

Music

Clash - I Fought the Law and the Law Won

A close-up photograph of a man with a shocked expression, his mouth wide open and eyes wide. He is wearing a green jacket. The background is blurred, showing other people in a social setting.

Life Inside a Skinner Box: Confronting our Future of Automated Law Enforcement

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Disclaimer



The views in this talk are the authors' and don't reflect the official policy or position of the United States Military Academy, Samford University, the Department of the Army, the Department of Defense, or the United States Government.

Why?



We don't want to live in a police state

Meditation on the Law



Driving the Speed Limit on the
Atlanta Perimeter

Three Points

1. Networked technologies have the potential to automate enforcement of the law.
2. Reckless and pervasive automation can have disastrous and unintended consequences.
3. This audience is in a unique position to defend society and appropriately confront law enforcement systems.

Automated Law Enforcement

Any computer-based system that uses input from unattended sensors to algorithmically determine that a crime has been or is about to be committed then takes some responsive action, such as to warn the subject or inform the appropriate law enforcement agency.

Additionally, these systems will be capable of automatically imposing some form of punishment. Our proposed conceptualization of automated law enforcement is based on a model that is subject to automation at various points.

1

The Precursors are in Place

Increased Proliferation of Sensors



Increased Diversity and Sensitivity of Sensors



State Police Pull Over CT Medical Patient for Tripping Radioactivity Detector

Compulsory Sensing



US Senate Passes Bill Requiring All New Cars in America to Come Equipped with a Black-box by 2015

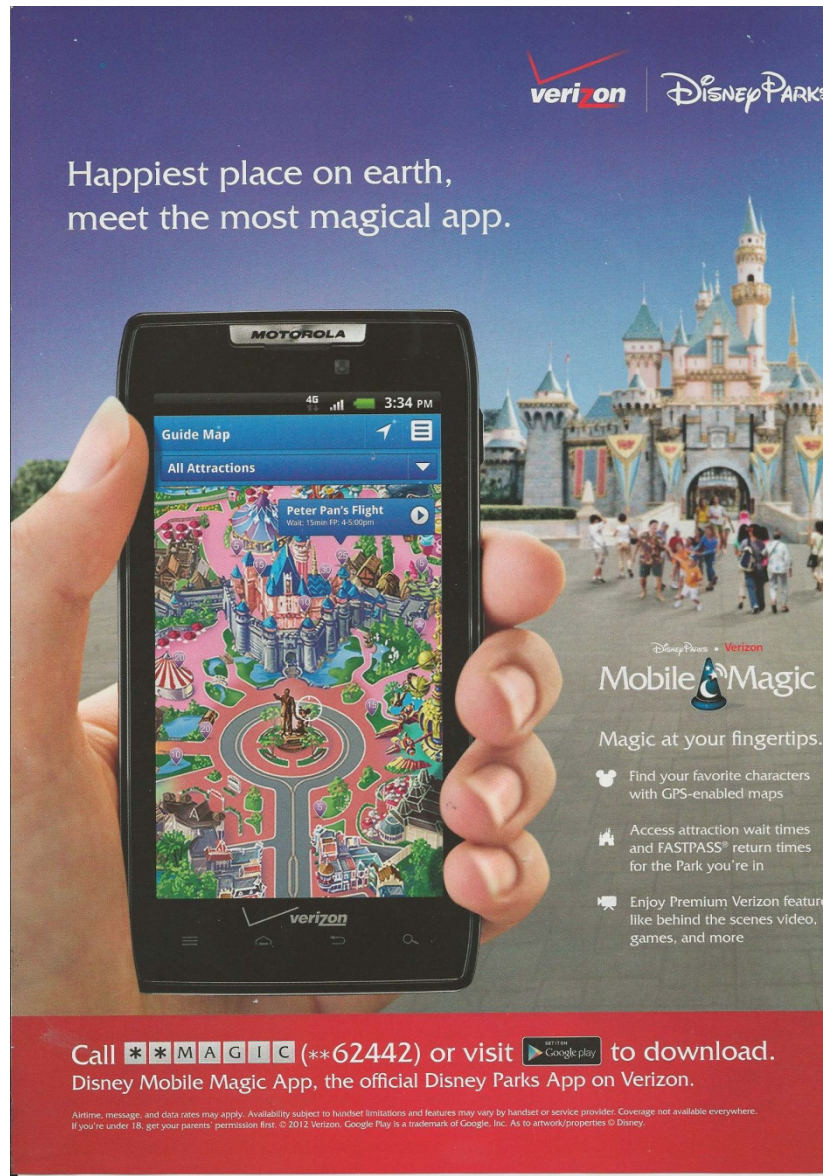
Mobile Sensors



Honeywell T-Hawk

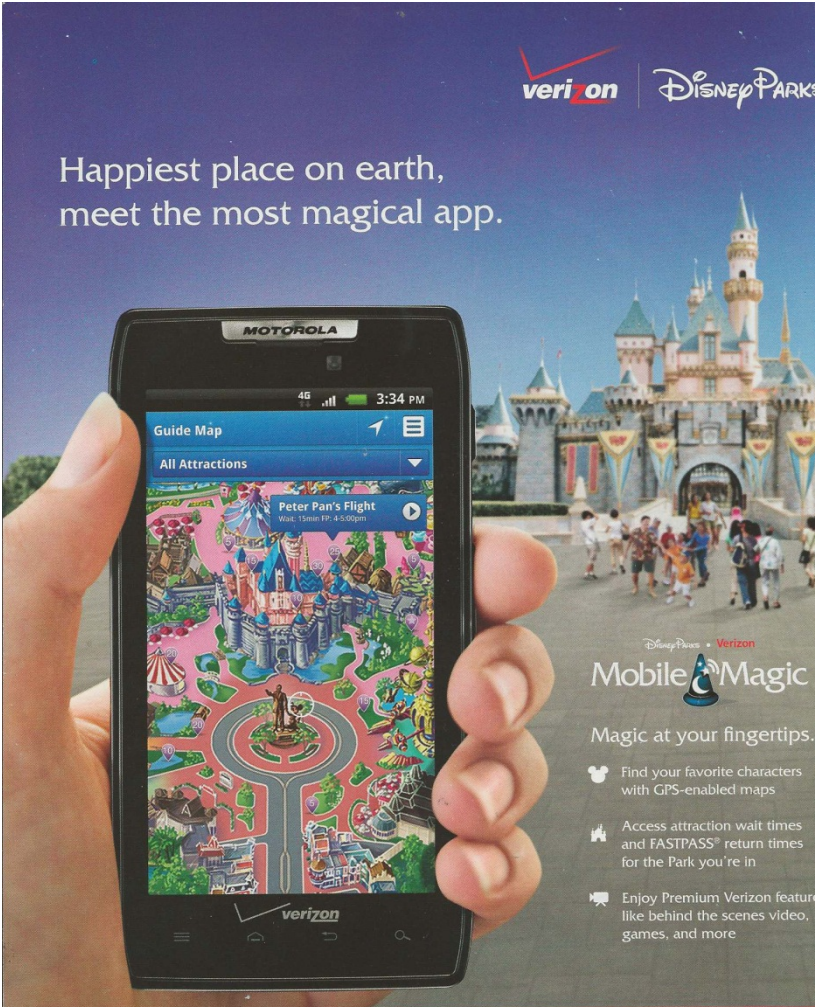
“Intended to provide the dismounted soldier with Reconnaissance, Surveillance, and Target Acquisition (RSTA) and laser designation. Total system weight, which includes the air vehicle, a control device, and ground support equipment is less than 51 pounds (23 kg) and is back-packable in two custom MOLLE-type carriers.”

3 Billion+ Mobile Devices



verizon | DISNEY PARKS


Happiest place on earth,
meet the most magical app.



Disney Parks • Verizon
Mobile Magic

Magic at your fingertips.

- Find your favorite characters with GPS-enabled maps
- Access attraction wait times and FASTPASS® return times for the Park you're in
- Enjoy Premium Verizon features like behind the scenes video, games, and more

Call ****MAGIC**** (**62442) or visit  to download.
Disney Mobile Magic App, the official Disney Parks App on Verizon.

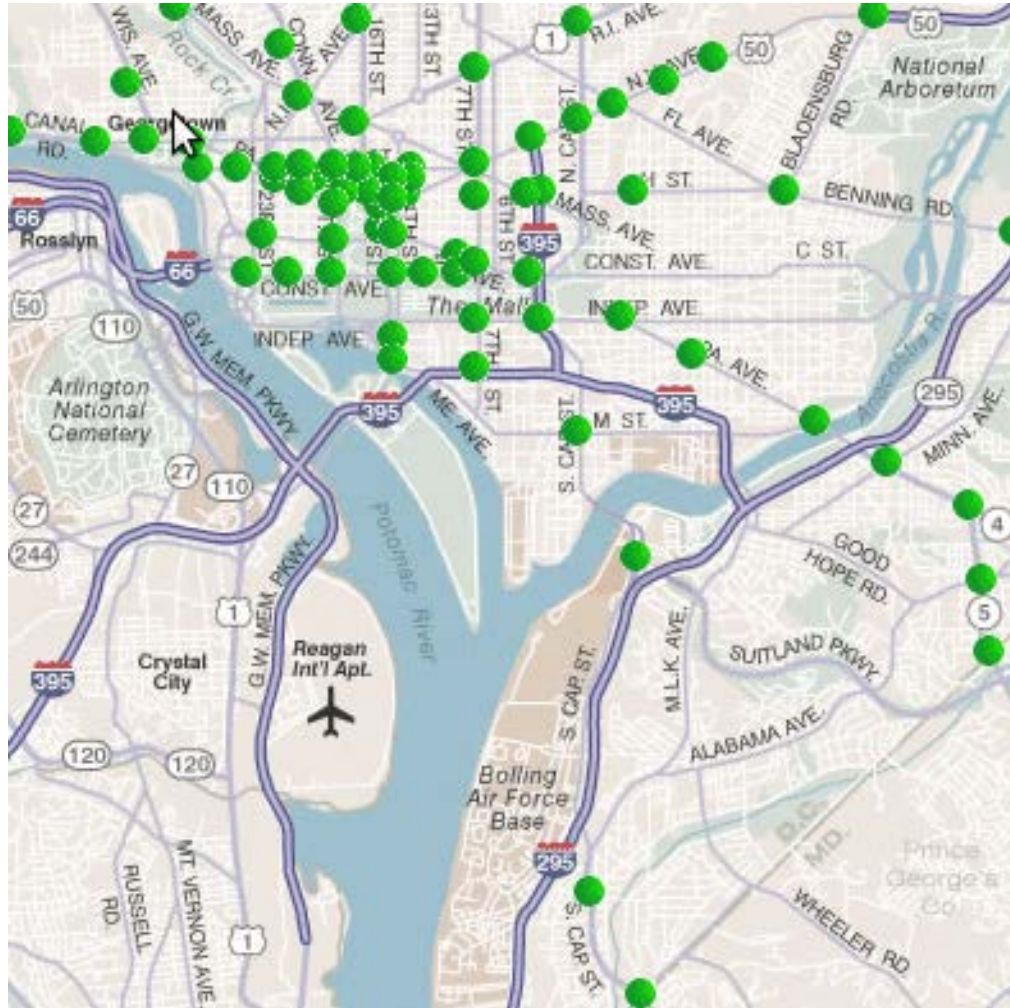
Airtime, message, and data rates may apply. Availability subject to handset limitations and features may vary by handset or service provider. Coverage not available everywhere. If you're under 18, get your parents' permission first. © 2012 Verizon. Google Play is a trademark of Google, Inc. All other marks/properties © Disney.

Connected Cars



OnStar

Instrumented Communities



Washington DC Area Traffic Cameras

We are Losing Control of our Technology

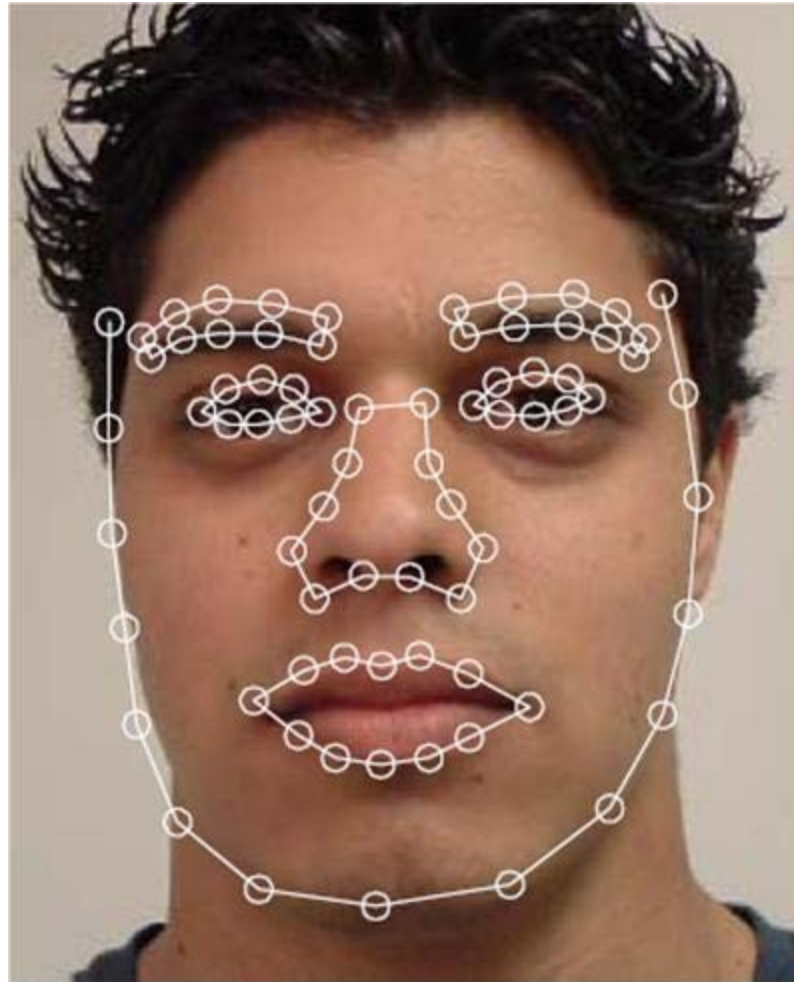


So when I get into a car—a computer that I put my body into—with my hearing aid*—a computer I put inside my body—I want to know that these technologies are not designed to keep secrets from me, or to prevent me from terminating processes on them that work against my interests.

- Cory Doctorow

* Note that this quote is taken a bit out of context. Mr. Doctorow was speculating that he may require a hearing aid at some point in the future.

Facial Recognition



Crowdsourced Identification

Identify the rioters

Help identify the people behind the Vancouver riots on Wednesday, June 15th

Can you identify the (alleged) rioter or looter in this photo?



 Like  11570 likes. Sign Up to see what your friends like.

This site does not make accusations - Once an alleged rioter is positively identified by multiple people, the riot picture is sent to the [Vancouver Police Department](#), along with the name of the identified individual. **Remember you can always tip the VPD directly too** by sending an email to robbery@vpd.ca

POLICE LINE DO NOT CROSS POLICE LINE DO NOT CROSS POLICE LINE DO NOT CROSS

Vancouver Riots

www.identifyrioters.com

Improved Algorithms



Cordon: 32 Vehicle Tracking Across 4 Lanes

Crowdsourced Crime Detection

The screenshot displays the Internet Eyes website. At the top left is the logo featuring a stylized eye and the text "Internet Eyes BETA". A navigation bar at the top right includes "Select Language" and "Select Country: Argentina". Below this is a menu with "Home", "IE Community", "Register as a Viewer", "Business Enquiries", "Latest News", and "FAQ". The main content area has the heading "Internet Eyes" and the sub-heading "Detecting Crime As It Happens". A text block states: "Shoplifting is at its highest recorded levels, £4.88 billion a year according to the Centre for Retail Research. Internet Eyes has been designed to combat this rise by detecting these crimes as they happen." To the right is a "Subscribe To Our Newsletter" form with a text input field and a "Sign up to our Newsletter" button. Below the main text are two columns: "Internet Eyes Viewers" with a photo of a woman at a laptop and a "Click here to discover more about becoming a Viewer" link, and "Business" with a photo of a Premier store and a "Click here to discover how Internet Eyes can benefit your business" link. A left sidebar contains a "USER LOGIN" button, a "Latest News" section with a "Sign Up" button, and social media links for Facebook and Twitter. At the bottom of the sidebar, it says "3,016 people like Internet Eyes." and shows small profile pictures.

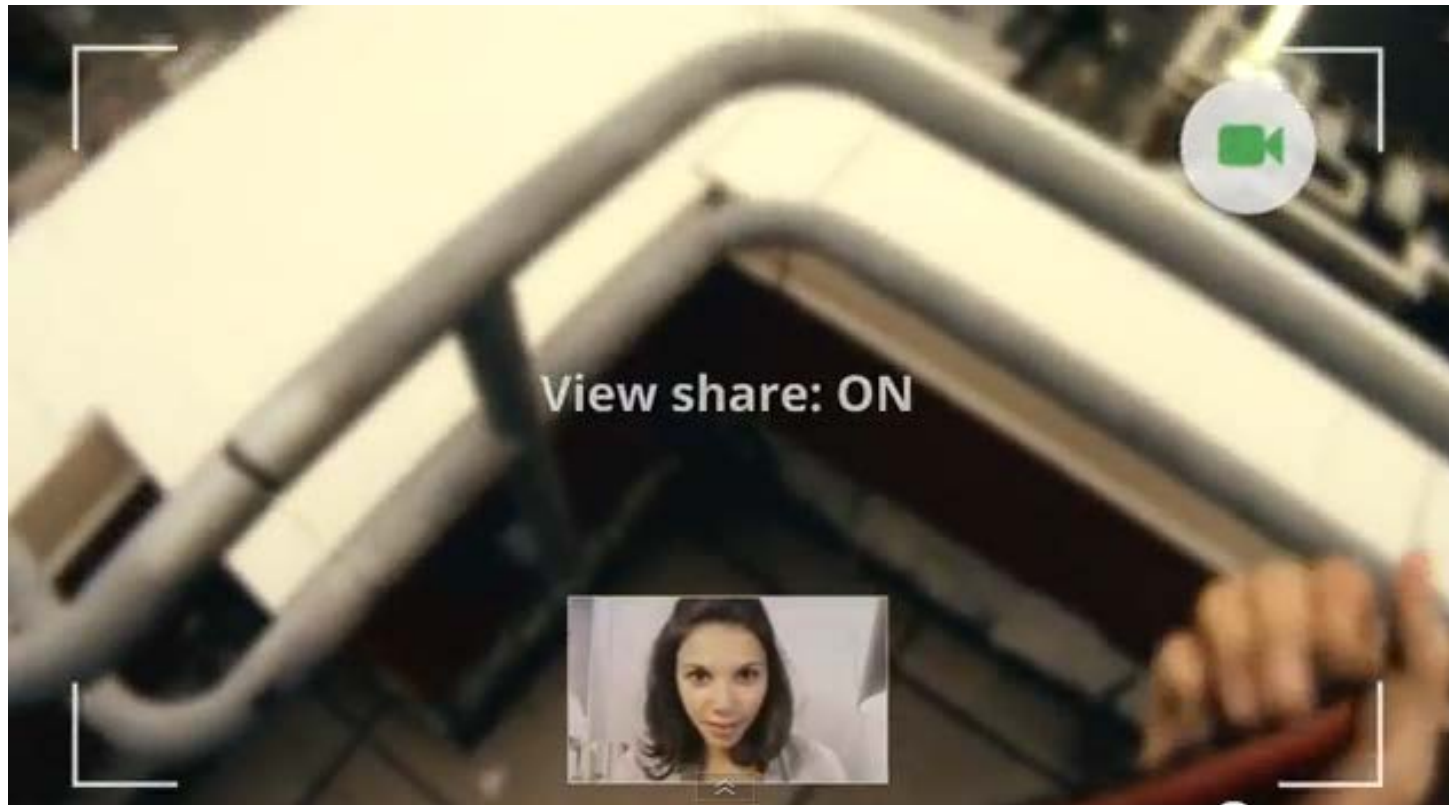
Internet Eyes - “Detecting Crime as It Happens”

Tech Transfer



Miami-Dade Police Department's Drones Ready to Fly

Augmented Reality

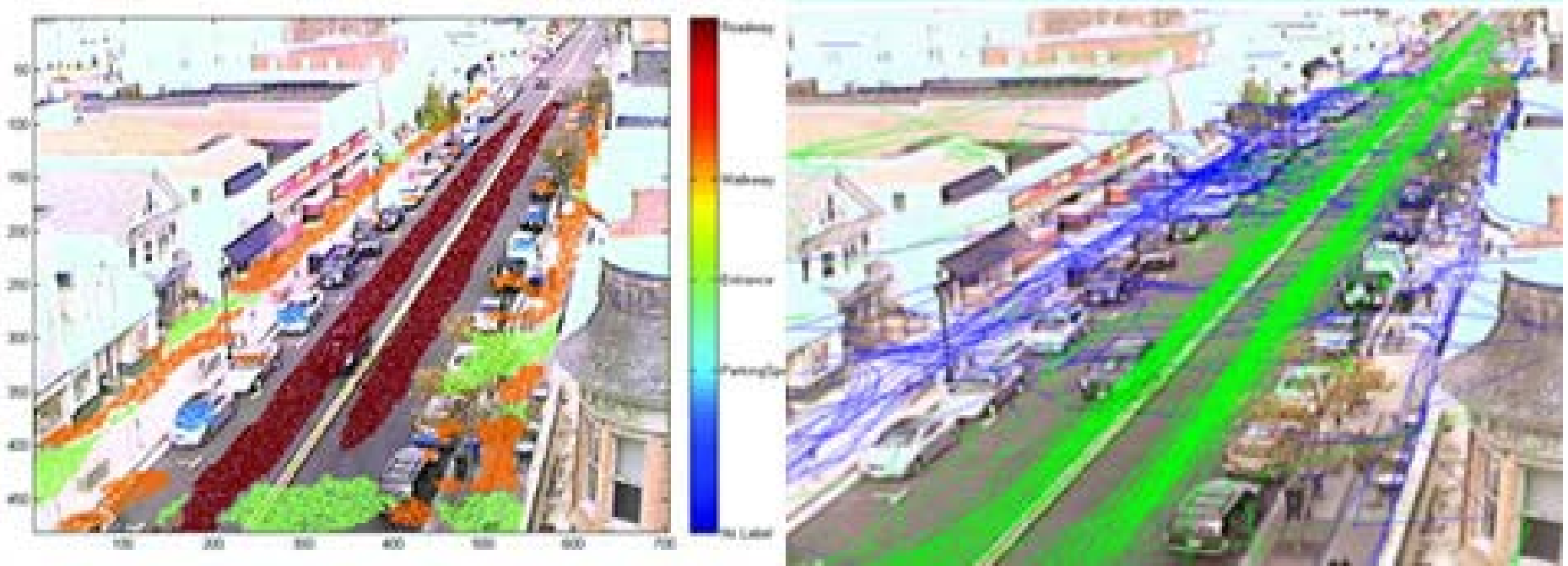


Google's Project Glass: One Day...

Conversion of Analog Systems to Digital



Increased Analytics



Wide Area Motion Imagery (WAMI)

See also Persistent Stare Exploitation and Analysis System (PerSEAS)

Increased Linkages



National Identity Registries



India Launches Universal ID System with Biometrics

Location Tracking



Get The Best of Both Worlds With Our Top Two Products

Live GPS Tracking **Spark Nano GPS Tracker**

- Live real-time reporting
- 5 day battery life
- SMS / e-mail alerts



Small GPS Logger **The Flash GPS Reporter**

- 90-Day Swappable, Rechargeable Battery
- Most Storage with Over 240,000 locations recorded
- Speed Notification Reports
- Works with Google Earth



Predictive Policing is on the Rise



California Police Praise Predictive Policing



Minority Report

Lots of Interested Parties



Federal, State, and Local Law Enforcement

Insurance Companies

* Note that we aren't stating that these specific entities are necessarily interested in Automated Law Enforcement, but in general we argue such types of entities are.

http://en.wikipedia.org/wiki/Oregon_State_Police
<http://www.coolgadgetconcept.com/coolest-police-badge/>
http://en.wikipedia.org/wiki/File:BIA_Police_Officer_Badge.jpg

Well Intentioned Officials



New York City Soda Ban

Well Intentioned Law Enforcement...



What Should I Consider Suspicious?	What Should I Do?
<p>People Who:</p> <ul style="list-style-type: none">• Are overly concerned about privacy, attempts to shield the screen from view of others• Always pay cash or use credit card(s) in different name(s)• Apparently use tradecraft: lookout, blocker or someone to distract employees• Act nervous or suspicious behavior inconsistent with activities• Are observed switching SIM cards in cell phone or use of multiple cell phones• Travel illogical distance to use Internet Café <p>Activities on Computer indicate:</p> <ul style="list-style-type: none">• Evidence of a residential based internet provider (signs on to Comcast, AOL, etc.)• Use of anonymizers, portals, or other means to shield IP address• Suspicious or coded writings, use of code word sheets, cryptic ledgers, etc.• Encryption or use of software to hide encrypted data in digital photos, etc.• Suspicious communications using VOIP or communicating through a PC game <p>Use Computers to:</p> <ul style="list-style-type: none">• Download content of extreme/radical nature with violent themes• Gather information about vulnerable infrastructure or obtain photos, maps or diagrams of transportation, sporting venues, or populated locations• Purchase chemicals, acids, hydrogen peroxide, acetone, fertilizer, etc.• Download or transfer files with "how-to" content such as:<ul style="list-style-type: none">- Content of extreme/radical nature with violent themes- Anarchist Cookbook, explosives or weapons information- Military tactics, equipment manuals, chemical or biological information- Terrorist/revolutionary literature- Preoccupation with press coverage of terrorist attacks- Defensive tactics, police or government information- Information about timers, electronics, or remote transmitters / receivers <p><i>It is important to remember that just because someone's speech, actions, beliefs, appearance, or way of life is different; it does not mean that he or she is suspicious.</i></p> <p>Joint Regional Intelligence Center (JRIC) www.jric.org (888) 705-JRIC (5742) mention "Tripwire"</p>	<p>Be part of the solution.</p> <ul style="list-style-type: none">✓ Gather information about individuals without drawing attention to yourself✓ Identify license plates, vehicle description, names used, languages spoken, ethnicity, etc.✓ Do not collect metadata, content, or search electronic communications of individuals✓ Do not do additional logging of on-line activity or monitor communications✓ If something seems wrong, notify law enforcement authorities. <p>Do not jeopardize your safety or the safety of others.</p> <p>Preventing terrorism is a community effort. By learning what to look for, you can make a positive contribution in the fight against terrorism. The partnership between the community and law enforcement is essential to the success of anti-terrorism efforts.</p> <p>Some of the activities, taken individually, could be innocent and must be examined by law enforcement professionals in a larger context to determine whether there is a basis to investigate. The activities outlined on this handout are by no means all-inclusive but have been compiled from a review of terrorist events over several years.</p>

Suspicious Activities

“Overly concerned about privacy”

“Always pays cash”

“Use of anonymizers... to shield IP address”

“Uses encryption”

“Downloads information about electronics”

“Strict Enforcement” Business Models Exist



Quotas Exist



To All Delegates and Members

August 25, 2011

This is to remind all PBA members that any threat of retaliation for failure to perform a specific numbers of police actions (summonses, stop and frisks, arrests etc.) within a specified time period is a violation of the quota law and a grievable offense. We encourage all of our members who experience the threat of retaliation or punishment to file an immediate grievance with the PBA. The [attached form](#) was developed to expedite the grievance process in these cases.

Faternally,

Patrick J. Lynch
President



August 25, 2011 - This is to remind all PBA members that any threat of retaliation for failure to perform a specific numbers of police actions (summonses, stop and frisks, arrests etc.) within a specified time period is a violation of the quota law and a grievable offense. We encourage all of our members who experience the threat of retaliation or punishment to file an immediate grievance with the PBA. The attached form was developed to expedite the grievance process in these cases.

Bait Cars



and Other Types of Bait...



And Illegal Enforcement...



And 'ol Charlies workin' out real good down at the corner store where the red light is. He sees them out-of-state plates two blocks away. Whey they get right on top of that green light, ol' Charlie pushes that secret button underneath the corner drug store counter. And that yellow light only lasts for a tenth of a second.

- Hoyt Axton (Speed Trap)

Some Regimes May Take Enforcement to a Whole Other Level



Citizens Who Want a Free Lunch...

SANS FIRE 2010
Baltimore, MD
June 6 - 14, 2010
PROFESSOR, INVESTIGATIONS, RESPONSE & EDUCATION

INTERNET STORM CENTER

Pick Up Your Vendor Expo Lunch Vouchers Here!

By registering, you agree to share your information with the following sponsors:

AccelOps	Core Security	Novell
Altor Networks	CoreTrace	Qualys
Bit9	LogRhythm	SAINT Corporation
Breaking Point	NitroSecurity	Solera Networks
Cenzic	Norman Data Defense	VMWare, Inc.
Cisco Systems		

Social Media





Successful Prototypes



Bus Lane Enforcement
Red Light Enforcement
Speed Limit Enforcement
Stop Sign Enforcement
Congestion Charge
HOV Lane
Railroad Crossings
Illegal Parking
Illegal Turns

The Inadequacy of Law



Sniffer Dogs

Florida v. Harris

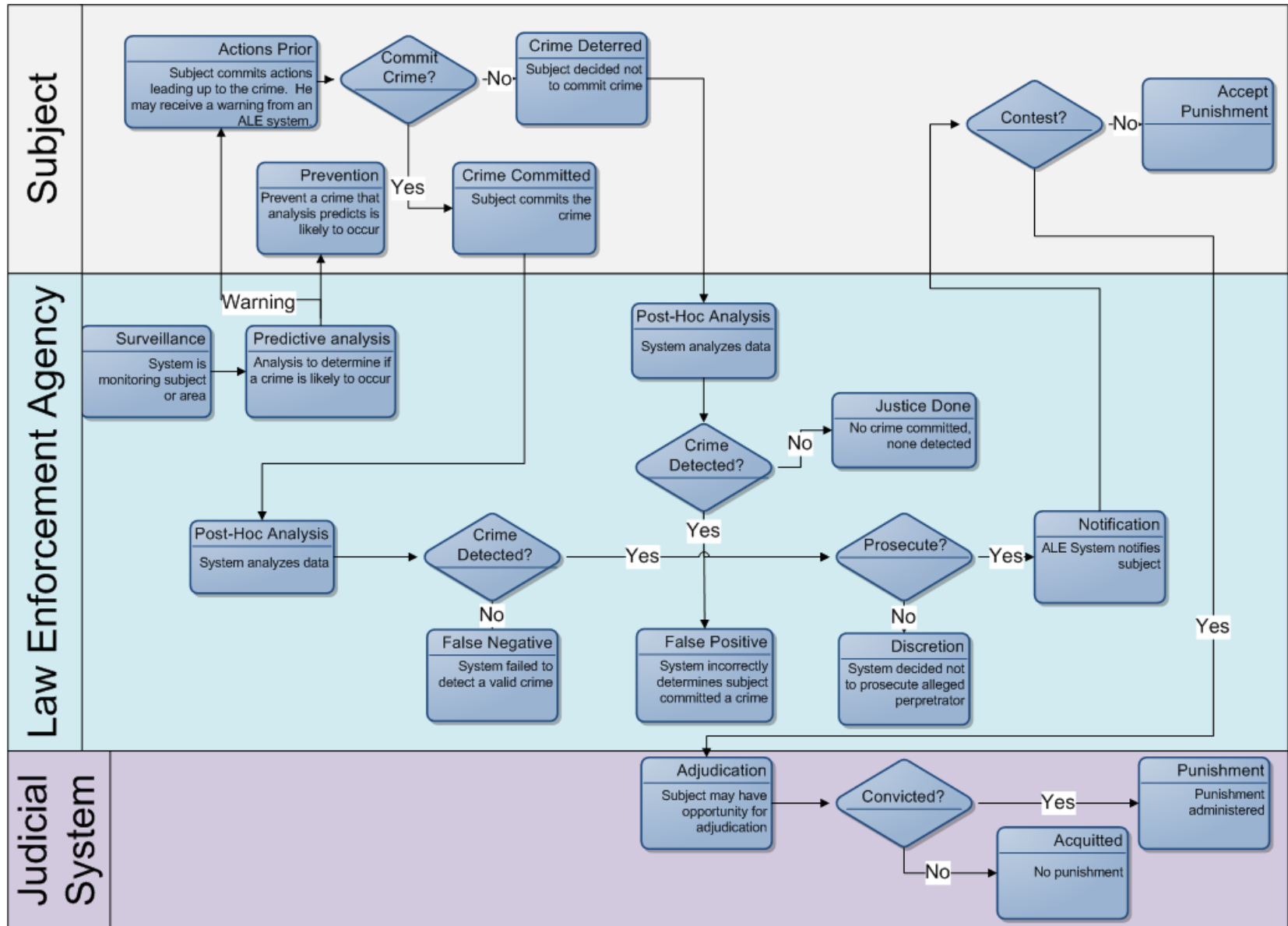
Florida v. Jardines

<http://www.scotusblog.com/case-files/florida-v-harris/>
http://en.wikipedia.org/wiki/File:Border_detection_dog.jpg
<http://www.scotusblog.com/case-files/cases/florida-v-jardines/>

So Where is all the Heading?

- ✓ Enabling technologies
- ✓ Ubiquitous sensors
- ✓ Promiscuous data sharing
- ✓ Security and financial incentives
- ✓ Well intentioned law enforcement
- ✓ Complacent citizenry
- ✓ Law lagging technology
- ✓ Successful prototypes

So How Does the Law Work?



Punishment Feedback Loop



Punishment Capabilities

	Notice	Warning	Embarrassment	Citation/Points / Fine	Arrest	Prosecution	Confinement	Execution
	7	6	5	4	3	2	1	0
Currently Implemented	Signs & websites warning about sensors	"Flash" when camera activates at speed trap or intersection	Listing on a website or database	Red Light Cameras, Radar speed traps			Ankle bracelets for house arrest	
Current Capability not yet Implemented	✓	✓	✓	✓	Robots could disable and drag crime suspects		✓	Lethally-armed robots
Future Capability	✓	✓	✓	✓	✓	Networked Sensor-DB Prosecution Algorithms	More sophisticated location control- better enforcement of restraining orders, for instance	More advanced lethally-armed robots that might even be autonomous

Notice

The screenshot displays the Virginia Traffic Information website. At the top left is the VDOT logo. Next to it is the 511 logo and the text "Virginia Traffic Information". On the right, a blue box contains the text "Click here to see other free ways to use 511." and the VDOT logo with the tagline "Please call responsibly". Below the header is a navigation bar with links: "My 511", "Map Views", "Text Views", "Resources", "Reach the Beach", "Contact Us", and "Help". On the left side, there is a sidebar menu with sections: "Weather" (with a link to "Log in to Customize"), "Traffic Alerts" (with "+20 New"), "Info", and "Legend" (with a link to "more info"). The legend includes "Traffic Speeds Layer" with color-coded lines for speed ranges (80% or ↑, 60-80%, 40-60%, 40% or ↓) and a "Traffic Speed Transparency" slider. It also lists "Road Conditions Layer" and various incident types like "Road Work", "Inactive Road Work", "Message Sign", "High Priority Incidents", "Other Incidents", "Open Bridges", "Special Events", "Weather Closures", "Other Weather Events", "Cameras", and "Inactive Cameras". The main area is a map of Virginia showing major highways and cities, with traffic speed data overlaid. A navigation control is visible on the left side of the map.

Virginia Traffic Information

Notice



INTERSECTION SAFETY SIGNAL WARNING NOTICE

This is only a warning notice. Please take notice as the registered owner(s) of the vehicle described and pictured herein, that the driver did not stop for the red traffic signal at the place, date and time specified. Therefore, as the registered owners(s) you are liable for a violation of Maryland State law (SS 21-202(H)). Maryland law imposes a civil penalty in the amount of \$75.00, which normally must be paid by the date shown on this notice. No points are assessed against the registered owner(s) driving record and this violation is not reported to Motor Vehicle Administrations nor any insurance companies. Therefore, your insurance rates are not affected by this violation.

You owe nothing for this warning. However, normally if you fail to either remit payment or contest your liability by the date shown, then you would be deemed to have admitted liability and would be subject to an additional monetary penalty of \$25 and a default judgement may be entered against you. In addition, failure to take timely action may result in the refusal or suspension of the motor vehicle registration.

This notice serves as a warning only. Do not pay the amount shown below.

DATE AND TIME OF VIOLATION 1/30/98 10:44:54 AM	LOCATION OF VIOLATION NOT EVID-24	AMOUNT DUE \$0.00	DATE DUE 3/10/98
---	--------------------------------------	----------------------	---------------------

A Public Safety Program of the
Montgomery County Department of Police
Automated Enforcement Unit



Send Check or Money Order Payable to
Director of Finance, Montgomery County
255 Hangerford Rd.
Buckville, Maryland 20850

NAME & ADDRESS OF REGISTERED OWNER OF VEHICLE:

REMITTANCE ADVICE - RETURN WITH PAYMENT

VIOLETION NUMBER & DATE Red Light-TestSite-Disk - NOT EVID-24 1/30/98	FINE AMOUNT NOW DUE \$0.00
	AMOUNT DUE AFTER 3/10/98 \$0.00



I certify that I am a duly authorized employee of the Montgomery County Police and I have reviewed the recorded images of the described vehicle, which was operated in violation of 21-202(H), as evidenced by the above images.

IS # 4808

Montgomery County, Maryland Intersection Safety Signal Warning Notice

Warning



Highway Speed Display

Embarrassment



Ohio Department of Rehabilitation and Correction Offender Search Results

[<< Search Page](#)

Page 1 of 100

Results for: Last Name begins with SMITH, No Record Limit

[Next 10 >](#)

Photo *	Name	Number	DOB	Status	Offenses
	SMITH II, [REDACTED]	[REDACTED]	[REDACTED]	INCARCERATED	DRUG TRAFFICKING
	SMITH II, [REDACTED]	[REDACTED]	[REDACTED]	INCARCERATED	AGG ASSAULT, BURGLARY
	SMITH II, [REDACTED]	[REDACTED]	[REDACTED]	APA SUPERVISION	DISCHARGE FIREARM AT HA
	SMITH II, [REDACTED]	[REDACTED]	[REDACTED]	INCARCERATED	ARSON, INTIMIDATE VICTIM
	SMITH II, [REDACTED]	[REDACTED]	[REDACTED]	INCARCERATED	POSS. OF DRUGS

Ohio Department of Rehabilitation and Correction
Offender Search Database

Citation / Points / Fine



**INTERSECTION
SAFETY SIGNAL
VIOLATION NOTICE**

Please take notice as the registered owner(s) of the vehicle described and pictured herein, that the driver did not stop for the red traffic signal at the place, date and time specified. Therefore, as the registered owner(s) you are liable for a violation of Maryland State law 1A-21-202.1. Maryland law imposes a civil penalty in the amount of \$75.00, which must be paid by the date shown on this notice. No points are assessed against the registered owner(s) driving record and this violation is not reported to Motor Vehicle Administrations nor any insurance companies. Therefore, you insurance rates are not affected by this violation.

If you fail to either remit payment or contest your liability by the date shown, then you will be deemed to have admitted liability and will be subject to an administrative fee of \$25.00 and a default judgement may be entered against you. In addition, failure to take timely action may result in the refusal or suspension of the motor vehicle registration.

This civil penalty may be contested in the District Court by requesting a Court date at least five days prior to the payment Due Date shown below. If you appear in Court, the maximum amount you can be charged is a \$100.00 fine and \$20.00 Court costs.

DATE AND TIME OF VIOLATION 01/12/08 01:07 PM	LOCATION OF VIOLATION Greenbelt Drive Parkway at Burger King, Westwood	VEHICLE REG MD 79P163
VIOLATION NUMBER 0280112 14	AMOUNT DUE \$75	DATE DUE 12/11/08



A Public Safety Program of the
Howard County Department of Police
Automated Enforcement Division (410) 313-6013

I certify that I am a duly authorized employee of the Howard County Police Department and I have imposed the recorded images of the described vehicle, which was operated in violation of TA 21-202.1, as evidenced by the above images.

Send Check or Money Order Payable to:
Director of Finance, Howard County
Post Office Box 323
Ellicott City, Maryland 21042

NAME AND ADDRESS OF REGISTERED OWNER OF VEHICLE:

Mr. Tim a Honda C. civic
17 Scenic Street St.
SomeCity, Maryland 417471

REMITTANCE ADVICE - RETURN WITH PAYMENT

VIOLATION NUMBER & DATE 0280112 14 12-JAN-08	FINE AMOUNT NOW DUE \$75
AMOUNT DUE AFR 12 FEB 08 \$100	

SAMPLE



Howard County, Maryland, Traffic Camera Fine

Arrest



TASER and iRobot are Collaborating on a TASER-Shooting Robot

Prosecution

```
public bool ConfigureSnapshots
{
    get { return configureSnapshots; }
    set
    {
        configureSnapshots = value;
        snapshotsLabel.Visible = value;
        snapshotResolutionsCombo.Visible = value;
    }
}
/// <summary>
/// Provides configured video device.
/// </summary>
///
/// <remarks><para>The property provides configured video device if user confirmed
/// the dialog using "OK" button. If user canceled the dialog, the property is
/// set to <see langword="null"/>.</para></remarks>
///
public VideoCaptureDevice VideoDevice
{
    get { return videoDevice; }
}
```

Source Code from iSpy Camera Security Project

Confinement



The New Generation III Alcohol and Marijuana Sensing House Arrest Ankle Bracelet With Active GPS Is Now Available for only \$3.00 per day!

Confinement



The New Generation III Alcohol and Marijuana Sensing House Arrest Ankle Bracelet With Active GPS Is Now Available for only \$3.00 per day!

Electronic Monitoring Just Got Better!

Execution



2

	Subject	Law Enforcement Agency	Judicial System
Advantages	<ul style="list-style-type: none"> ● Safer more secure society ● Reduced Bias 	<ul style="list-style-type: none"> ● Safer more secure society ● Community financial incentives ● Increased and more effective enforcement ● Potential efficiency gains 	<ul style="list-style-type: none"> ● Safer more secure society ● Potential efficiency gains
Disadvantages	<ul style="list-style-type: none"> ● False positives ● Chilling effect ● Societal harm ● “Perfect” enforcement ● Misidentification ● Enforcement of minor infractions ● Creating infrastructure for abuse ● Security of ALE systems 	<ul style="list-style-type: none"> ● False positives ● Loss of discretion ● Lost jobs ● Less compliant populace ● Loss of “professional courtesy” ● Sensor data as legal defense 	<ul style="list-style-type: none"> ● False positives ● Potential overload

Advantages and Disadvantages

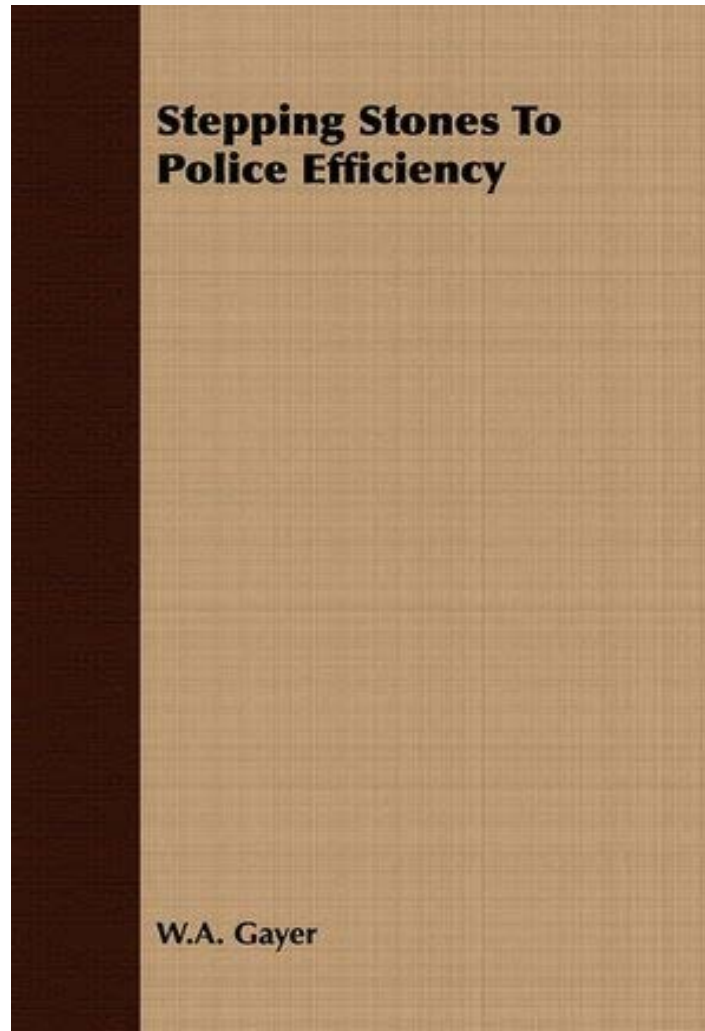
More Secure Society



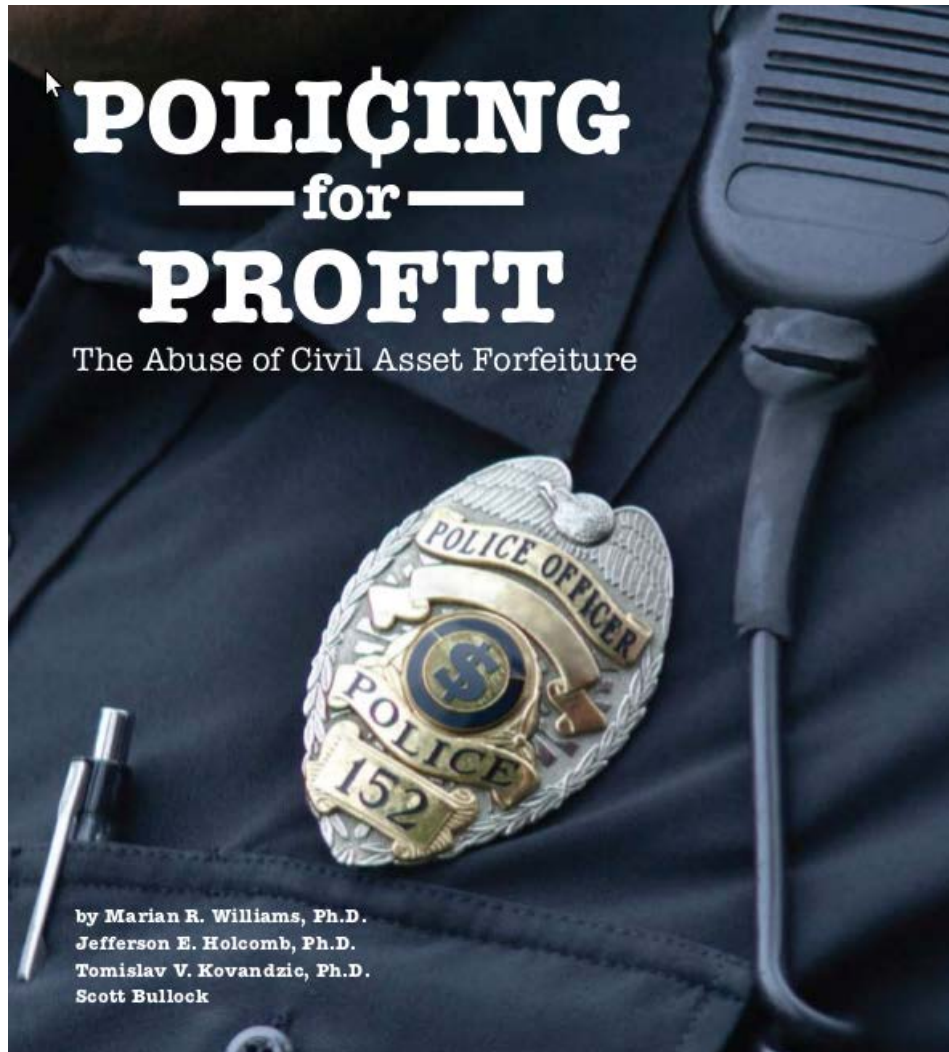
Safer Society



Increased Efficiency



Financial Incentives



Reduce Bias



Respect the badge

He earned it with his blood

Fear the gun

Your sentence may be death because

I am THE LAW!

You won't f**k around no more

I am THE LAW!

I judge the rich, I judge the poor

I am THE LAW!

Commit a crime, I'll lock the door

I am THE LAW!

Because in Mega-City

I am THE LAW!

- *Anthrax (Judge Dredd / I am the Law)*

Protection from Abuse



Dallas set to pay \$1M for two Separate Police Abuse Cases

Increased Opportunity for Abuse

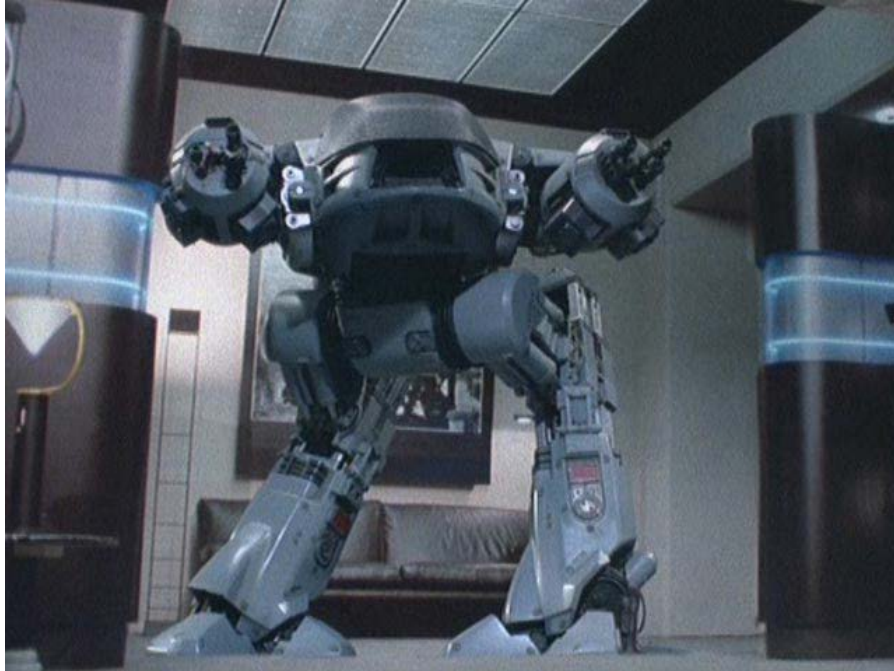


McCarthy-era Propaganda Comic Book

Increased Opportunity for Abuse



False Positives



ED-209

Please put down your weapon,
you have 20 seconds to
comply...

<puts down weapon>

You now have 15 seconds to
comply

I am now authorized to use
physical force

...

Dick, I am very disappointed...

Sir, I'm sure its only a glitch...

False Negatives



Misidentification



Terror List Snag Nearly
Grounded Ted Kennedy

“If they have that kind of difficulty with a member of Congress, how in the world are average Americans, who are getting caught up in this thing, how are they going to be treated fairly and not have their rights abused?”

- Senator Ted Kennedy

Societal Harm



Chilling Effects



Less Compliant Populace



Loss of Human Discretion

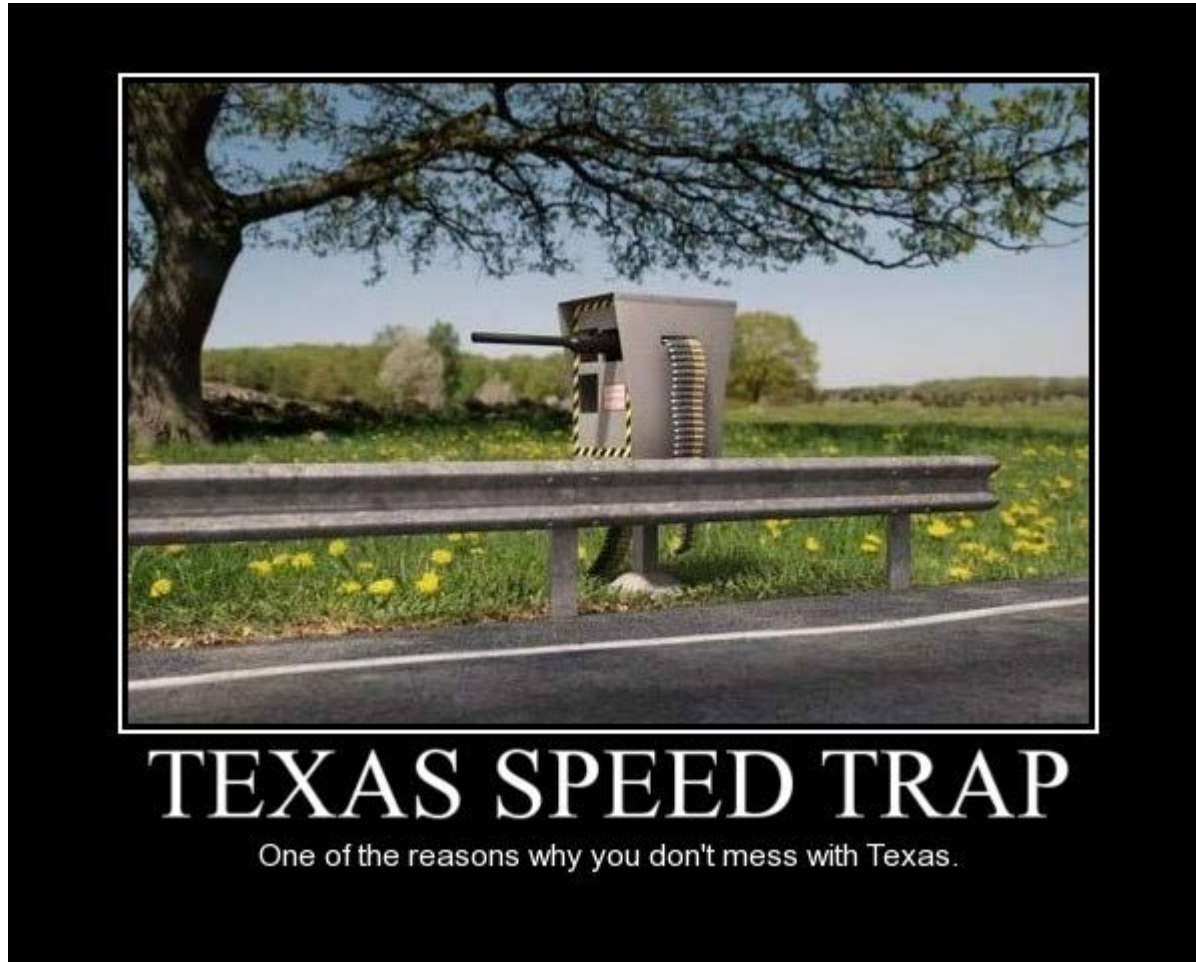


Equal and Fair Enforcement of Law

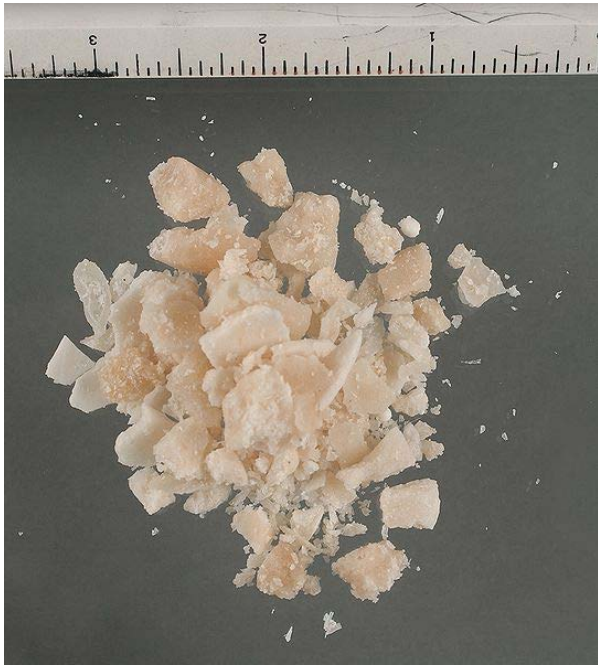


Driving While Black

Risk of Unproportional Response



Equal and Fair Enforcement of Law



Crack



Cocaine

Perfect Enforcement of the Law



No Jaywalking

Social Control



Loss of Power



Montgomery County Maryland Police “Photographed Speeding Past Camera with Extended Middle Finger”

Lost Jobs



NYCPBA

PATROLMEN'S BENEVOLENT ASSOCIATION



- What's New
- Contract
- PBA in the News
- PBA Press Releases
- PBA Publications
- PBA in the Community
- From Pat Lynch
- General Counsel
- Widows & Children's Fund

- Benefits
- Employment
- Political Action
- Outside Links
- Photo Gallery
- Offers & Discounts
- World Trade Center
- In Memoriam
- Contact Us



CURRENT TOPICS

- Alcohol Counseling Unit
- Complaint Procedure
- HR-218 Amendment
- LOD Prescription Program
- Pension Tax Info
- Health/Safety Violation Form
- Pension Seminar
- FMLA — Amendments

Overflowing the System



Case Studies



Driving Case Study

- Speeding
 - Windshield wipers without lights in rain
 - Foglights without fog
 - algorithmic specifications for laws
 - built in time constraints, warning periods, higher limits?
 - driving the speed limit will get you run off the road in most major metropolitan areas
 - license plate identification
 - emergency override?
 - remote disable by police?, on star, manufacturer, change programming of engine chip, corvette with key to disable 4 of eight cylinders
 - requirement to broadcast laws? (like marking w/speed zones, school zones with signs, "speed zone ahead")
 - security vulnerabilities in ALE systems, failure modes, possibilities for misuse
 - ignorance of law is no excuse
 - internal sensors (limited knowledge of local laws? centrally fed? updated? validated?)
 - external sensors (like a speed camera) may have localize knowledge?
 - law DB, updates? validated how?
 - what legal loopholes/defenses will emerge
 - for some areas technology isn't ready to enforce laws, but in some areas it is
 - rental cars (you don't own it, therefore you rights are less)
 - road use tolls (in news)
 - role of easy pass like systems
 - role of onstar
- Case Law / Legal Defenses
 - Legal defenses against ALE systems (look to radar guns, red light cameras, speed cameras)
 - Calibration
 - Radar vs GPS tracking device <http://www.csmonitor.com/USA/2009/0911/p02s01-usgn.html>

Windshield Wiper Before Headlights



Mainstream Media



Questions Necessary to Confront Automated Law Enforcement

Method of Implementation

Control

Discretion

Perfection of Enforcement

Legal Integration of Algorithms

Preemptive / Post Hoc Enforcement

System Error / Malfunction

Administrative Burden

Procedural Safeguards

The Social Cost of Automation

3

Analysis

Procedural Safeguards

Due Process

Privacy

Freedom of Expression

The Necessity Defense

Transparency



Countermeasures

Countermeasures



For more see our HOPE 9 talk

Detect
Monitor
Bypass
Shield
Exploit sampling rate
Scattering
Disable
Destroy
Jam
Spoof
Camouflage
DOS

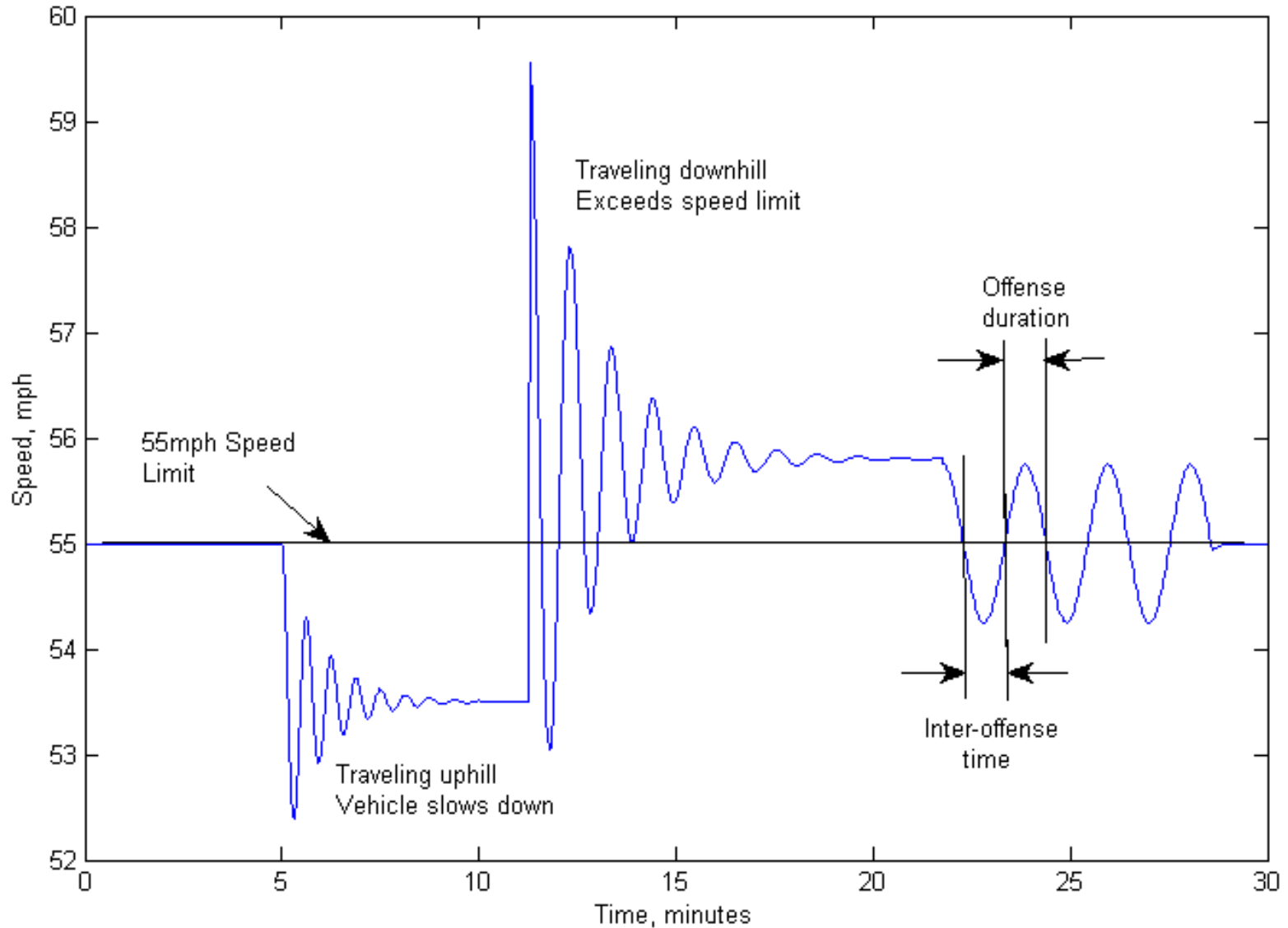
and more...

Competing Sensors



GPS Defense Against Radar

Algorithmic Laws?



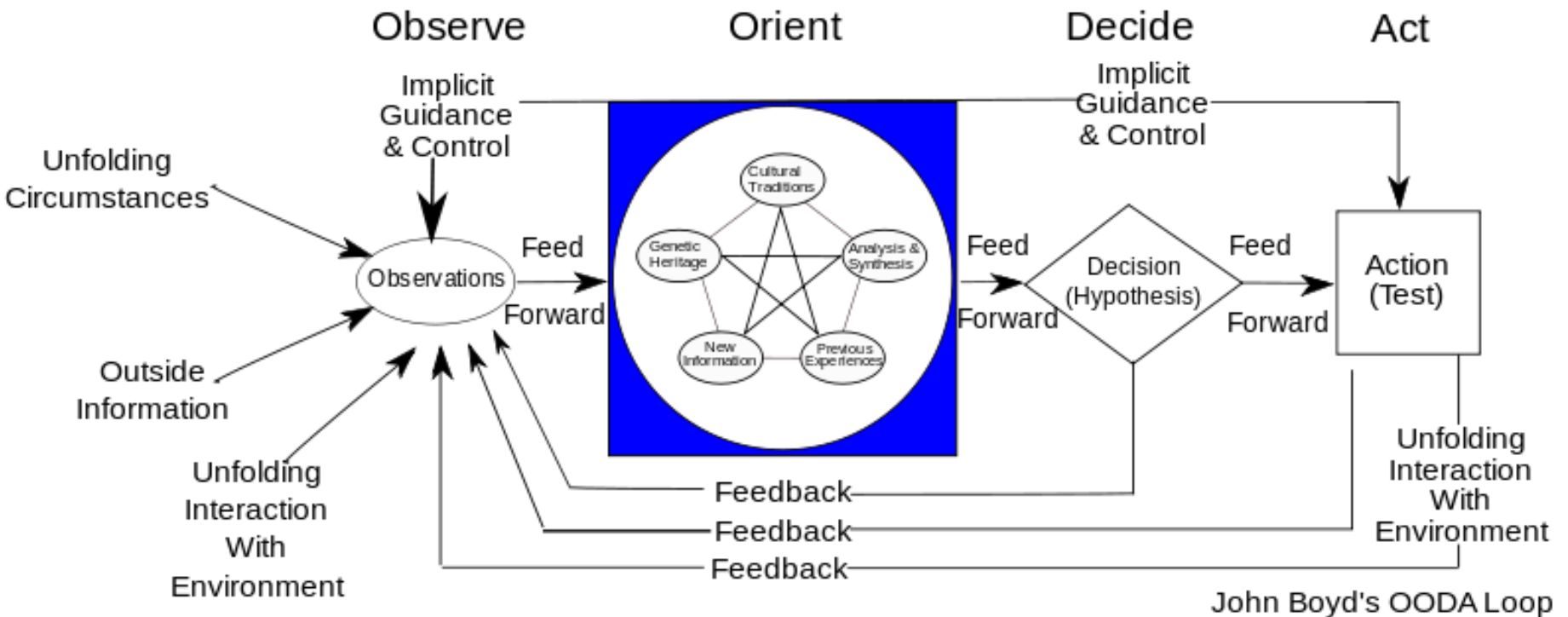
Emerging Brain Computer Interfaces



See...

- Brain-Computer Interfaces - Dennis McFarland and Jonathan Wolpaw. "Brain-Computer Interfaces for Communication and Control." Communications of the ACM, May 2011, Vol. 54, No. 5, pp.60-66.
- Feed by M. T. Anderson
- My Second Implant by Estragon, 2600, Summer 2010

The OODA Loop Applies



Law Resistant Systems

- Please include a manual override

Security of ALE Systems

- Vulnerabilities in Car Electronics
- CALEA wiretap infrastructure abuses
- <http://www.forbes.com/2010/02/03/hackers-networking-equipment-technology-security-cisco.html> (probably should cite Tom's BH talk instead)
- Whit Diffie, Susan Landau
<http://queue.acm.org/detail.cfm?id=1613130>

Research Agenda

- Metrics to Assess Risk/Benefit
- Design for Transparency
- Design for Accountability

This isn't Going to Happen Overnight



Cuyahoga River Fire

Be Careful What You Build



Three Points (redux)

1. Networked technologies have the potential to automate enforcement of the law.
2. Reckless and pervasive automation can have disastrous and unintended consequences.
3. This audience is in a unique position to defend society and appropriately confront law enforcement systems.

For More Information...

- Lisa Shay, Dominic Larkin, John Nelson, and Gregory Conti. "A Framework for Analysis of Quotidian Exposure in an Instrumented World." IEEE International Carnahan Conference on Security Technology, October 2012. (accepted, to be published)
- Lisa Shay and Greg Conti. "Countermeasures: Proactive Self-Defense Against Ubiquitous Surveillance." HOPE 9, July 2012.
- Lisa Shay, Woodrow Hartzog, John Nelson, Dominic Larkin and Gregory Conti. "Confronting Automated Law Enforcement." We Robot, April 2012.
- Greg Conti. "Our Instrumented Lives: Sensors, Sensors, Everywhere." DEFCON 18, July 2010.

We'd also like to thank John Nelson and Dominic Larkin for their support of this work.

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Questions?