

# **Protecting Sensitive Areas Against Wireless Threats**

**John Piccininni** johnp@inpixon.com



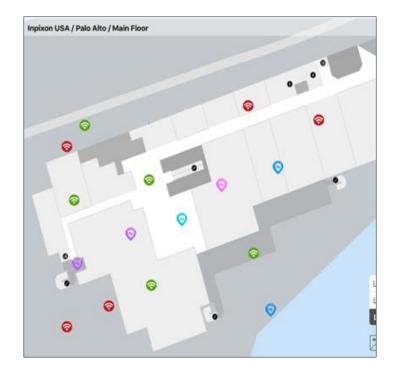


## **Three Fundamental Pillars of Indoor Intelligence**

#### MAPPING



#### POSITIONING

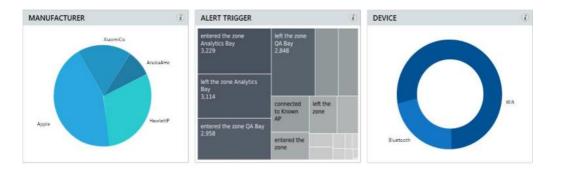


#### **ANALYTICS**



## **Security Applications**







### **Device Detection**

Detect and position the location of fixed and mobile wireless devices for cyber and physical security.

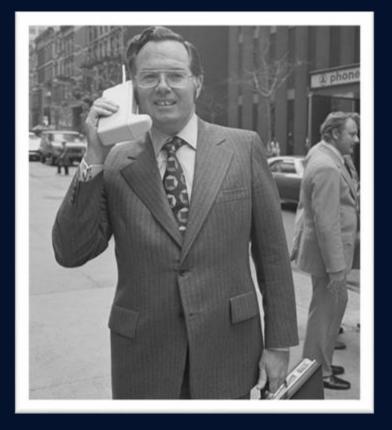
## Analytics and Trend Reporting

Track wireless activity over time in easy to understand reports for any or all areas over definable time periods. Spot anomalies and persistent threats.

## Long-Range & GPS - Outdoor

RTLS for tracking assets and people via GPS and private, secure 900MHz networks.





#### **April 3, 1974** First cellular phone call

## April 4, 1974

Government bans cell phones in government buildings





# One way to manage risk



# Mobile device connections have surpassed the number of people in the world



## 4.75 Billion

Mobile phone users in the world



**61.62%** Of people today own mobile phones

All can be potential threat vectors.



# Threats can come from anywhere or anyone, maliciously or inadvertently

© Inpixon | All Rights Reserved | Inpixon.com



## **Embrace** Secure Comply



#### inpix@n Indoor Intelligence\*

# 1. Increased Productivity: Frost & Sullivan estimates that 52 minutes of productivity are lost per day due to not having a smartphone at work.

2. Improve Morale: 6 of 10 federal agencies have declining employee engagement scores. (Partnership for Public Service Survey, 2018)

Reasons

Wireless

Mobility

to **Embrace** 

- 3. Enhance Recruiting Efforts: 4 Of 10 millennials refuse to work for organizations that ban the reasonable use of personal devices in the workplace. (2016 Economist Intelligence Unit Survey)
- 4. Maintain Security: 4 of 10 federal employees are willing to sacrifice government security measures in order to use a device at work, for convenience or to contribute to mission success efficiently. (Market Cude Survey, 2015)





Directive No. 510



Mobile Device Directive



Directive ACD 470.6



"Personal and unclassified government-issued mobile devices are prohibited in secure spaces but may be used in common areas."

"All camera functions must be disabled and all microphone functions must be restricted to only the native application while in secure spaces."

"Secure spaces operating for more than 30 days must be equipped to *continuously monitor* the facility for unauthorized mobile devices, and ensure the identification, enumeration, logging and locating of all authorized and unauthorized mobile devices."

"This ACD prohibits the introduction into secure spaces of personally and contractor owned mobile devices not fully managed by a DOE/NNSA enterprise mobility management system." (NNSA ACD 470.6)



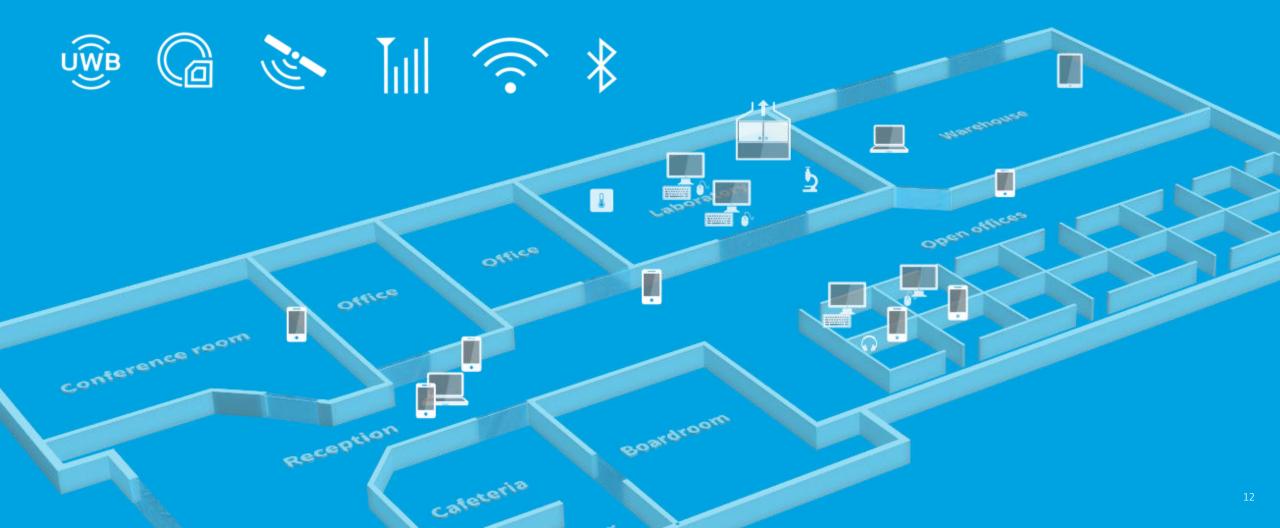
## **Detect and Identify electronic devices**

#### 

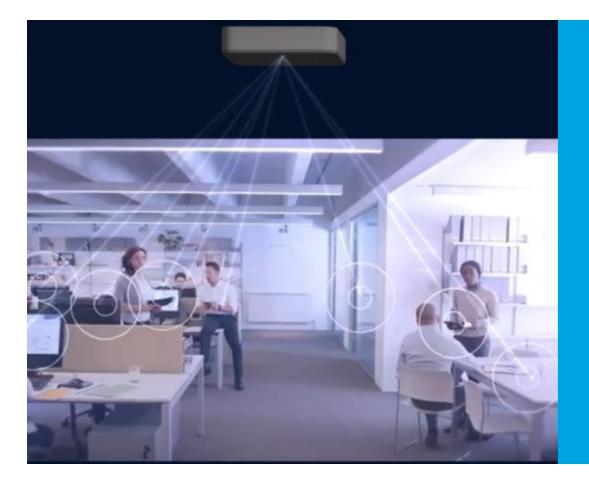
© Inpixon | All Rights Reserved | Inpixon.com



## Visualize your wireless environment



## **Inpixon Aware for Security**



- Detect the Presence of RF Devices
- WiFi, Bluetooth, Cellular, Active RFID
- Locate devices on floorplans
- Record all RF activity for later review
- Differentiate known vs unknown
- Discover rogue devices and AP's
- Geofence secure areas
- Integrate with other platforms

# Inpixon Sensor 4000

#### Wi-Fi Bluetooth Cellular

- Cell Phones, Tablets, Laptops
- Cellular Broadband Cards
- Mobile Hands-Free Headsets
- Personal Heath & Fitness Devices
- And More...





# **Typical Installation**

#### inpixon Indoor Intelligence"

#### Inpixon 4000SE Sensors

# 

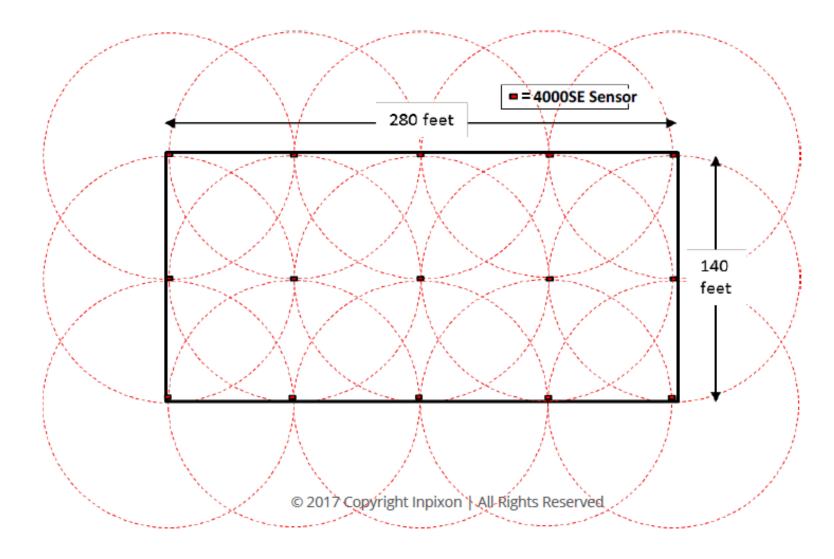
**PoE Network Switch** 

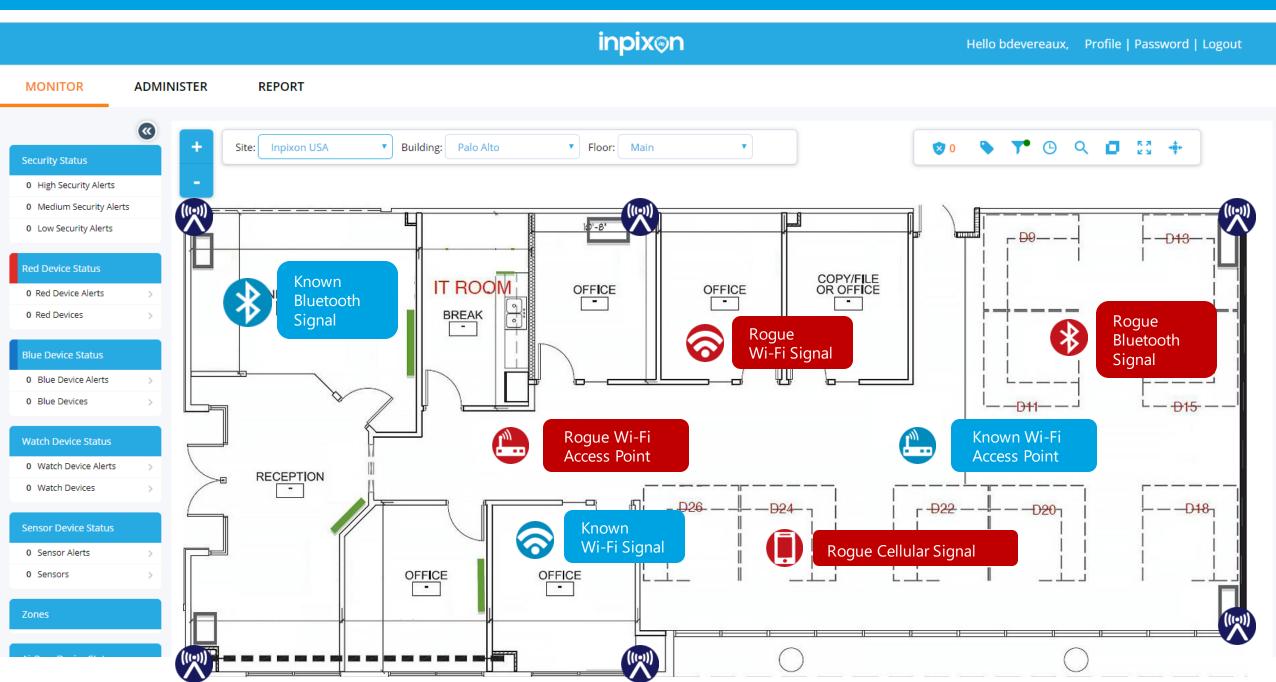
#### Server Running Inpixon ZoneDefense<sup>™</sup> Software





## **Continuous Area Coverage**

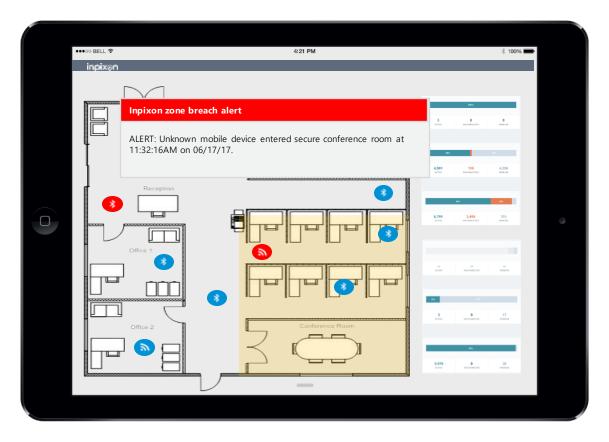




© Inpixon | All Rights Reserved | Inpixon.com



## **Aware Alerts**



## 0

#### DETECTION

Passive identification of all devices on the premises



#### **PREVENTION**

Alert notification based on rules when unknown devices are detected in restricted area

## CONTIN

#### **CONTINUOUS PROTECTION**

Proactive policy administration for secured zones through MDM, Asset Tracking and Multifactor Authentication



## **Device Mitigation — MDM Integration**



Policies sent and applied to mobile device

## **Portable Sensor Kit**

#### QUICK DEPLOYMENT PORTABLE

Includes:

- Five (5) 4000SE Sensors in Housings
- Five (5) Tripods for Sensors
- Six (6) Batteries
- One (1) NUC Computer
- Three (3) Shipping Cases
- Cables and mounting brackets
- Five (5) Zone Defense Software Licenses
- Wired or wireless sensor communications.





Note: Sensors may be used without stands, case closed during operation.

## **Forensic Analytics**

2



ALERT REPORT

npixor	1					Q	
	1		DEVIC	E BRAND	REPOR	т	
START DATE	🗂 END D	ATE	E BURDING	EP FLOOR			
June 03. 2019	June 06.	2019	V Cynosure		- Main		
പ്പ 219		(ED)	226,643		11	,076,010	
٠. ۱	anufacturers	(III)	Unique Devices	- ) ) ) )		evices	
M.	anufacturers		Unique Devices			evices	Seen
MAC COUN	г						
icceRcgl/28 1,552,433		SamoungE 708,840	Matacola 665,537	Netgea 397,9	r Xiao 02 393	miCo .513	RuckusWi 382,773
		HewlettP	IntelCor	Azureway	BestitWo	Guangdon 200,214	OneplusT
		349,700	302,902	205,646	203,868	200,214	181,240
1,177,824							
		Cisco 324,702	HuaweiTe 297,025	Smartlin 177,411	LiteonTe 117,960		
		CompexPt 310,684	Apple 290,659	ViveMobi 161,422	Ubiquiti 78,305		
				GenexisB 143,688	AsustekC 60,891		
		Shenzhen 303,561	Zte 226,709	ArubaAHe	Private 59,689	Htc	
				134,141	Longchee 58,001		
DETAILED REPORT							
Manufacturer	N T	MAC	lluiding		Floor Title		Mac Count
3com -	000102030A3A		V Cynosure	Main			10
Jcom	000102030AA5		V Cynosure	Main			6
3com	000102030608		V Cynosure	Main	Main		15
3com	0001020309FD		V Cynosure	Main	Main		3
Advanced	58109189C350		V Cynosure	Main			1
AirgoNet	0004F5C3C108		V Cynosure	Main			4
AirgoNet	000AF5E0FA60		V Cynosure	Main			2
AirgoNet	00AF50BC34C		V Cynosure	Main			3

DEVICE BRAND REPORT

Balt Lawi And B. 2019 Balt Balt And Balt And B. 2019 Balt Balt And B. 2019 <th colspan="4"></th> <th colspan="8">CELL PHONE REPORT</th>					CELL PHONE REPORT							
And 10. 2019 And 00. 00. 00. 00. 00. 00. 00. 00. 00. 00	START DATE							Ci BUILDING	HP RUCCH			
SM 2 (m) SM 2												
NAT/DOP NOT NO	DEVICE	E CATE	GORY									
Out     Out <td>884.72MHz</td> <td>GSM</td> <td>GSM</td> <td>GSM</td> <td></td> <td></td> <td></td> <td></td> <td>1971.50MHz</td> <td></td>	884.72MHz	GSM	GSM	GSM					1971.50MHz			
Solu     Solu <th< td=""><td>203</td><td>GSM</td><td>GSM</td><td>GSM</td><td></td><td></td><td></td><td></td><td>2,294</td><td></td></th<>	203	GSM	GSM	GSM					2,294			
Billow     Out     Out<			GSM	GSM	GSM							
Image: constraint of the		GSM		GSM	GSM	GSM						
CADA Construction     Cama Construction			GSM		GSM	GSM						
152     ONA     ONA <td>885.32MHz</td> <td>USM.</td> <td>GSM</td> <td></td> <td>GSM</td> <td>G5M</td> <td></td> <td></td> <td></td> <td></td>	885.32MHz	USM.	GSM		GSM	G5M						
CAM     CAM <td></td> <td>GSM</td> <td>CSM</td> <td></td> <td>GSM</td> <td>GSM</td> <td></td> <td></td> <td></td> <td></td>		GSM	CSM		GSM	GSM						
COM     COM <td>GSM 884.42MHz</td> <td>GEM</td> <td></td> <td>GSM</td> <td>GSM</td> <td>G5M</td> <td></td> <td></td> <td></td> <td></td>	GSM 884.42MHz	GEM		GSM	GSM	G5M						
OM Elitaria     OM Elitaria     OM Exit (M)			GSM	GSM	GSM	G9M						
1,252 1,258 1,210 1,07 1,352 1,358 1,210 1,07 000000 0,0000 0,000	GSM 884.87MHz	GSM	GSM	GSM	GSM	GSM	GSM					
								1,358	1,e IV	1,077		
	1,488 Low	SM Device 2 MHy 2 MHy 2 MHz 2 MHz				203 35 52 134	unt	CDMA 1973.10841:	50 C	Deske Count 852 458 358 175		
GSM - 884 87MHz 121 WCDMA - 197150 MHz 2,234	1,488 Low GSM DEVIC GSM - 885.0 G3M - 885.0 G3M - 885.4	SM Device 2 MHy 2 MHz 2 MHz 2 MHz 2 MHz				203 186 152 134	unt	CIMA 19/2 Jonet: 1,175 COMA DEVICE COUNT COMA / 19/2004 Devi COMA		Device Count 852 458 358 175		

3

CELL PHONE REPORT

## **Analytics**

			AS	SESSMENT REPO	DRT
START DATE	END DATE	SURDING	HT ALDOR	DEVICE TYPE	DEVICE CATEGORY
June 03, 2019	June 06, 2019	V Cynosure	Main	~ Wifi	Known Wifi Acces
HEAT M	AP				
-					
	100 ET 101 ET 101	Cabin 5 Diam			Cafeteria/Pantry
EPI			a 10°-7"	8-0" x 9-10"	19'-8" x 9'-10"
1	Contraction		-		
4	2 Parts				UPS
Cabin	11/1-		A	Second prove the second	8'6" x 5'-0"
10-0	· / · · · · · · · · · · · · · · · · · ·			1	
	0 0		AU 101.	11 10	Server 8'-4" x 8'-9"
		and had been	fr os 2 Confe	ence 3	
a -		10	x 9-6* 10'-6*	946*	
Cabin 3 10'-0" x 9			2 10	1	
					Open Storage
Cabus 2		2			× 13-7*
10-0" x 9-		6		and an a set a set 3	* * *
alt-		regen al Calendaria	Tel Tel		
			Aratar Lanard		
			73 Workstations		
Cabin 10'-0' s s	1		49'-0" x 48'-3"		
		1	Leafer-3 TLeafer-4 6-6*x7-3* 6-6*x7-3*		A ROOM A
10'-0" 1	7-6*				
10.0	*				Closed Cat
*	Cabin				Closed Cab 8'-6" x 20'
*					Closed Cal 8-6" x 20
*	Cabin				8-6* × 20
*	Cabin				Closed Cab 8'-6" x 20"
*	Cabin x 15:0*				8-6" x 20"
*	Cabin x 15:0*				8-6" x 20"
	Cabin x 15:0*				8-6" x 20"
*	Cabin x 15:0*				8-6" x 20"
* MD	Cabin x 15:0*			BLUETOC	8-6" x 20"
* MD	Cabin x 15:0*				5-6* 3.20"
Low MIFI DEVICES					TH DEVICES
In the second se	550	Manufachurer	Cland Seafty	Date	TH DEVICES
	500 BLA A TOCOMECTIVETIN	Mechicure Jam	Cherrol Security WPA2.792	Dute 01, 2019 04607A978	Image: Section of the sectio
Low WIFI DEVICES	Star	Mendesure Join Join Join Join Join	Chanal Beauty West, 197	Date     04607A978       June 03, 2019     04607A978       June 03, 2019     04459D28J	Ker x20       Cobin 0       Cobin 0 <td< td=""></td<>
MD 15-07 15-07 16-	Case So So Autoconectiver Autoconectiver Autoconectiver Autoconectiver	Mandatane Jam 12 Jam 12 Jam 12	Chanal Security W021278 W02278	Date     Aure 01, 2019     0.4607/4978       June 01, 2019     0.4650288     0.4650288       June 01, 2019     0.40151580     0.40151580	Max     Other       NA     Ame 81.2       AB     Ame 81.2
Mop 15-07 15-07 15-07 15-07 100 1	50 B.A. A TOCORNECTION B.A. ATOCORNECTION B.A. ATOC	Next Chickson     1       Jacon     1       Jacon     12	Chanal Security W932,554 W932,554 W932,554	Date     Ox6073878       Aure 03, 2019     Ox46074878       Aure 03, 2019     Ox4653028       Aure 03, 2019     Ox4051259       Aure 03, 2019     Ox4051259       Aure 03, 2019     Ox60553873	Image: Second
	50 BA ATCOMECTIONE BA ATCOMECTIONE BA ATCOMENT MATE BA ATCOMENT MATE	Manufacture     I       Manufacture     I       Jacrit     I <td>Clevel Security W012/52 W012/52 W012/52 W012/52 W012/52</td> <td>Date     Outpute       Aune 01. 2019     OA60734778       Aune 01. 2019     OAA550284       Aune 01. 2019     OAA512298       Aune 01. 2019     OADE12598       Aune 02. 2019     OB66523873       Aune 03. 2019     OB66523873</td> <td>нородина на страна на страна</td>	Clevel Security W012/52 W012/52 W012/52 W012/52 W012/52	Date     Outpute       Aune 01. 2019     OA60734778       Aune 01. 2019     OAA550284       Aune 01. 2019     OAA512298       Aune 01. 2019     OADE12598       Aune 02. 2019     OB66523873       Aune 03. 2019     OB66523873	нородина на страна на страна

5

**ASSESSMENT REPORT** 



### **SYSTEM ISSUE REPORT**

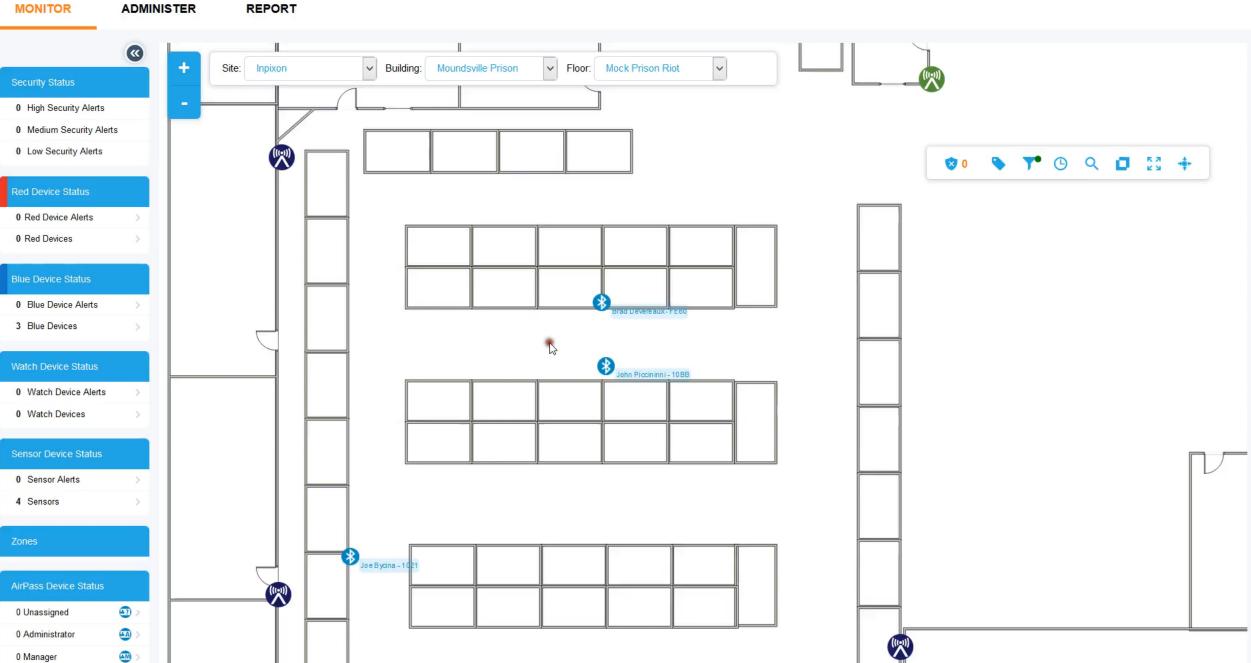


**SECURE YOUR** DOME

#### ZONE**DEFENSE**



V





## Long Range Outdoor Positioning Solutions

Inpixon | All Rights Reserved | Inpixon.com

## **GPS900 Solves Tough Problems**

## inpixon

#### Ground Situational Awareness

Precision Impact missions are dangerous and require highly accurate positions to track personnel

#### **Real-Time Surveillance**

- Up to 1-second update rate
- Long range, up to 40-miles line of sight
- Off-grid and secure Fully encrypted over-the-air messages
- Accurate Time-Space-Position Information (TSPI) provider

#### Unwieldy Existing GPS Solutions

Existing GPS transmitters are either the size of briefcases or do not support both personnel and vehicle tracking.

#### Nimble

- Deliver location-based messaging to users real-time
- Combined Transmitter Unit (CTU)
- Portable, light-weight handheld and personnel tracker
- Mount to vehicles with high-gain RF and GPS antennas for improved range

## **3**. is

## Target Tracking is Expensive

Not cost-effective to incorporate GPS into existing targeting missions.

#### **Cost-effective TSPI**

- Cost-effective provider of accurate Time-Space-Position Information (TSPI)
- Save up to 90% compared to existing solution, enabling the targeting use case

## inpix⊛n

# GPS 900 Ground Personnel and Asset Tracking System

Identify and plot position of personnel and assets across large bases and test ranges

- Warrior Safety
- Asset Management
- Small Lightweight Transmitters
- GPS Positioning
- Proprietary (non-SIM) encrypted communications
- Integrate with base C2 systems



## inpix⊚n

#### **GPS Components**

- Transmitter (CTU)
- Repeater (Solar Power Available)
- Receiver
- Converter (Software)

#### **Key Features**

Long Range: Up to 40-mile range (Line of Sight)

900MHz ISM band: 1-Watt Transmit Power

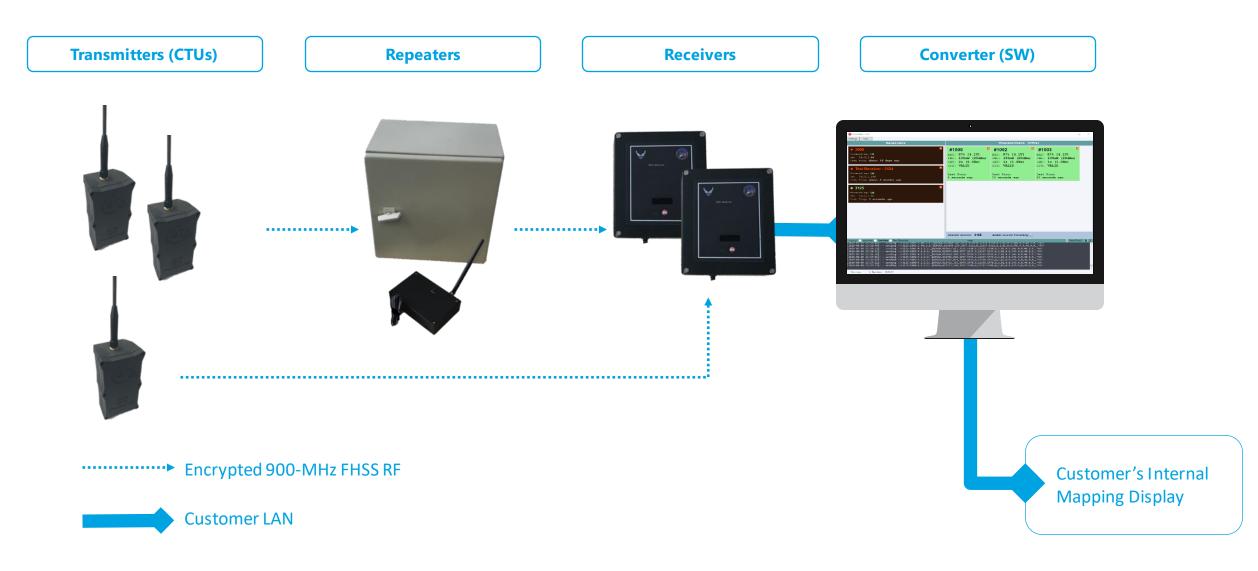
Secure: 256-bit AES over-the-air encryption

**Extendable Range:** Receivers and Repeaters extend system range

**Solar Powered Repeaters:** Solar Panel and Solar Batteries allow Repeaters to operate for months in remote terrain without standard AC

**Real-Time Surveillance:** On-premise Converter software provides position data to Internal Mapping Display and serves as Live Operations Display

## **GPS System Architecture**



inpixon

# You can never have enough security...

...only more.



## **Redefining Wireless Security**

Inpixon's patented technologies help you to detect, position and react to potential wireless device threats to tip the risk/reward scale into your favor



#### Mapping

Create dynamic, tailored map-enabled solutions that address myriad use cases



#### Positioning

Locate and track wireless devices using on-device or external sensors, ensuring security and privacy



#### **Security**

See the unseen with wireless device detection to pinpoint unauthorized devices, enforce no-phones zones and more



#### **Analytics**

Forensic and investigative reporting tools for insight into breaches, device types, recurring anomalies, busiest areas and more over time.



Realize workflow efficiencies



# **Thank You**

PRESENTED BY: John Piccininni johnp@inpixon.com

