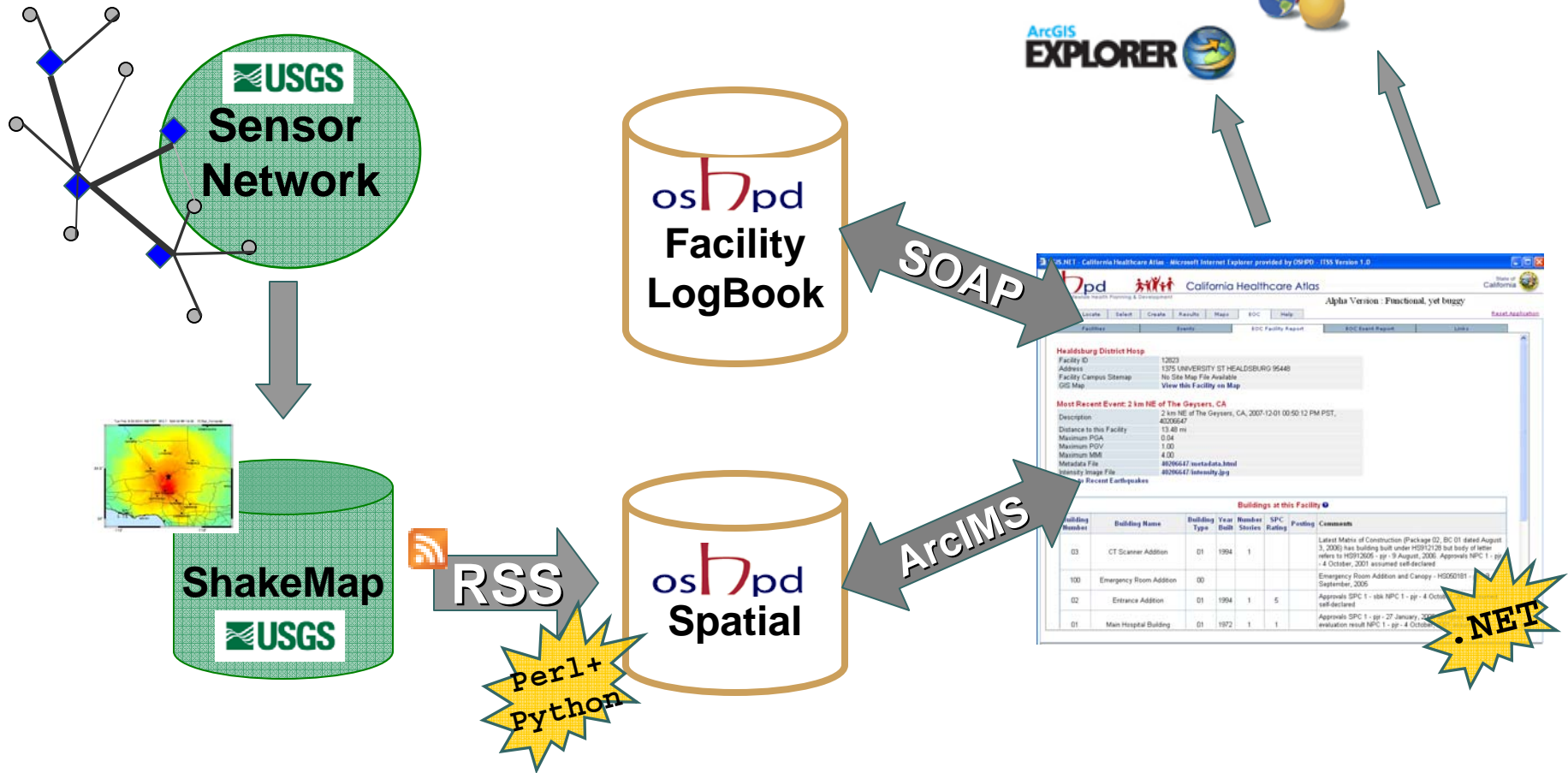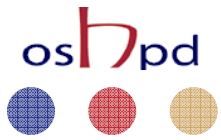
Live Demonstration

- **All Facilities** Perspective
- **All Events** Perspective
- **Single Facility** Report
  - Critical Buildings
- **Single Event** Report
- Reference Links
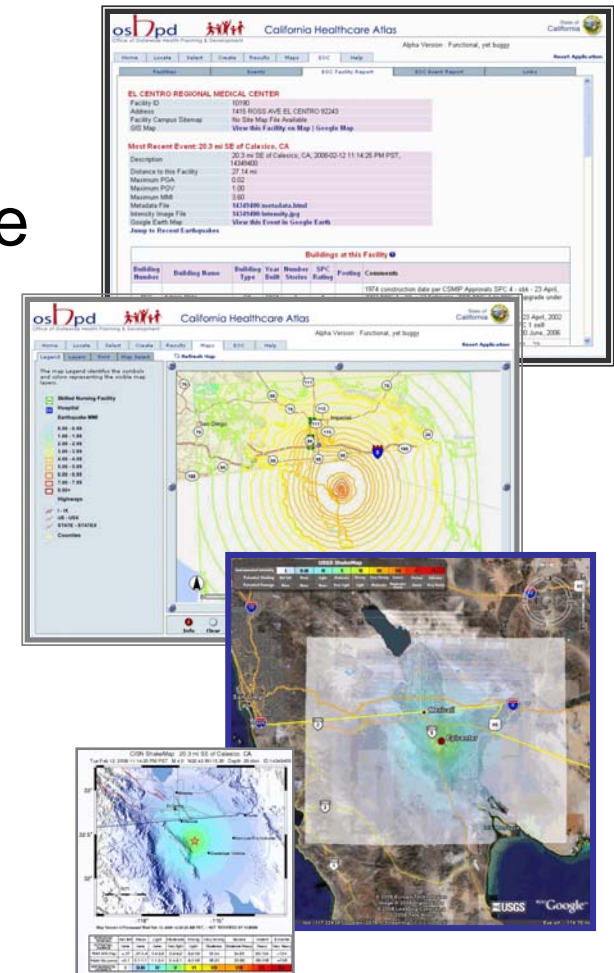
All Facility Report Tab

- **Facilities impacted** $^{w}/_{in}$ time period & shaking threshold
- Summary Stats
- **Critical** Buildings
- Links
  - Single facility report
  - Maps

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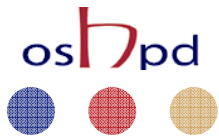
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Single Facility Report Tab

- Recent Event Summary
- Buildings Summary
- Critical Buildings
- Metadata (event's)
- Google Earth/Map links
- Cross-Reference to other events $^w/_{in}$ time period

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All Events Report Tab

- List all events w/in selectable time period

- Summary Statistics

- Links
  - Single event report
  - Maps

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Single Event Report Tab

- List Facility Impacts above shaking threshold
- Summary Statistics
- Links
  - Metadata
  - USGS Graphic
  - Google Earth

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Google Earth Link

✓ *Any KML source can now be integrated*

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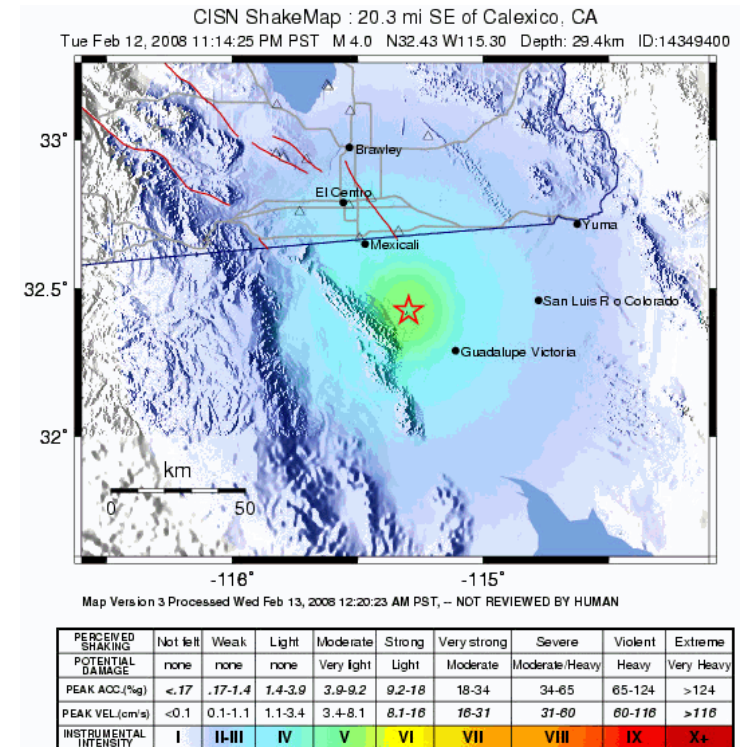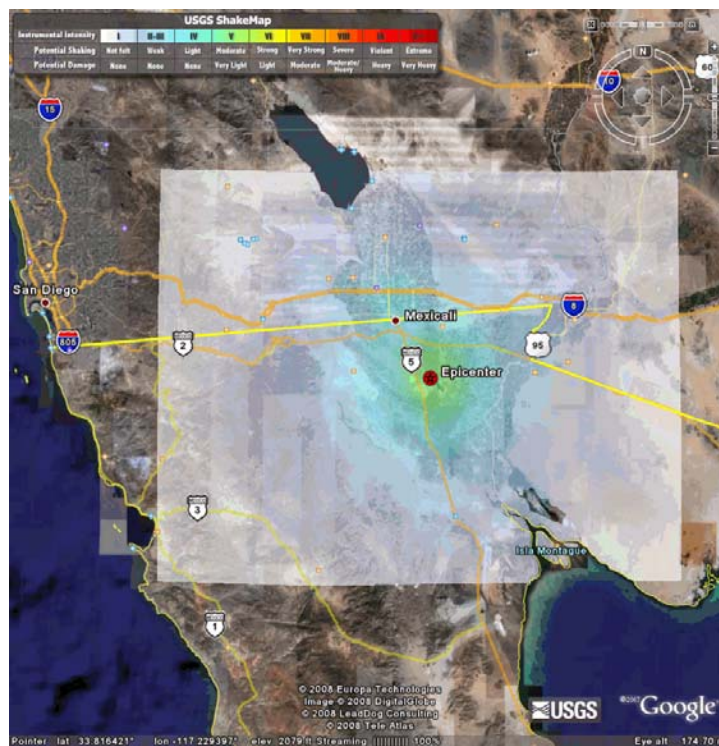
Status & What's Next?

○ Proof-of-Concept → Production

○ ArcGIS Server

○ Add Event Types

- Fire

- Flood

○ Real-time Field Staff Updates of building safety status as tagged.

○ Facilities Division is re-engineering their business process.

Acknowledgements

- OSHPD Staff
  - Michael Byrne (Project Manager)
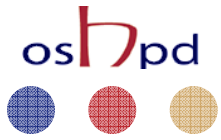 - Michael O'Neill (Application Architect)
  - Patrick Rodgers (Sr. Structural Engineer)
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  - Tony Preston (Developer)
- U.S.G.S.
  - Kuowan "Wan" Lin (ShakeMap/ShakeCast Dev. Lead)
- ESRI
  - Scott Christman (former GIS Coordinator)

Questions ?

Michael O'Neill & **Michael Byrne**

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