

Example: Shot Spot in South Bend

- Courtesy of Santiago Garces, CIO of South Bend, Indiana
- Target indicator: reduce crime
- Target indicator: reduce gun crime and group-related activity
- Target indicator: target interventions at specific group members
- Means: Incorporate Shot Spot information with 911 dispatch calls.
“Whenever, a shot incident is detected and a resident also calls 911 to inform of the incident, the dispatch is classified differently than when a signal is detected but not accompanied with a resident's call.”

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Indicators Used

1. **The total number of shootings involving a group member, compared to a 3 year rolling average;**
2. the ratio of group member involved shootings, compared to the total number of criminal assault shootings;
3. **Number of shooting incidents recorded both by Shot Spotter and residents**
4. **Number of direct interventions with group members, or close social relatives**
5. Number of call-ins (large meetings where notorious group members are presented with the opportunity to get involved with social services, or communicated the enforcement action alternative)
6. Number of enforcement actions, interventions directed at executing warrants and investigations against the most violent group
7. Ratio of shots where a resident called as a shot is detected by Shot Spotter (proxy for community trust and collaboration with the Police Department)
8. Percentage/ s-value of number of complaints relative to calls for service

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- Things we need to model:
 - Frameworks that draw on indicators from a number of different sources: ISO 37120 for overview, FBI uniform crime reporting program, 911 CAD system, Shot Spotter, internal databases for group activity and “interventions”
 - Comparisons of indicators as indicators, e.g. the total # of shootings compared to a 3 year rolling average
 - Logical operations on indicators, e.g. # of shootings recorded by Shot Spotter AND local residents, # of direct interventions with group members OR close relatives
 - Relationship between indicator and ‘sub-indicators’
 - Properties of indicators, like how difficult it is to supply that indicator

Example: Nextgen

- Courtesy of John Baez and Metron
- Nextgen: “Next Generation Air Transportation System”
- From DARPA: “The DoD and urban infrastructure capabilities are increasingly based on the integration and coordination of heterogeneous systems using System-of-Systems (SoS) architectures. However, it is difficult to model and currently impossible to systematically design such complex systems using state-of-the-art tools, leading to inferior performance, unexpected problems, and weak resilience. This inadequacy in design capability results from the complexity of interactions between system structures and behaviors across multiple time and length scales that cannot be adequately modeled using conventional approaches.”

Non-temporal indicators

- E.g., location-varying indicators like energy use per building:

Property Name	Reported	Property Type	Address	ZIP	Gross Area (sq ft)	Site EUI (kBtu/sf)
MEEI -Longwood	Yes	Ambulatory Surgical Center	800 Huntington Ave	02115	76,300	173.1
Prime Motor Group	Yes	Automobile Dealership	1525-1607 VFW Parkway	02132	150,000	28.7
New England Center for Homeless Veterans	Yes	Barracks	17 Court St.	02108	130,000	49.8