Scalable Systems for GeoCoded Event Data - CAP Alerts on Google Earth

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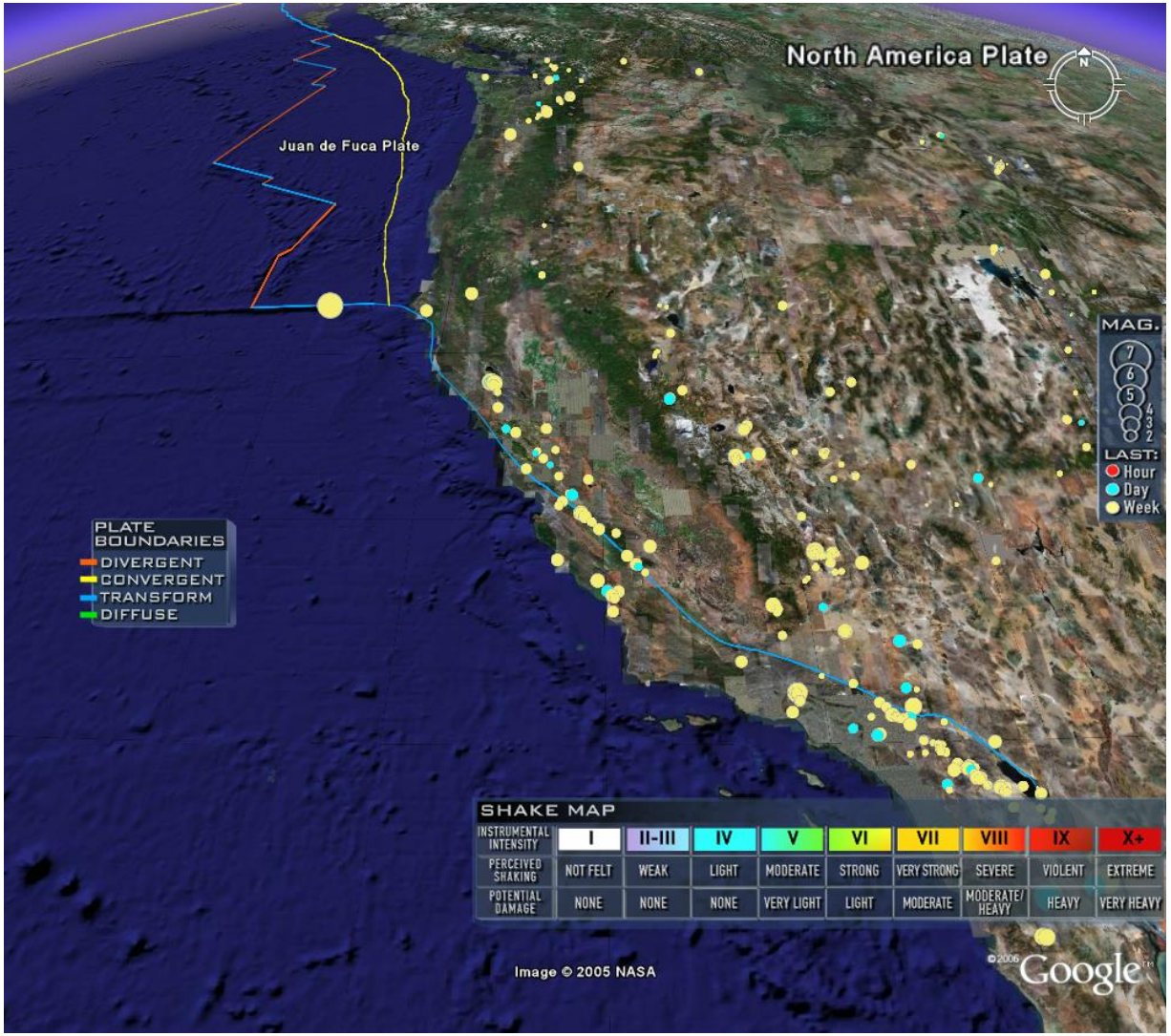
Google Earth and Neopolitan

- Early Enterprise Customer
- Set Many Initial Software Requirements
- Developed Scalable Backend Systems
- Google Earth and Neopolitan have been investing in a geospatial data delivery infrastructure

Dissemination of Critical Public Information



Exemplified by the Common Alerting Protocol

Critical data distribution raises a number of key infrastructure design challenges

- Survivability of the infrastructure when needed most
- Protection of the alert distribution infrastructure from attacks
- Scalable policy enforcement

Distribution of CAP Alerts

- Non-trivial technical undertaking
- Requires broad expertise in non-overlapping disciplines
  - Networks with extreme scalability and service availability
  - Scalable distributed server infrastructure that can apply geospatial, policy, and other filters in near real-time.
  - Pervasive security and cryptographic capabilities

CAP Alerts in the US

Open Geospatial Platform

- The abstract application platform is designed to have no vendor dependencies
- Excellent integration with Google Earth presentation layer provides a widely supported user interface but does not preclude other user interfaces
- Open API and protocol specifications

Geographical Distribution Means Survivability and Scalability

- Infrastructure designed to function as a fault-tolerant distributed database system, eliminating single points of failure
- Geographic sites designed for autonomous and/or semi-independent operation as required by circumstance or policy
- State-of-the-art proven networks capable of handling very high peak loads

Scalable Geospatial Systems Research

Neopolitan is actively researching solutions to the fundamental scalability limitations of these types of applications

- Improved geospatial algorithms, especially search
- Massively distributed geospatial services
- Performance optimization of existing software frameworks for CAP applications
- Hardware acceleration of computationally intensive and/or latency sensitive aspects

Moving Forward

- Neopolitan and Google Earth are actively addressing some of the most pressing infrastructure limitations of ubiquitous public alert dissemination
- The Neopolitan/Google Earth infrastructure is being designed to meet not only the challenges of CAP distribution and management but a broad range of critical applications with a geospatial component
- Neopolitan will entertain requests from any alerting agency worldwide to publish their official, public alerts into the Neopolitan/Google Earth infrastructure