

GPS Monitoring Pilot Program



Tony Pernas



Responsibilities of Contracting Officers Representative (COR's)

- ◆ Review, and accept or reject all contractor deliverables provided under task orders.
- ◆ Approve or disapprove contractor invoices.
- ◆ Conduct periodic contract surveillance activities such as:
 - * Monthly progress reports

 - * Routine meetings, and spot checks.





FWC

Upland Invasive Plant Program

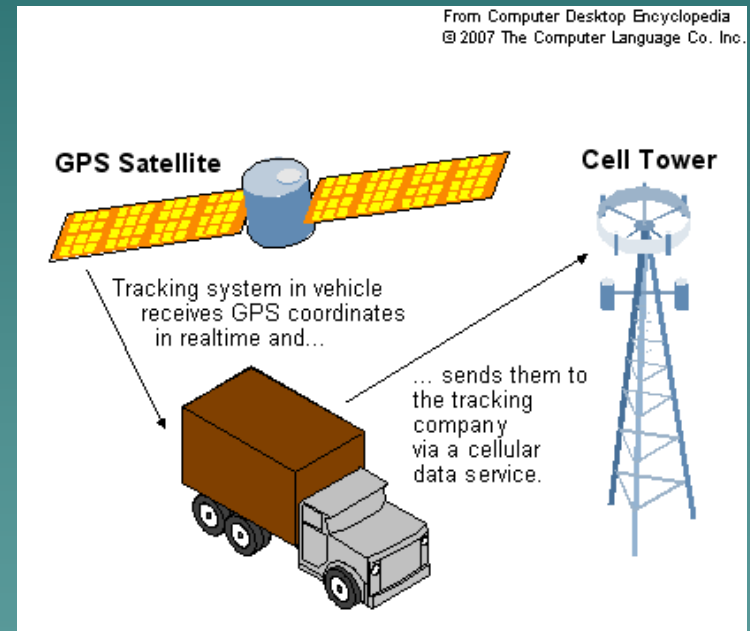
Operational Procedures

- ◆ CONTROL OPERATIONS
- ◆ You should expect the Contractor to contact you and set up a date and time to begin work. It is important for you to meet with the field crew when they arrive for the first time. It is possible that the crew leader is not the representative who conducted the site visit. Review the site boundaries, target species, and any other site-specific conditions with the crew leader and crew. Also, it is quite possible that the Contractor is from another region of the state and the crew may not be familiar with your specific target species.

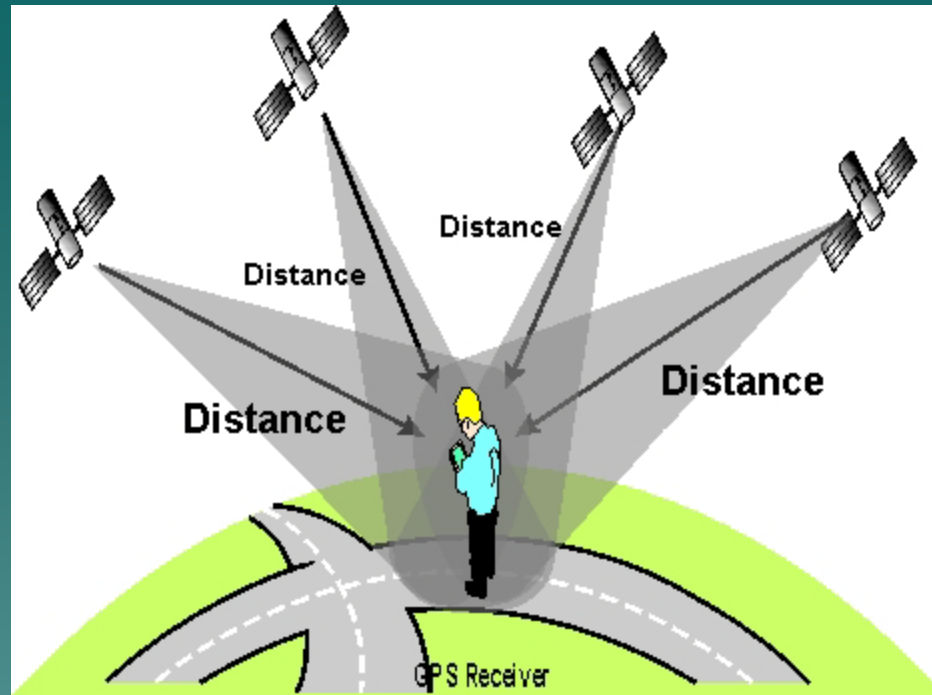
The Contractor's work should be monitored frequently the first few days, and then as you deem appropriate. **History has proven that Site Managers who conduct frequent work inspections get better results.** When the Contractor concludes all work at your site, please review all treatment areas with the crew leader to ensure that all target vegetation has been treated.

GPS Tracking Devices allow us to:

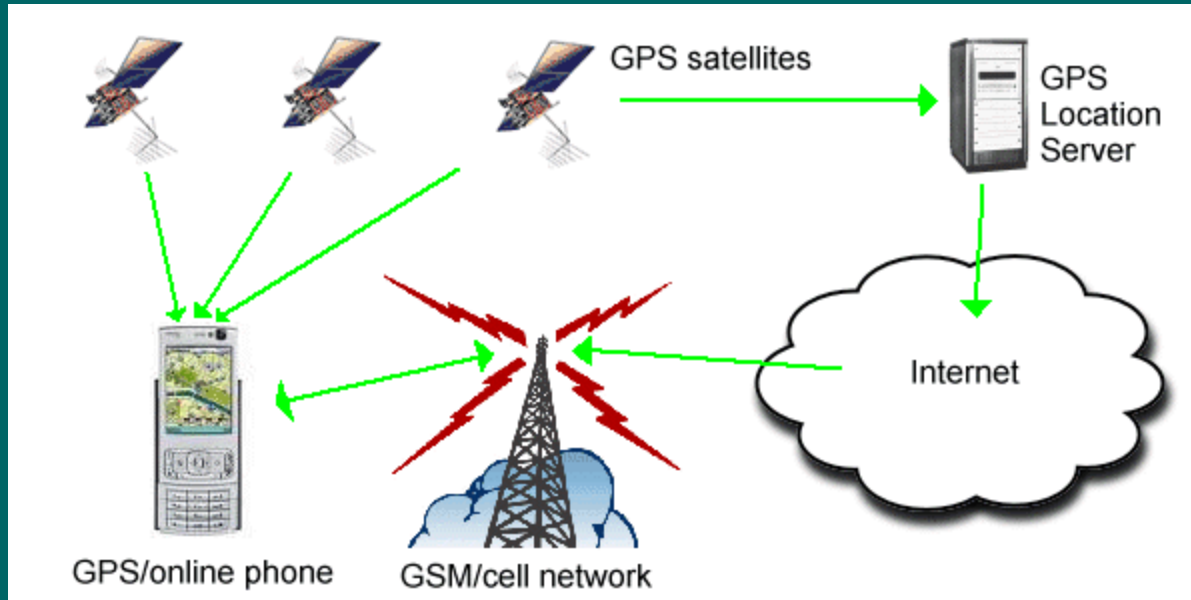
- Verify Time in/Time out
- Identify Treatment locations
- Identify Treatment Routes
- Increase Productivity (+ 30%)



People work harder when Big Brother is watching.



The Global Positioning System (GPS) is a satellite-based navigation system. GPS is a position, velocity and time determination system that is truly global, is able to operate 24 hours a day under all weather conditions, and charges no user fees. GPS offers comparatively high accuracy, when operational conditions are favorable.

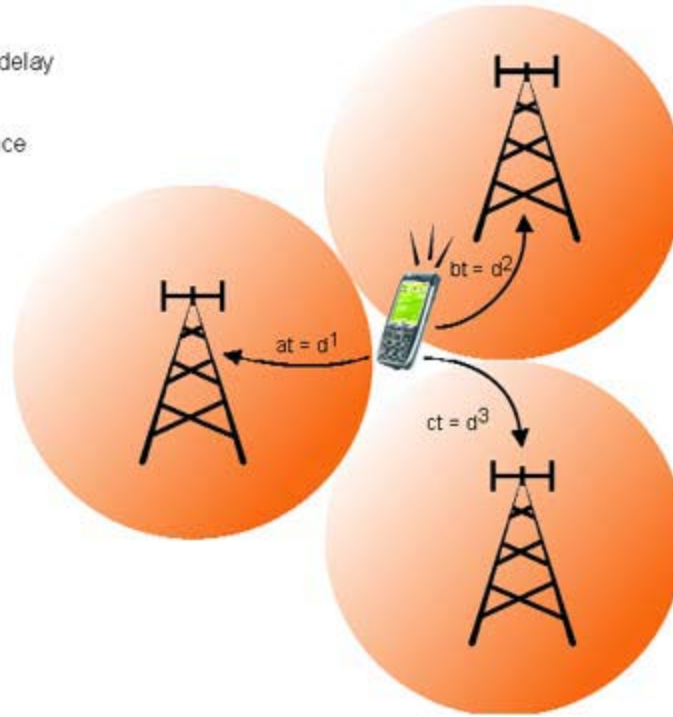


Assisted GPS (A-GPS):

GPS positioning technique whereby there is assistance data provided from a special GPS server/base station by the mobile telephone network. A-GPS enables GPS positioning even in urban and indoor areas and under tree canopy, where the signal is too weak to be acquired using standard signal tracking procedures within the

receiver

a, b, c = delay
t = time
d = distance



GPS Enabled Cell Phones:

GPS positioning technique whereby there is assistance data provided from a special GPS server/base station by the mobile telephony network. A-GPS enables GPS positioning even in urban and indoor areas, where the signal is too weak to be acquired using standard signal tracking procedures within the receiver.

GPS Tracking Categories

◆ Passive

– Tracking Keys/Data loggers (USB)

- ◆ Low Cost ,No Monthly Fees (start at \$199)
- ◆ Long Battery Life
- ◆ Programmable Data Intervals
- ◆ Primarily GPS



GPS Tracking Categories

- ◆ Active (Real Time) - Hosted or Premised Base

- Cellular Wireless Network

- ◆ A-GPS
- ◆ Real Time (Computer/PDA)
- ◆ Double as Emergency Cell Phone (Calls, alarms)
- ◆ Geo Fence Capabilities
- ◆ Monthly Service Fees



- Satellite

- ◆ Real Time (Computer)
- ◆ Emergency Messages
- ◆ Monthly Service Fees



Cell Phone Tracking Categories

◆ GPS Enabled Cell Phones

- Cellular Wireless Network
 - ◆ Real Time (Computer/PDA)
 - ◆ Geo Fence Capabilities
 - ◆ Monthly Service Fees



Note:

Tracking someone without their knowledge can get you in trouble.

Most GPS Tracking software run invisibly in the background behind all other applications. Many also silently record the entire text of all SMS text messages along with the associated phone number and are available to the administrator via a web interface.

NPS GPS

Contractor Monitoring Pilot Project

Implementation

- ◆ Selected a Hosted GPS Tracking System (Laipac Inc.)
- ◆ Hardware = S-911
 - Ease of Use
 - Memory
 - Emergency features
 - Costs 25 units (\$249+ \$30/month)
 - Increased Productivity?



- ◆ Annual projects = \$600,000
 - ◆ 30% increased productivity = \$180,000
 - ◆ 15% = \$90,000
 - ◆ 10% = \$60,000
 - ◆ 5% = \$30,000
 - ◆ 2.5% = 15,000
-
- ◆ \$15, 650 Initial
 - ◆ \$9,000 each year after

NPS GPS

Contractor Monitoring Pilot Project

Implementation

- ◆ Falling triggers the G-Sensor
(alert sent via email/text message)
- ◆ Geofence
 - Email/Text Message when unit leaves pre-defined area.
- ◆ Safety



NPS GPS

Contractor Monitoring Pilot Project

Implementation

- ◆ One GPS unit per individual/per project
- ◆ Contractor responsible for charging, maintenance etc.





Applied Aquatic Schinus Project- BICY

- ◆ Track progress of project throughout park
- ◆ Stores data for 30 days
- ◆ Locate group in real-time


Breadcrumb Trail



Southeastern Chemtreat EVER Project

◆ Show polylines to view breadcrumb trail

Event History


Welcome, ipcViis [Logout](#)

Event History Reports

MAP FUNCTIONS


- Locate Device
- Locate Group
- GeoFence Setup

REPORTS



- Event History
- Log Reports

PROFILES

- Device Profiles
- User Profile
- Change Password
- Help



Device:  Bobby4509 Event Type: Breadcrumb Trail

From (Date/Time)

08/06/2009  00:01 

(DD/MM/YYYY) (HH:MM)

To (Date/Time)

12/06/2009  23:59 

(DD/MM/YYYY) (HH:MM)

Report Summary
Generate Report
Show on Map
Print
Export to Excel

Total Positions: 903 | Distance: 29.0(km)

Unit ID	Received	Location	Latt/Longt	Speed
40051935	19/06/2009 13:26:26	null	18.335137/-64.938082	.00
40051935	19/06/2009 13:28:44	null	18.335052/-64.938167	.00
40051935	19/06/2009 13:29:54	null	18.335123/-64.938208	.00
40051935	19/06/2009 13:32:01	null	18.335040/-64.938275	.00
40051935	19/06/2009 13:32:45	null	18.335055/-64.938217	.00
40051935	19/06/2009 13:33:09	null	18.335218/-64.938058	2.74
40051935	19/06/2009 13:33:20	null	18.335335/-64.938010	.00
40051935	19/06/2009 13:33:28	null	18.335423/-64.937938	.00
40051935	19/06/2009 13:33:39	null	18.335525/-64.937812	.00
40051935	19/06/2009 13:33:41	null	18.335537/-64.937805	.00
40051935	19/06/2009 13:33:53	null	18.335632/-64.937732	3.94
40051935	19/06/2009 13:34:09	null	18.335795/-64.937503	.00
40051935	19/06/2009 13:34:18	null	18.335847/-64.937505	2.82
40051935	19/06/2009 13:38:06	null	18.336070/-64.937100	.00
40051935	19/06/2009 13:43:17	null	18.336112/-64.937210	.00
40051935	19/06/2009 13:48:19	null	18.335940/-64.937337	.00
40051935	19/06/2009 13:52:19	null	18.335855/-64.937307	.00
40051935	19/06/2009 13:52:51	null	18.335877/-64.937168	.00
40051935	19/06/2009 13:56:37	null	18.335865/-64.937125	.00
40051935	19/06/2009 13:56:46	null	18.335918/-64.937157	2.65
40051935	19/06/2009 13:57:41	null	18.335898/-64.937312	.00
40051935	19/06/2009 14:02:47	null	18.335922/-64.937312	.00
40051935	19/06/2009 14:07:49	null	18.336092/-64.937427	.00
40051935	19/06/2009 14:17:52	null	18.335575/-64.939968	.00
40051935	19/06/2009 14:19:47	null	18.335425/-64.940350	.00
40051935	19/06/2009 14:19:53	null	18.335377/-64.940367	3.14
40051935	19/06/2009 14:25:16	null	18.334933/-64.940952	.00

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◆ Track individual units

Check Accuracy of Data Sheets

Device: 1917 Event Ty

From (Date/Time)

24/03/2009 00:01

(DD/MM/YYYY) (HH:MM)

Report S

Total Positions: 85 | Distance: 14.0(km)

Unit ID	Received
40051917	24/03/2009 06:08:14
40051917	24/03/2009 06:13:15
40051917	24/03/2009 06:28:19
40051917	24/03/2009 06:33:20
40051917	24/03/2009 06:38:21
40051917	24/03/2009 06:43:23

Start Time

40051917	24/03/2009 15:06:33
40051917	24/03/2009 15:11:34
40051917	24/03/2009 15:16:35
40051917	24/03/2009 15:21:37
40051917	24/03/2009 15:26:38
40051917	24/03/2009 15:36:40
40051917	24/03/2009 15:41:42
40051917	24/03/2009 15:46:43
40051917	24/03/2009 15:51:44
40051917	24/03/2009 15:54:02

End Time

Date: 3-24-09

DAILY PROGRESS REPORT FOR VEGETATION MANAGEMENT

WO #	TRTMT TASK #	FUND	AREA	FUNDED PROG	FUNCTIONAL LOCATION	CONTRACTOR
	T245080103			PRNT-2008-1	DEEP LAKE UNIT	APPLIED AQUATIC MANAGEMENT


RESOURCES	EFFECTIVE TIME	TRAVEL TIME	LOST TIME	SURVEY / INSPECTION	PLANNING / PREPARATION	TOTAL TIME
SUPERVISOR	10					10
LABORER	70					70
SUB TOTAL						

START TIME: 6:45 AM END TIME: 5:15 PM

DEP PROGRAM:
Effective Time
Travel Time Vehicle
Travel Time Plant
Lost Time Weather
Minor Repairs
Other Duties / Miscellaneous
Holiday / Leave
Survey / Inspection
Preparation
Removing Obstructions
Administrative / Planning

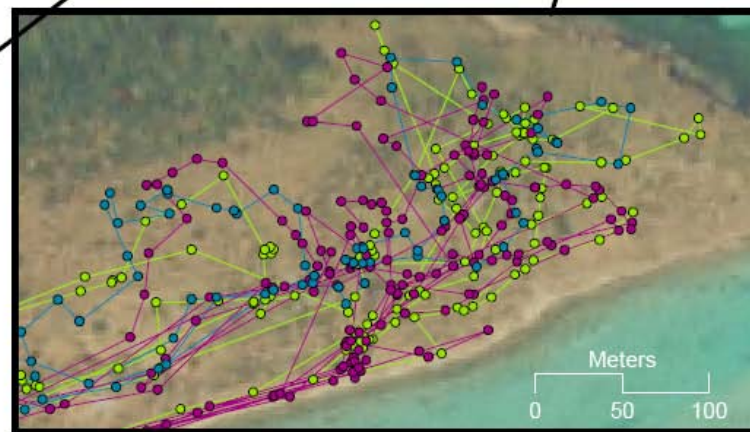
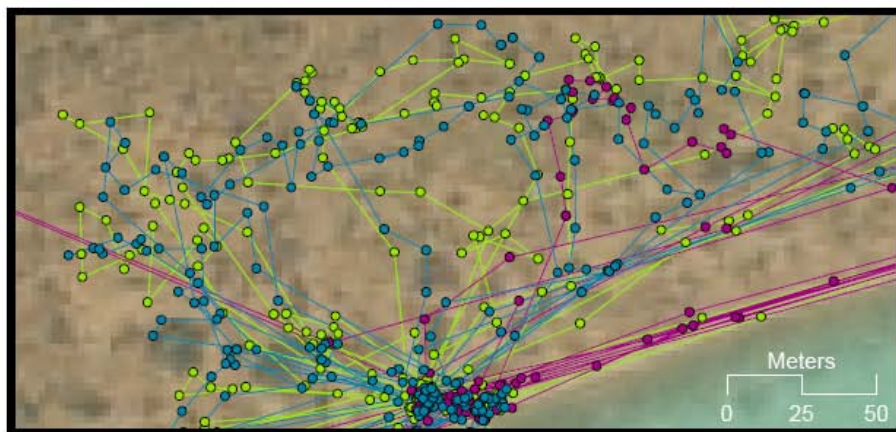
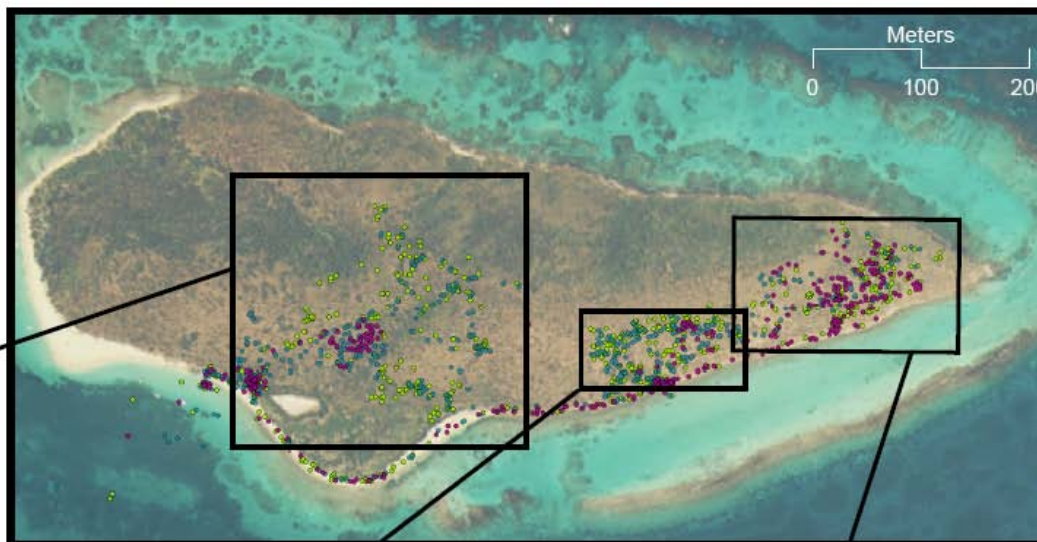
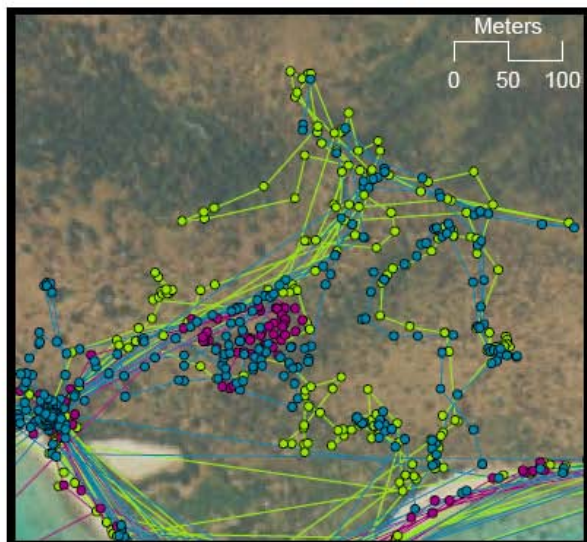
WIND MEASUREMENTS	CONTRACTOR PERSONNEL	DEP PROGRAM ONLY
TIME VEL DIR	NAME HOURS	WATER BODY NAME:
	Mike Cunningham 10	
	Mulnard Velasquez 10	
	Francisco Velasquez 10	
	Otoniel Perez 10	
	Eusebio Salas 10	
		COMMENTS (weather / etc.):
		A.M. mostly cloudy 62° to 75°

Data Storage and Manipulation

- ◆ Export data into Excel
 - ◆ Import as table into ArcGIS
 - ◆ Display as Point
 - ◆ As Lines (Hawthes Tools- Animal Movement)
 - ◆ Display with imagery, park boundaries, vegetation inventories
- 

Earth Balance Exotic Plant Removal Project- Buck Island Reef National Monument

National Park Service Exotic Plant Management Team



Three GPS tracking devices were used to record contractor locations at five minute intervals throughout the duration of the project. The breadcrumb trails symbolize the path taken by each individual contractor.

Legend

- 1920 Recorded Locations
- 1913 Recorded Locations
- 1927 Recorded Locations
- 1920 Breadcrumb Trail
- 1913 Breadcrumb Trail
- 1927 Breadcrumb Trail





2009 BICY Schinus Treatment

Pros

- ◆ Identify Coverage of Treatment Area
- ◆ Overlay Over Treatment Locations
- ◆ Safety
- ◆ Approving Invoices

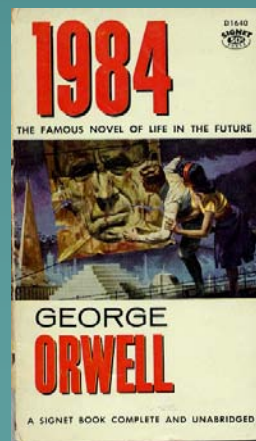
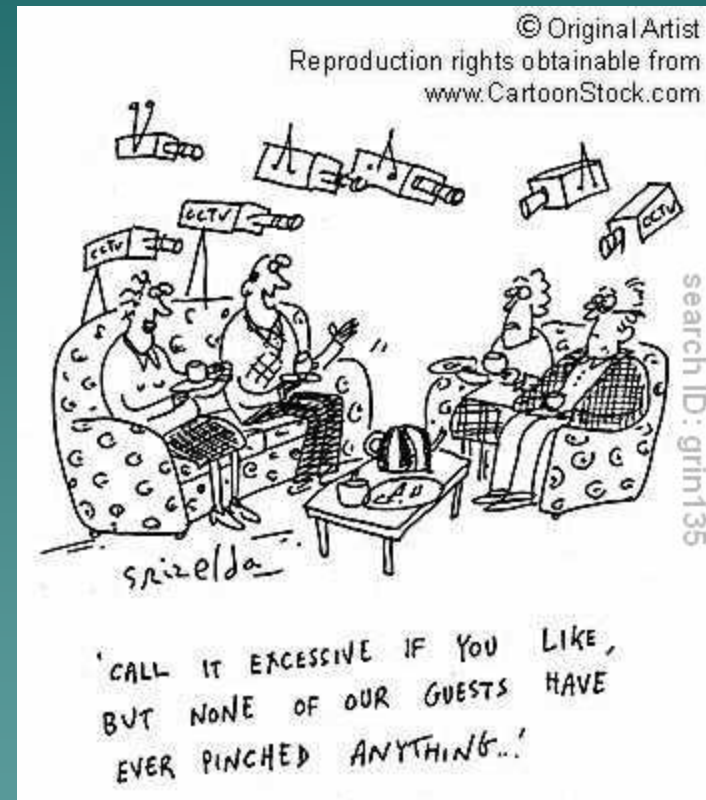


Limitations

- ◆ Spotty coverage in Northern BICY
- ◆ 30-day online data storage limit
- ◆ Misuse by contractors

Technology !!!





usbpro



GPS Signal Blocker / Jammer