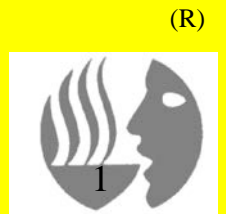


# New Technology to Reduce Costs of Graffiti Vandalism

Graham Bell

E-Nose Pty Ltd  
The Australian Technology Park  
18 August 2011

graffit-e-nose ®



# Change the Behaviour..

## Change the Reward Structure

- Graffiti Vandals enjoy the thrill of breaking the law (reward 1)
- They get prestige in the eyes of their mates (reward 2) ...and even better...
- There is *almost* no risk of being caught! (Impunity: reward 3)
- ...so let's **change “almost no” to “every”..**

# With *every* risk of being caught the Reward Structure Changes

- Reward 1. Thrill: Changes to fear
- Reward 2. Prestige: Changes to shame
- Reward 3. Impunity: Changes to Unpleasant Consequences

# Likelihood of being caught deters graffiti vandals

- If there is always a high risk of being detected and consequences follow, you will not offend
- Consider the effect of speed cameras on your own driving behaviour: they have changed the odds of your being apprehended...and you hate them...and you drive slower...
- New technology that may be at any potential graffiti attack site changes the odds of being apprehended

# New Technologies

## 1. DNA Spray

- Product:.....South Australia
- Set off by proximity to a “hot-spot”
- Sprays vandal with unique substance
- Police use CCTV to identify vandal
- DNA “reader” identifies presence of unique marker residue

## 2. Weeping Wall

- Product:.....NZ
- A sprinkler system on top of wall is activated by proximity of vandal to the wall
- Water runs down the wall making it difficult to spray
- Feet (trainers) become soggy
- Vandal departs without damage to the wall

# 3. Auditory Detection

- Product: ..... USA
- Detector on top of wall detects sound of spray can
- Activates a silent alarm
- Vandal is apprehended in the act

## 4. Graffiti Database

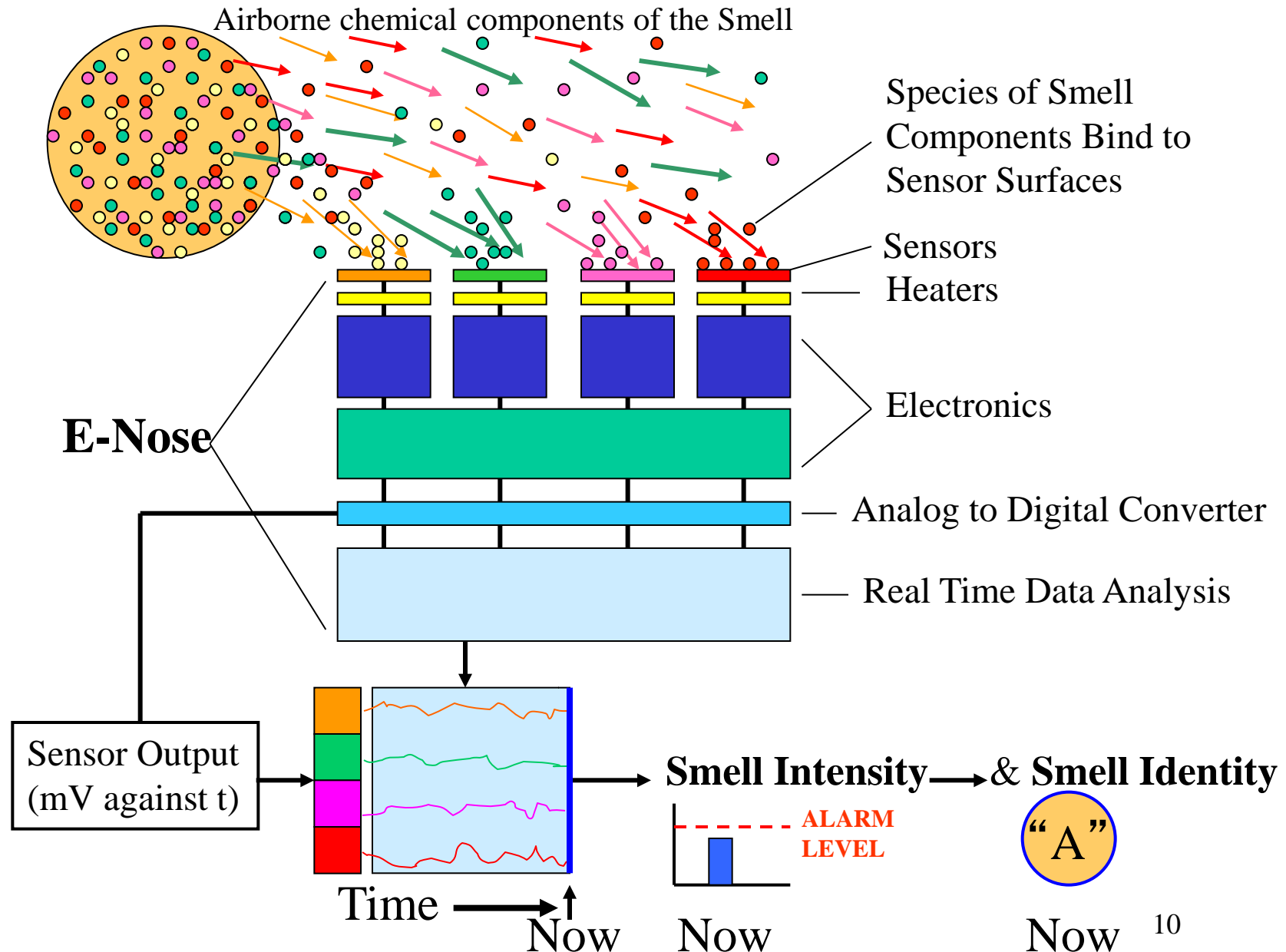
- Product: numerous
- GPS / Phone based systems
- Geospatial reference system
- Multiple users / stake holders
- Log graffiti vandal tags / fingerprints
- Identify high vandal activity areas
- Direct clean-up crews for rapid remediation



## 5. Chemical Detection

- Product: graffit-e-nose<sub>(R)</sub> (E-Nose P/L, NSW)
- Identifies fumes from graffiti paint/ink
- Activates silent alarm (SMS)
- Recipient calls up video-streaming on smart phone and makes assessment
- Verification of attack acted on by Police
- Vandal is caught in the act and identified on video record.

# Smell of "A" (complex mixture of odorant compounds)





# Mk 4 E-Nose

- Integrated with computer and telecoms
- Improved algorithms for target discrimination
- Remotely check-able
- Verify attacks with video stream
- Can switch on/off 4 independent systems
- Under construction: web access to multiple devices



# Mk4 E-Nose 2011













# Results from Mk3 graffit-e-nose® Trials

## **Newcastle C C (Feb-July 09):**

Attacks reduced to Zero. Deterrence Prevails

## **Campbelltown C C (April to July 09):**

Attacks Reduced Deterrence Prevails

New trial: Aug 2011

## **Miranda Community and Scout Hall (ongoing ):**

Attacks Reduced Deterrence Prevails

**4 Arrests (including 2 for drugs and knife)**

## **Sutherland Shire Council (March-May 2010)**

**1 Arrest** Reduced attacks

## **Salisbury City Council, S Aust (Oct – Mar 2009)**

**2 Arrests** Reduced attacks – Increase deterrence

## **Blacktown City Council (Sept – Dec 2010)**

Reduced attacks – Increase deterrence

New trial Sept 2011

## **Penrith City Council (Sept – Dec 2010)**

Reduced attacks – Increase deterrence

New trial: Sept 2011





# One Vandal's Reach **NITRO**

**Skate Park, Library Wall, Community Centre,  
Toilet block, Bus stop, Council Car Park,  
Drop-in Centre, Playground Equipment,  
Street Signage, Bus shelter, Car Park,  
Bridge, Post box, Under bridge, Lane-way,  
Picket Fence, Shop shutter, War Memorial  
Inside bus, Inside train, Train station,  
Outside train, School wall, Fences, Rocks  
in Park, Trees, Club House, Overpass,  
Back of shops, Shopping Centre Access,  
Loading dock, Construction site, bill  
board, Safety Sign, change rooms...**



## Home suburb

Skate Park, Library Wall, Community Centre, Toilet block, Bus stop, Council Car Park, Drop-in Centre, Playground Equipment, Street Signage, Bus shelter, Car Park, Bridge, Post box, Under bridge, Lane-way, Picket Fence, Shop shutter, War Memorial Inside bus, Inside train, Train station, Outside train, School wall, Fences, Rocks in Park, Trees, Club House, Overpass, Back of shops, Shopping Centre Access, Loading dock, Construction site, bill board, Safety Sign, change rooms...

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## Girlfriend's area

Skate Park, Library Wall, Community Centre, Toilet block, Bus stop, Council Car Park, Drop-in Centre, Playground Equipment, Street Signage, Bus shelter, Car Park, Bridge, Post box, Under bridge, Lane-way, Picket Fence, Shop shutter, War Memorial Inside bus, Inside train, Train station, Outside train, School wall, Fences, Rocks in Park, Trees, Club House, Overpass, Back of shops, Shopping Centre Access, Loading dock, Construction site, bill board, Safety Sign, change rooms...

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## Beach area

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What happens

NITRO

NITRO

When you are caught and prosecuted?



Watch...



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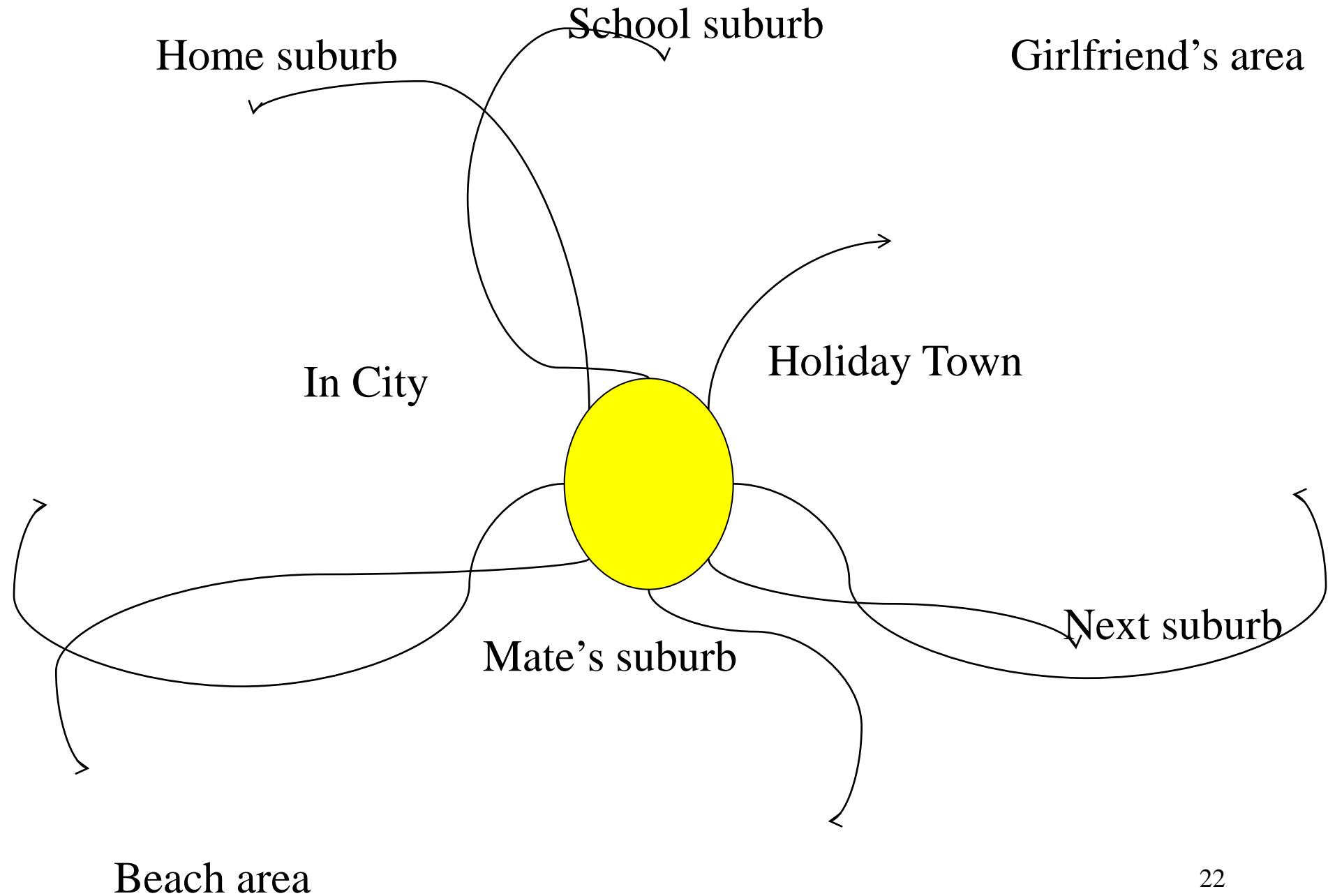
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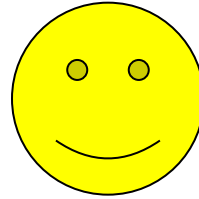
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Home suburb



School suburb



Girlfriend's area



The Community

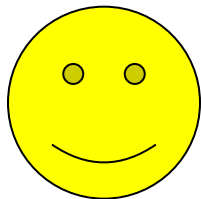
In City

Wins!

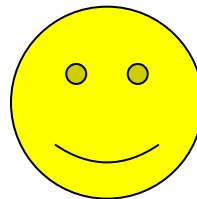
Holiday Town



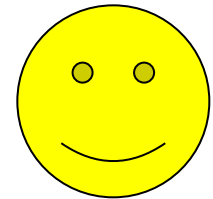
Beach area



Mate's suburb



Next suburb





# Tangible Outcomes

- Arrests & Deterrence of graffiti vandals
- Decreased **costs** of vandalism
- Eradication of ugly mindless graffiti
- Increased Public Satisfaction
- Public Money for Better Uses
- Safer, Cleaner Community Spaces
- Reduced Social Disorder (*Science*, Dec 2008)



# Thank You!

## Acknowledgements

Ben Wright, ATP Innovations  
ATP-Innovations Team: (Hamish, Sally, Britt, Sue)  
E-Nose Team (Martin, Ruan, Brian, Winston)  
Council and Community Supporters

graffit-e-nose ®



(R)

