National Collaborative for BioPreparedness

- What is it
- Why it was created
- Who we are
- Value of NCBP to EMS data owners
- Where we are going
- System Demo
WHAT IT IS

• A collaboration of owners of data that can expose threats to health and safety
• Enabled by a visualization and analytics platform provided to data owners at no cost
• Enhances national preparedness by providing early warning of events not otherwise detectable
• National integration and expansion in process

Result:
- National, near real time disease syndromic warning and tracking system
- Near-real time business intelligence for data owners
CREATION OF NCBP

• Developed by UNC-Chapel Hill under a cooperative agreement with U.S. Department of Homeland Security
• To address a major gap in national biosurveillance
  - Human health
  - Animal health
  - Food security
  - Environmental hazards
• To enhance interaction of the national preparedness enterprise
  - Public health preparedness
  - Emergency responders
  - Emergency management
  - Public safety / law enforcement
  - Private sector infrastructure operator
WHO WE ARE

• University of North Carolina at Chapel Hill
  - Performed research and development
  - Development network of data owners
  - Ongoing research into identification of population health risk

• Biospatial, Inc.
  - Receiving spin-out from UNC 2017 Q2
  - Operating the platform
    • Led by team experienced in providing operational analytics support to U.S. intelligence services
  - Maintaining and growing the data owner network
    • Led by Jeff Runge, MD
    • Emergency/EMS physician
    • Directed the program for UNC since 2014
    • Head of NHTSA (2001-2005)
DUAL GOAL

• Improved national biopreparedness
  - Government agencies better equipped to protect public for significant health events
    • Naturally-occurring health events
    • Biological or chemical terrorism
    • Unexpected outbreaks – opioids, enterovirus, Ebola, VBD

• Service Optimization for Data Owners
  - Local and state officials receive real-time business intelligence for service optimization
  - Enhance collaboration between emergency response, emergency management, and public safety / law enforcement
  - Enable cooperation across geopolitical boundaries
BIOSPATIAL PLATFORM
TIMELY INSIGHT INTO EMERGING HEALTH AND SAFETY EVENTS

• DATA – National Network of Data Owners
  o Ingests and hosts multiple mission-related data sources
    • EMS, infrastructure, environmental, any dynamic or static data source
  o Enables collaborative sharing across the Collaborative

• VISUALIZATION – intuitive and insightful presentation of data
  o Intuitive geospatial and temporal awareness of emerging events
  o Customizable dashboards to meet needs of each organization, user
  o Actionable reports to improve response management, operations

• ANALYTICS – alerts, anomalies, predictions
  o Detect syndromic events
  o Proprietary, proven machine learning technology – applicable to any data type
CURRENT SYNDROMIC ALERTS

• Respiratory syndromes
  - Biological weapons – tularemia, anthrax, plague
  - Naturally occurring respiratory dz – EVD 68

• Influenza-like illness
  - Seasonal or pandemic
  - Novel ILI syndromes

• Constitutional syndromes
  - Botulism, occult poisonings

• Opioid syndromes
  - Heroin, Fentanyl derivatives – intentional, unintentional

• Motor vehicle injury
  - Injury crashes with location, time clustering
  - Stratified by severity of injury
VALUE FOR THE DATA OWNER

• **Visualize Your Own Data**
  o Agencies are able to visualize their own data on a map
  o Additional operational data sources are overlayed

• **Visualize Nearby Events and Trends**
  o Agencies are better informed and operationally prepared by seeing events and trends in adjacent counties/jurisdictions
  o Enables additional context for preparedness

• **Optimize Operations**
  o Performance metrics computed from NEMSIS data
  o View statistics of metrics, reach back to original records, review outliers
  o Use of data improves data quality and timeliness
**Value for National Preparedness**

- **Visualize Data on National Scale**
  - Enables querying and reporting across multiple data layers
  - Identifies trends
  - Supports decision making
  - Connects Federal preparedness agencies to states and localities

- **Near Real-time Alerts**
  - Automated anomalous event warnings
  - Enables rapid response and crisis event management

- **Real-time Information to Response Agencies**
  - Federal subscribers have national level data context
  - Improves collaboration between Federal users and local/state agencies to aid in response planning and event/disaster management
NCBP operates in full HIPAA-compliance
- Environment is HIPAA/HITECH compliant
- Data owners operate as Business Associates to UNC/Biospatial
- NCBP system and policies are evaluated by external HIPAA consultant annually
- User organizations administer data access rights to appropriately trained users

NCBP operates in a maximum security environment
- Biospatial has deep operational experience in classified systems
- Data environment FISMA-aligned
- Data fully encrypted in transfer and at rest
- Data owners retain full control of who can see what data
HOW IT WORKS

- **Data owners** share data in the protected Biospatial environment with full discretion over access.
- **Biospatial** provides data management, security and analytics to turn data into information.
- **Biospatial** provides the platform at no monetary cost to the data owners.
- **Data owners** must grant access to users inside and outside its organization.
- **U.S. Government** preparedness agencies subscribe to the system to see analytic signals produced by the analytics (but not the raw data).
Data Partnerships at National Scale: Serving EMS, Security, and Medical Communities

WHERE WE ARE GOING

Biosphere & Health Data from Multiple Sources

Data Source-Specific Processing to Extract Geospatial Activity, Correlate Across Sources

Large-Scale Geospatial Database, Analytics (anomalies, alerts, predictive), Web Services

Data and Analytics Exposed through our Web Client, Automated Reports

Emergency Medical Services
Poison Control
Emergency Departments
Animal Health Data
Open Source Social Media
Environmental Data
Critical Infrastructure

Source-Specific Processing
Correlate
Scalable Multi-Source Data Store
Analytics
Web Services

Live Visualization and Alerts
Trend and Pattern Discovery, Visualization, Analysis
Optimize Operations
Automated Reports

AWS
OPIOID SYNDROME DEMO - NC

OPIOID DEMONSTRATION

The National Collaborative for Bio-Preparedness

23 March 2017
MVC DEMONSTRATION

The National Collaborative for Bio-Preparedness

17 April 2017