URBAN INSTITUTE · ELEVATE · THE · DEBATE

POLICE FOUNDATION

October 2, 2016

Technological Responses to Police Problems

27th Annual Problem-Oriented Policing Conference

Nancy La Vigne
Eddie Reyes

Introduction and Purpose

- Describe challenges in police technology adoption and use
- Frame police technology within the Problem-Solving model
- Employ gunshot detection technology as a case study
- Identify opportunities to enhance effective technology deployment
- Share lessons learned with each other

Who we are

Urban Institute:

- Justice Policy Center staff of ~60 researchers
- Works in partnership with practitioners
- Generates knowledge that improves CJ policies and practices

Police Foundation:

- National independent non-profit
- Advances policing through innovation and science
- Staff includes former law enforcement officers/executives, research and behavioral scientists, analysts and professional staff

Our Backgrounds

Nancy La Vigne, PhD

- 25+ years experience evaluating policing and CJ programs and practices
- Director of the Urban Institute's Justice Policy Center
- Founding director of DOJ's Crime Mapping Research Center
- Evaluations include:
  - Public surveillance systems
  - Body worn cameras
  - Video Analytics
  - Gunshot detection technology
  - Cost-benefit analyses

Our Backgrounds

Deputy Chief Eddie Reyes (Ret.)

- 25-year veteran of Alexandria PD
- Deputy Chief Amtrak
- Sr. Law Enforcement Project Manager – Police Foundation
- Technology work includes:
  - Small Unmanned Aircraft Systems (sUAS)
  - Critical Incident Review (Charlotte-Mecklenburg; Charlottesville)
  - Open Data
  - GDT
  - Community Policing
  - Public/private video cameras
  - LPR
  - Social media
  - Integration of multiple technologies into Real Time Crime Center

Who are you and why are you here?

- Name
- Department affiliation
- Technology of interest

Applying SARA to Technology

Scanning

- What is the general nature of the problem the technology can address?
- How will the technology achieve its intended goals?

Analysis

- What are the patterns of crime and criminal behavior?
- What are the typical police responses to them?
- What does the technology require?

Response

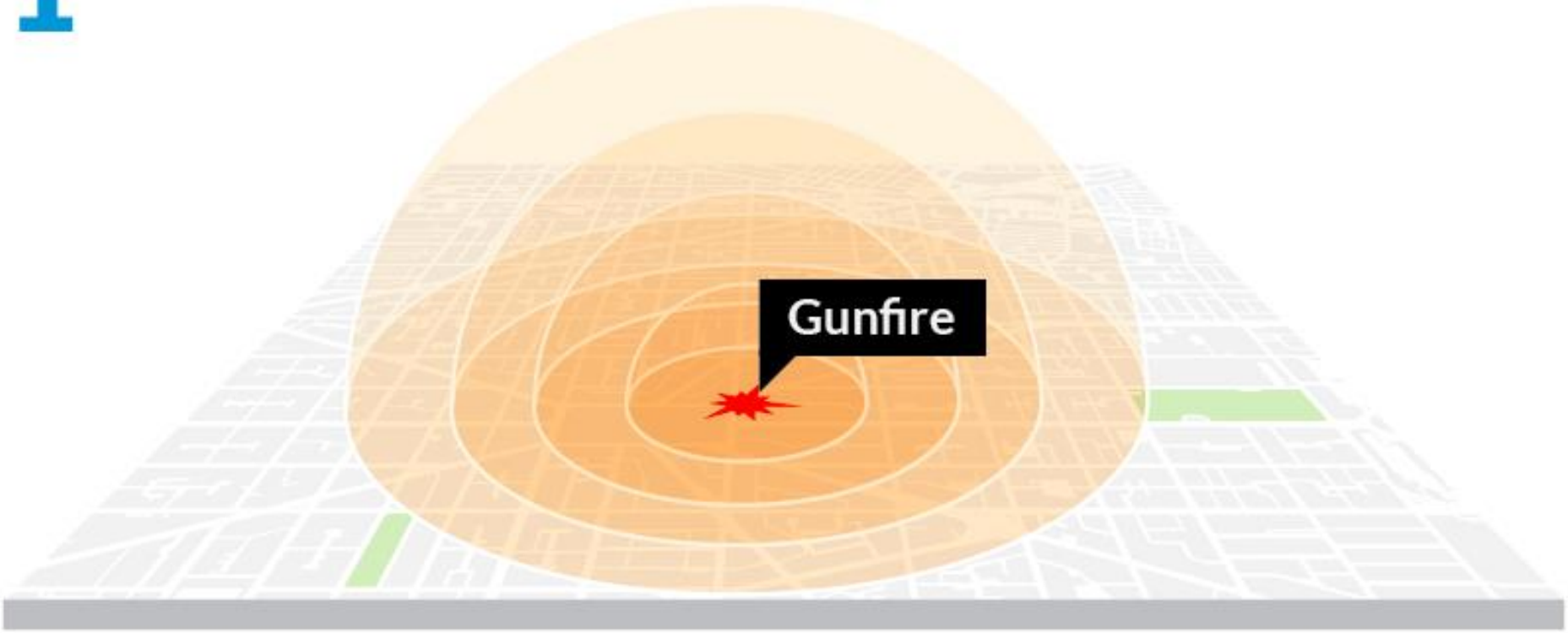
- How can the technology be employed to best achieve its intended impact?

Assessment

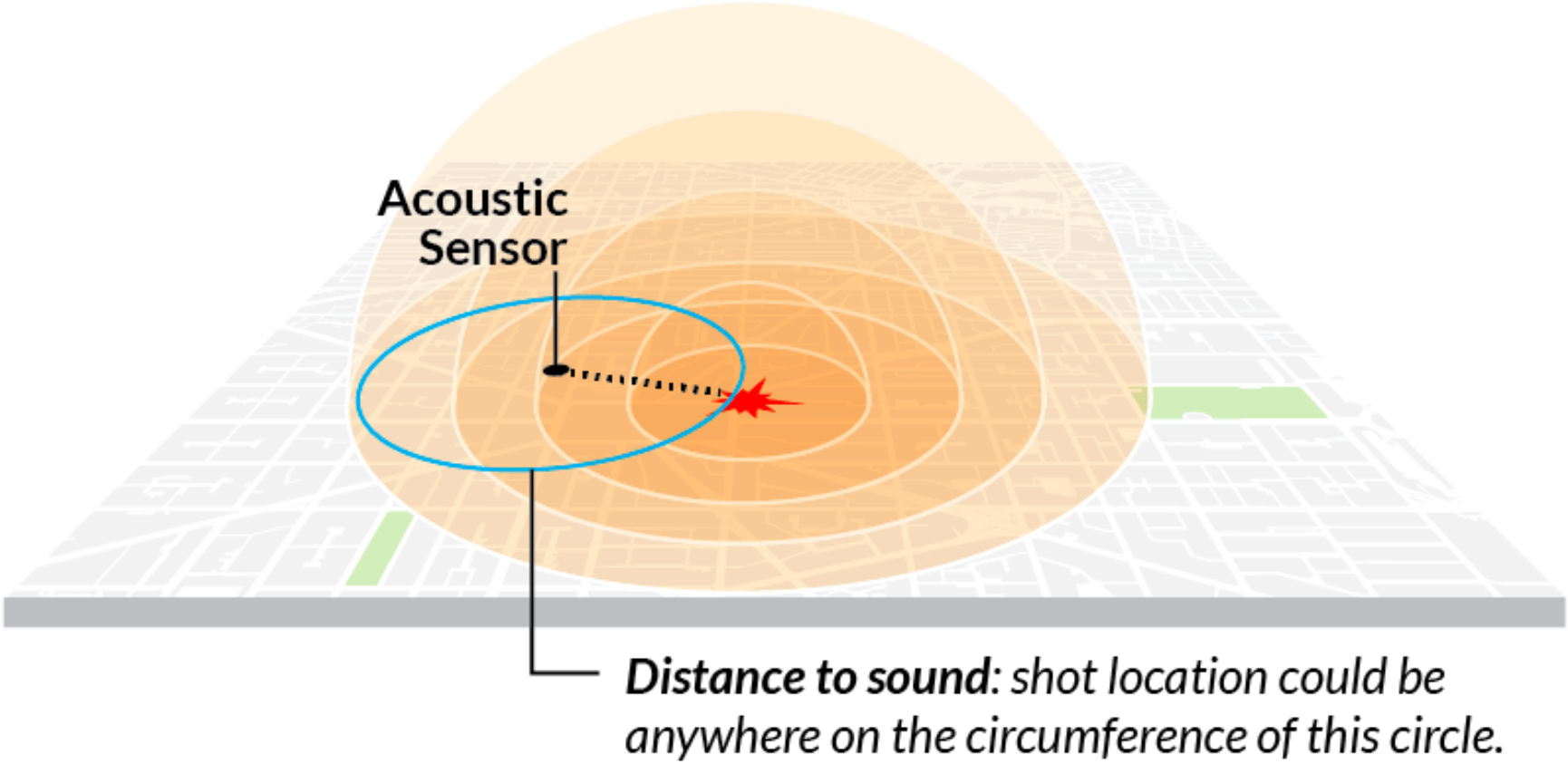
- Was the technology used according to plan?
- Did the technology achieved its intended goals?

Gunshot Detection Technology: A Case Study

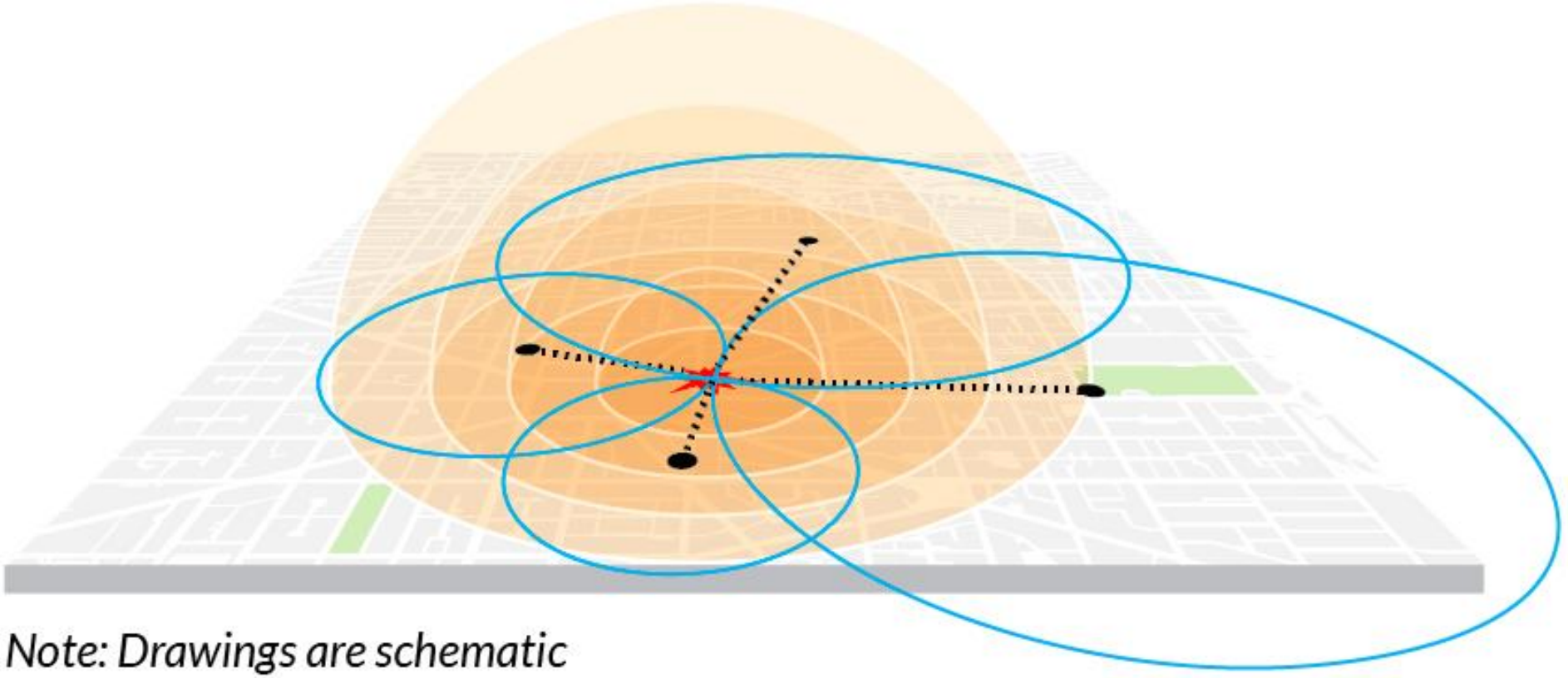
1 Gunfire produces sound waves that expand in every direction.



2 Acoustic sensors throughout the city listen for the distinctive waveforms that firearms produce. When detected, individual sensors calculate the distance to the sound.



3 Readings from multiple sensors are used to triangulate the location of the shot.



Note: Drawings are schematic

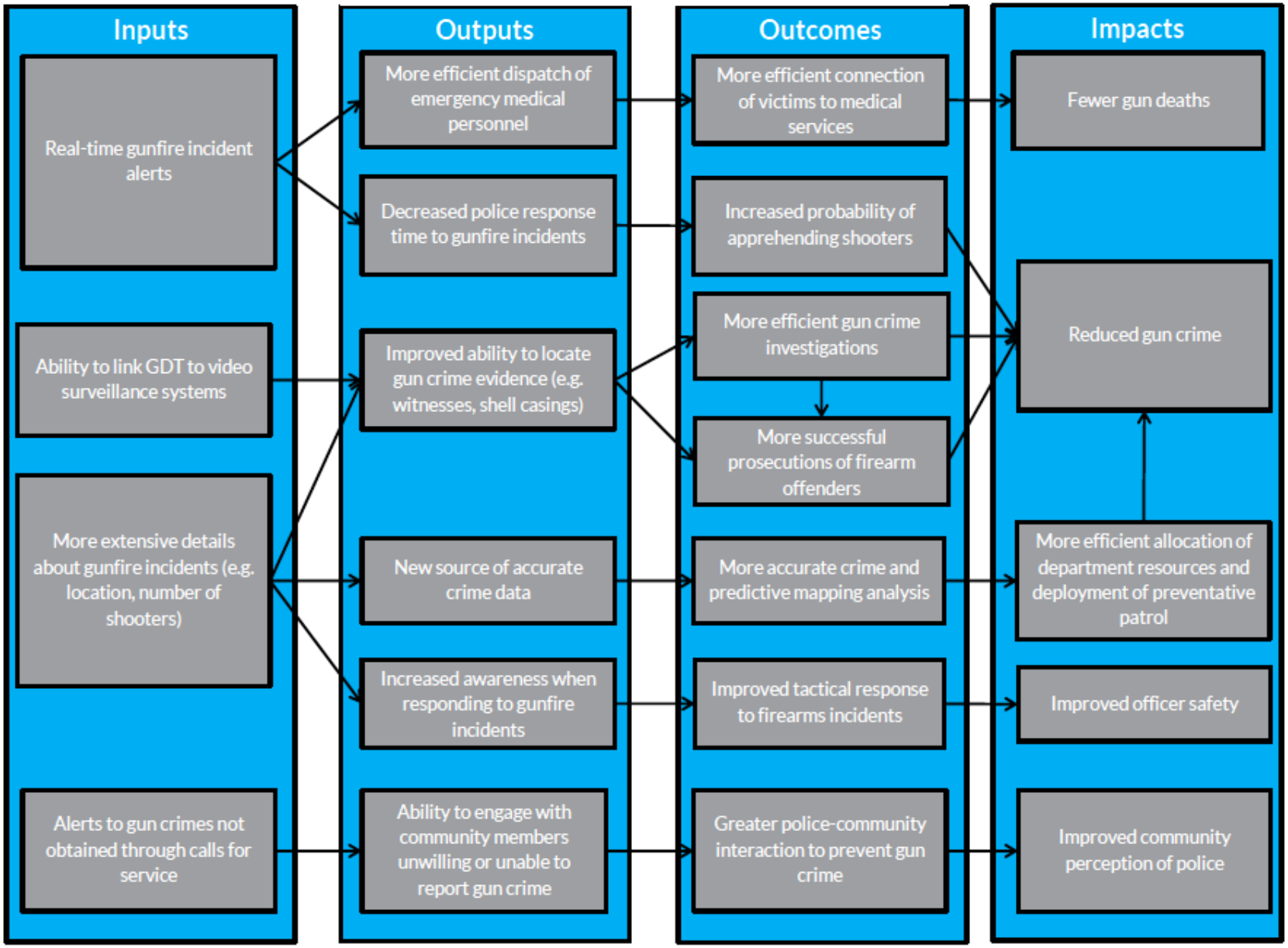
4 Gunfire is verified and transmitted

5 Officers Dispatched

SCANNING

- What is the general nature of the problem the technology can address?
  - Illegal firearms discharges
  - Gun violence
  - Aggravated assault
  - Homicide
- How will the technology achieve its intended goals?
  - Increase the risk of apprehension
    - Reduce response time
    - Identify gun crimes that are not reported
    - Support investigations
  - Enhance community perceptions of police
  - Increase cooperation in investigations, as witnesses

Figure 1. Gunfire Detection Technology Logic Model



ANALYSIS

- What are the patterns of crime and criminal behavior?
  - Where are gun-related crimes occurring?
  - Where do gangs/groups engaged in gun violence reside?
- What are the current responses to the problem?
  - Response to calls for service
  - Ballistics
  - Spatial or predictive analyses
- What does the technology require?
  - Unobstructed acoustics
  - Triangulation
  - Power source
  - Crime analysis capacity
- What training and policies are needed?
- What partners need to be engaged and educated?

RESPONSE

- Employing the technology in a manner that is most consistent with analysis results
- Where to place sensors?
- How much coverage area
- Overt or covert?
- Community engagement
- Police response
  - GDT calls prioritized?
  - Exit patrol car?
  - Search for shell casings?
  - Seek out witnesses?
  - Analyze GDT alert patterns?
  - Integrate with NIBNS?

ASSESSMENT

- Was the technology implemented according to plan?
  - Ratio of dispatches to GDT alerts
  - Response times
  - Ballistics evidence
  - Crime analyses
- Did the technology achieve its intended goals?
  - Gun-related crimes
  - Calls for service
  - Clearance rates
  - Community sentiment

Applying SARA to other technologies

Scanning

- What is the general nature of the problem the technology can address? How will the technology achieve its intended goals?

Analysis

- What are the patterns of problem the technology is meant to address? What are the current responses to the problem? What does the technology require to operate effectively?

Response

- Where, when, and how should the technology be deployed? What training and policies are needed? What partners need to be engaged and educated?

Assessment

- How to measure whether the technology was implemented as intended? If it achieved its intended impact?

Key Takeaways

- Develop a logic model
- Understand the technology's requirements
- Invest judiciously but sufficiently
- Deploy in alignment with problem's concentrations, characteristics
- Unearth the technology's hidden costs
- Attend to training, buy in of end users
- Develop policies and implement before deployment
- Engage the community
- Measure both inputs and impacts
- Integrate into existing operations, activities

Questions & Follow Up

Nancy La Vigne
nlavigne@urban.org
202-261-5763
www.urban.org/justice

Eddie Reyes
ereyes@policefoundation.org
703-906-6204
www.policefoundation.org