

OVERVIEW OF BROWARD COUNTY'S REGIONAL PUBLIC SAFETY RADIO SYSTEM (AFTERNOON PRESENTATION)

July 11, 2018



TRACY JACKSON

Director – Broward County

Regional Emergency Services and Communications

CURRENT SYSTEM

- Law Enforcement
- Fire / Emergency Medical Services
- Department of Detention
- County Agencies (Public Works, Medical Examiner, Parks, Traffic, Streets and Hwy, Waste Water Services, Facilities, Aviation, Port Everglades, Animal Control, Inspector General)
- Broward School Board (County's current 800 Mhz system contains frequencies licensed to School Board)
- Interoperable partners (state, federal and local)

Proposed New Public Safety Radio System

- New system will be exclusive to Public Safety users, to be operational fourth quarter 2019

Proposed New Local Government Radio System

- County is establishing a Local Government Radio System, to be operational in first quarter 2019 for County agencies, scalable to include others optionally
- School Board, Fort Lauderdale, and West Park have expressed interest in participating in the Local Government Radio Program

- County hired Mission Critical Partners to engineer the new system after consultation with police, fire, and communications disciplines
 - User Interviews and Focus Groups
 - Online User Surveys
 - Needs Assessment – September 2015
 - Federal and State Agencies and related requirements
- Recommendation – County to procure a trunked system

- Frequency Availability
- Number of User Agencies
- Agency Operational Requirements
- Flexibility to Grow TalkGroups without Growing Infrastructure
- Security
- Data Functionality
- Backup and Redundancy

- No system has unlimited capacity
- Every system (conventional and trunked) has trade-offs
- Trunked systems – many more Talkgroups than Channels – 700 Talkgroups and 28 Channels in Broward
- FCC requires trunking when using more than 5 frequencies/channels
- Broward has insufficient number of frequencies for a conventional system

DANIEL SANCHEZ

MSSSI Vice President & Director
Florida Government & Public Safety
Motorola Solutions Inc.

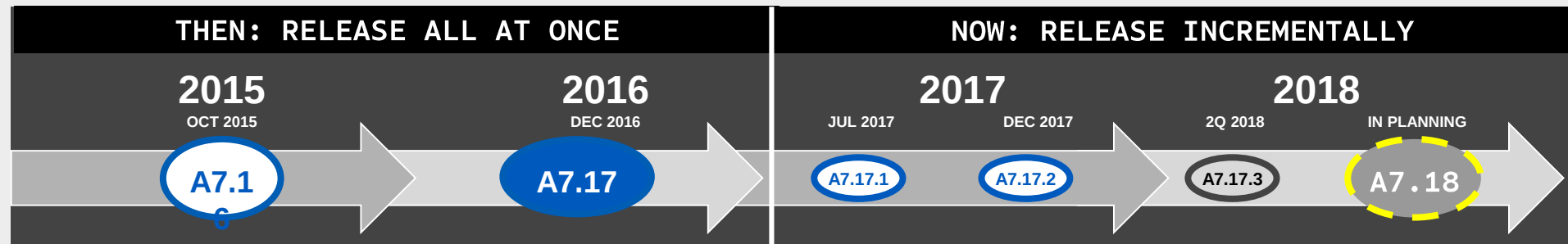
ASTRO 25 M3 Trunked Core

- Highest tier system in P25 System Portfolio
- Latest software with new releases annually
- Hardware and software “refresh” every two years

Scalable platform designed with flexibility

		 Multisite		 Statewide/Regional	
Standalone	Express Site	K-Core	L-Core	M1/M2-Core	M3-Core
Conventional	Trunking	Conventional	Trunking	Conventional	Trunking
1 Site	1 Site	1 – 75 Channels	1 – 5 Sites	Single Zone Up to 24/75 Sites	1 – 150 Sites per zone
					
Up to 100 users per channel	Up to 16,000 users	Up to 16,000 users	Up to 16,000 users	Up to 16,000 users	Up to 250,000 users

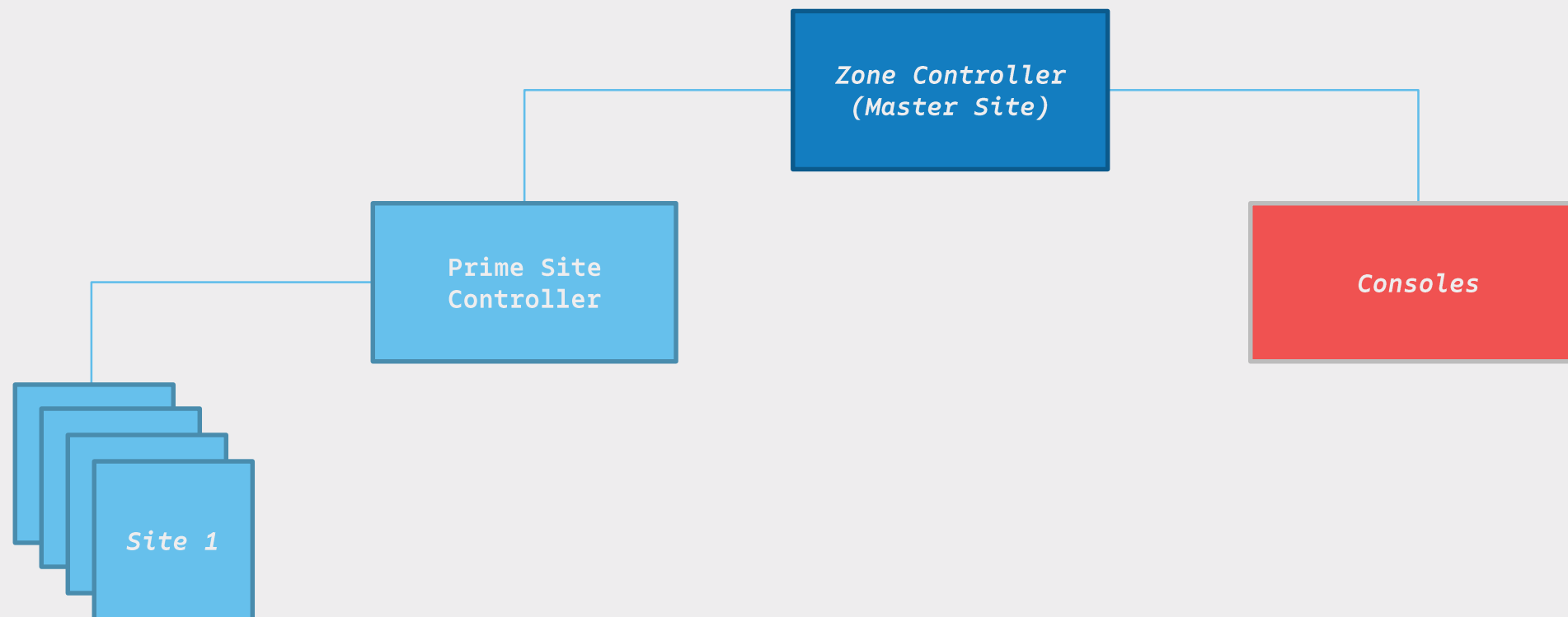
Delivering value to customers



THROTTLING (CONTROL CHANNEL SATURATION)

- What is Throttling (Control Channel Saturation)?
 - A system protection mechanism designed to handle momentary large level of requests into the Controller
 - Helps prevent the system from crashing
- When & Why Throttling Happens
 - Unusually large number of radio users access the system at the same time
 - Turn on / off
 - Change talk-groups
 - Push-to-talk

The Zone Controller (Master Site) will never go into throttling and will never dissolve a patch (applies to current and new systems).



JOSE DE ZAYAS

Radio System Administrator
Broward County Office of
Regional Communications and Technology

WHY A TRUNKED SYSTEM

Conventional	Trunked
Radio channels selected by the user	Radio channels assigned to the user automatically
No control channel needed	Control channel used in all P25 trunked applications
Suitable for smaller systems or systems structured for smaller groups of users (e.g. NYC)	Better for larger (approximately 300+) organizations

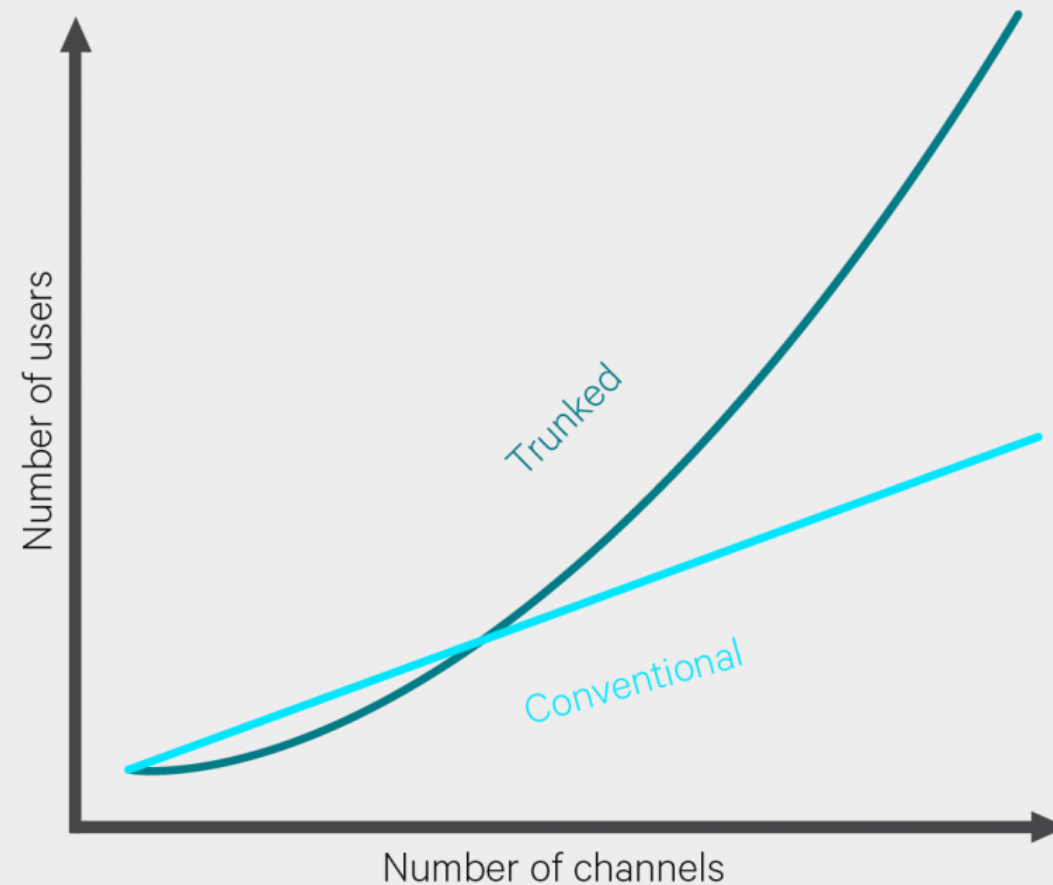
WHY A TRUNKED SYSTEM

	Conventional	Trunked
Call Arbitration	None	Controller-based
Automatic channel assignment	No	Yes
Channel Busy	User tries again and again	Auto System Call-back
Talkgroup to Channel Ratio	1 Talkgroup per Channel (e.g. 100 groups need 100 channels) Prone to more idle airtime on channels	Many talkgroups per channel (e.g. 700 groups can use 36 channels) Higher Spectrum Efficiency

WHY A TRUNKED SYSTEM

Conventional

As channels grow,
the number of users
per channel is the
same



Trunking

As channels grow,
the number of users
per channel grows
exponentially

Normal Operations in Daily Busy Hour
+
Projected User Growth Over System Life

FLORIDA COUNTIES

- Pinellas (Motorola)
- Hillsborough (Harris)
- Miami-Dade (Harris + conventional analog)
- Orange (Motorola)
- Duval (Motorola)
- Palm Beach (Motorola)

U.S. CITIES

- Houston (Motorola)
- Philadelphia (Motorola)
- San Antonio (Harris)

Communities have different operational environments and radio procedures and system designs must accommodate local needs.

What are the differences between the current system and the new system being implemented?

	Current System	New System
Technology	- Proprietary 30-year-old Analog Smartnet Trunking with 3600 baud Control Channel running 6809 machines - Mixed-mode analog and digital	- Standards-based P25 Digital Trunking with 9600 baud Control Channel running on modern servers - Exclusively digital
Coverage	10 sites (8 are Tx/Rx, 2 are Rx-only) 15 dB Countywide coverage	16 sites, all Tx/Rx 20-25 dB Countywide coverage
Capacity	27 Talk-paths	36 Talk-paths
a. Core Redundancy b. Prime Site Redundancy	a. Redundant master sites at single location b. Single prime-site location	a. Geographically separated master sites b. Geographically separated redundant prime sites
System Access Security	n/a	ID-based Authentication
Site Connectivity	T1 & Microwave	Full Microwave dual-loops
Back-up System	No backup system	4-site, 7 Channel Trunked System
Data Capabilities	No data-capabilities	GPS Officer Location on PTT, text capable

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Director – Broward County

- Local Government Radio System - 4,500 Fewer Local Government Radios on New System by Q1 2019
 - *School board to determine solution for their radio system needs before new public safety system comes online*
- Regional Standard Fleetmap
- User Training and Awareness
- Backup System and Faster Independent System Controller
- Early Warning Trigger (in development)
- Security (new P25 Authentication prevents duplicate IDs, cloned radios, etc.)

Radio Best Practices
+
Stop Gap Measures
+
User Training

You Can Make a Difference!

- Follow National Incident Management System (NIMS) and Incident Command System (ICS) Protocols
- Incident Commander Makes and Manages Talkgroup Assignments
- On Duty and Responding Elsewhere
 - Critical Radio Traffic Only*

- Each Agency Has a Designated Main Channel
- Outside Agencies Providing Support Incorporate Use of Countywide Mutual Aid Channels
- Use Regional Standard Fleetmap
- Conduct Ongoing Training (no less than annual)
- Perform Ongoing Radio Maintenance to Manufacturer's Specifications (no less than annual) – *out of tune radios contribute to Control Channel Saturation*

Given that any system is susceptible to resource limitations in a mass incident, these best practices will be implemented immediately and throughout the year to improve system performance, and will continue in the new public safety system.

- Dispatcher Announcements Regarding Radio Operations
- Exception Reporting of Specific User Affiliations Contributing to Control Channel Saturation
- Formal Communications Training (radio and dispatch) – starting Summer 2018

Stop gap measures cannot be addressed with any currently available technology.

- Radio Operations User Guide
- Approved Regional Standard Fleetmap and SOPs
- *with input of Police and Fire Chiefs Associations*
- Annual Training (with tracking)
- Routine Follow-up Exercises

Fourth Quarter
Calendar Year 2019

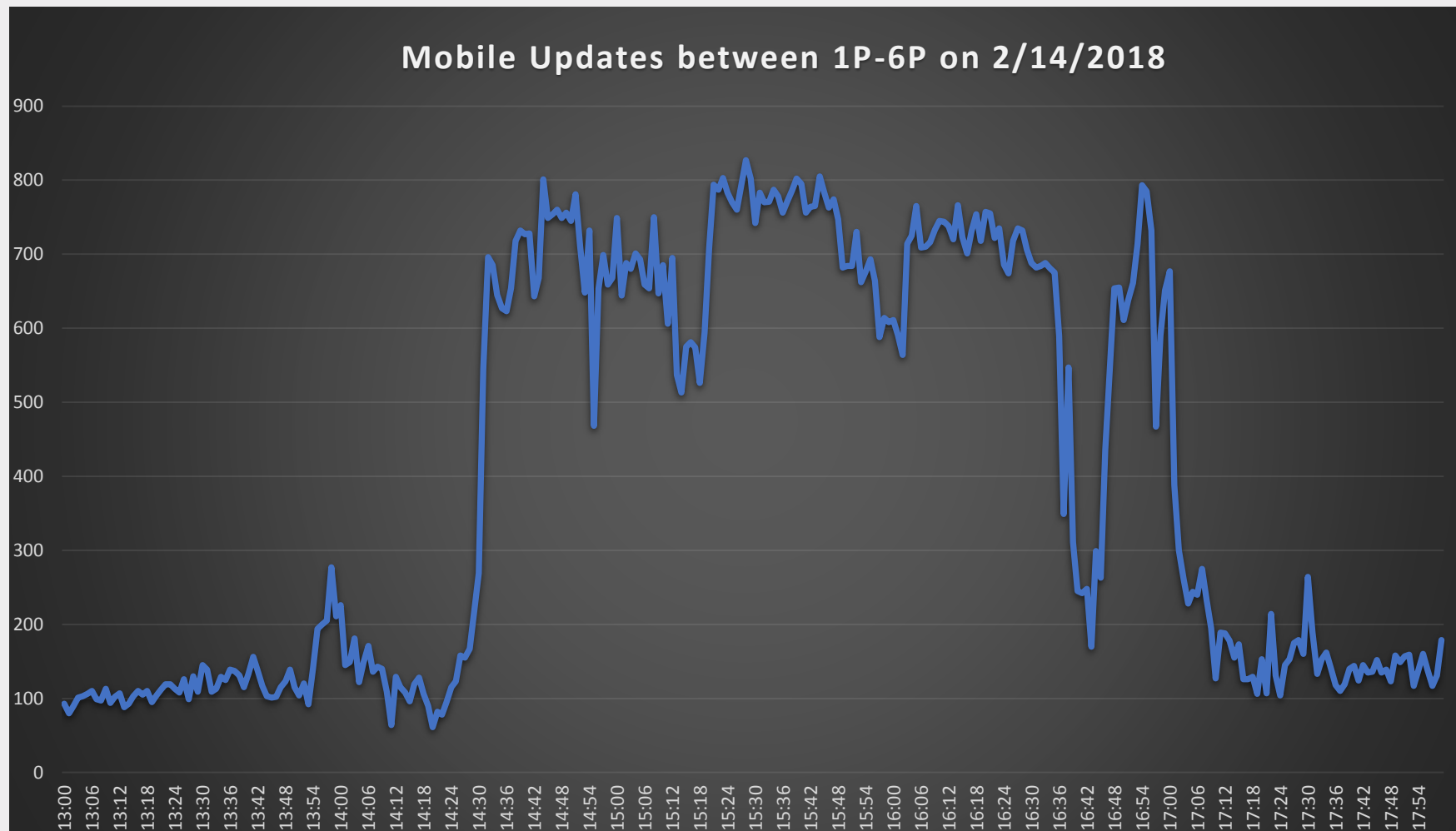
Efforts to expedite this timeframe are being evaluated.

MOVING FORWARD: BROWARD'S NEW 911 RADIO SYSTEM

QUESTIONS?



- Mobility Updates (affiliations/deaffiliations)



Mobility Updates – vs. Calls on County Radio System

- 3 day comparison of system activity

