



RADIO TRAINING

Utah Communications Authority

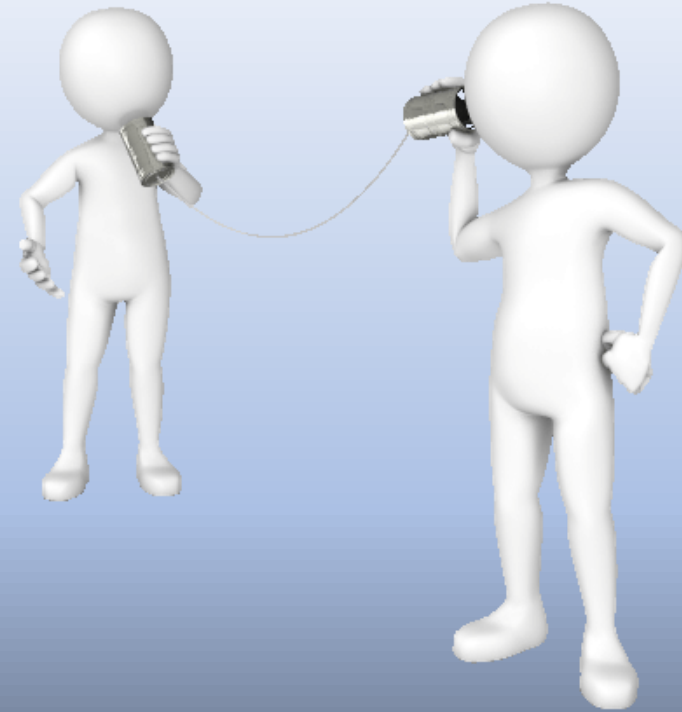
Keeping Public Safety Connected



-Michael Veenendaal Interoperability Division Director -

OVERVIEW

- Introduction
- Goals and Objectives
- Fleet Mapping Defined
- Best Practices
- Fitting all the pieces
- Current vs New
- Nomenclature
- Uses



History of the System / System Evolution

- Utah's System One of Largest in North America.
- Grew by both collaboration as well as UCAN/UCA growth.
- Radio user fee model encouraged a "sales" approach to the system.
- 2019 System award
- 2020 Fleet map Talk Group naming convention was sent to end users for approval.
- 2021 Talk Groups Built



INTRODUCTION



Implementation of P25 System is a once in 20 years opportunity to reconsider many aspects of Utah's radio system.

- There were things we do very well.
 - System maintenance
 - Coverage
 - Interoperability and cooperation with 911
- And there are things we could improve upon.
 - Radio ID management
 - Talk group management
 - Site access and dragging traffic

Utah's fleet map is one of the areas of improvement. What has been adopted by UCA is recommended by every consultant we have spoken with as well as L3Harris Solutions and Motorola Solutions.



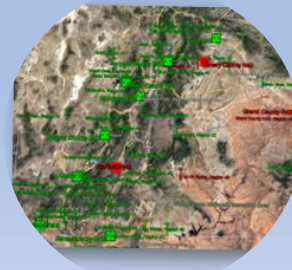
GOAL

Promote a uniform approach to the design and management of Local, State, or Regional Interoperable Trunked Radio Communications



OBJECTIVES

Allocate Subscriber ID's to prevent duplication between Systems Drive, System Configuration, and Channel Loading. To define subscriber operational needs and unique characteristics. To develop Talk Groups for Local, State, and Regional communications. To promote interoperable communications using common talk group parameters. To establish common management systems and practices



Fleet Mapping Defined



- Fleet mapping is the process of configuring the features and programming parameters of a trunked radio system to function according to the unique operational requirements of each participating agency. Fleet mapping can be thought of as:
 - Configuring trunked systems for management and control of subscriber radios.
 - Assigning Talk Groups to the radios issued to personnel.
 - Assigning Talk Groups to the dispatcher control positions.
 - Defining the feature subsets available to the personnel using the radios and dispatcher control positions.
 - Determining what Talk Groups are accessible in what parts of the coverage area and how to communicate over a large area when collaboration is required.





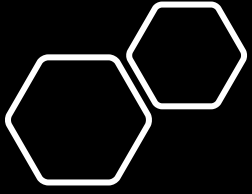
Fleet Mapping Best Practices

- Develop Talk Groups for local, regional and statewide communications
- Regional communications plans based on operational needs
- Minimize user intervention (reduce knob turn)
- Promote interoperable communications for local to regional to statewide to serve common needs
- Efficient configuration for channel loading (minimize busies)
- Limit roaming to leave resources available for local or regional communications
- Radio management (who can talk to whom and where)
- Simplify communication paths to create an understandable and quickly accessible template for users.



What Goes Into Fleet Mapping





Current Fleet Map

- The present fleet map is a descendent of the legacy conventional VHF repeater model. A single agency per repeater, where your radio has all your neighbor's single repeaters programmed in your radio.
- It has allowed for the Dragging of traffic Busying out PSAPS and Users across the system.
- Caused confusion on Talk Group usage
- Limited Interoperability
- Presented significant problems for growth as new Talk Groups required massive amounts of reprogramming

ZONE 1	ZONE 2	ZONE 3	ZONE 4	ZONE 5
RIVERTN PD	UPD OQURH	OPS 1	EVENT 1	8CALL90
RIVERTN TAC	UPD WASH	OPS 2	EVENT 2	8TAC91
RIVERTN C2C	UPD SPL 5	OPS 3	EVENT 3	8TAC92
SERVICE	UPD MIDVL	OPS 4	EVENT 4	8TAC93
HERRIMAN PD	UPD TAC 1	OPS 5	EVENT 5	8TAC94
VECC C2C	SLCPD PN	OPS 6	EVENT 6	ST RPT 1
DRAPER PD	SLCPD LTY	OPS 7	EVENT 7	ST RPT 2
SJPD	UHP NO	OPS 8	EVENT 8	ST RPT 3
UC LAW 1	UHP SO	OPS 9	EVENT 9	ST RPT 4
W J P D 1	FIRE 1	OPS 10	EVENT 10	ST RPT 5
W J P D 2	FIRE 4	NO RGN	EVENT 11	ST T/A 1
SANDY PD	HERRIMN C2C	N E RGN	EVENT 12	ST T/A 2
WVC PD D1	SSL PD	S W RGN	EVENT 13	ST T/A 3
WVC PD D2	MURRAY PD	S C RGN	EVENT 14	ST T/A 4
COTTONWD	LZ-1	S E RGN	EVENT 15	ST T/A 5
SL RGN	LZ-2	SL RGN	EVENT 16	8CALL90D



NEW FLEET MAPPING DESIGN

- The new fleet map is a model of better agency interoperability, providing each agency and user the ability to interoperate within out outside of your normal daily operations.
- It provides:
 - More interagency Talk Groups
 - A unified interoperability approach across the system
 - The ability for the individual PSAP to manage communication between ALL responding units within the system.
 - Limited traffic dragging
 - Flexibility for Growth



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CEDAR COMMUNICATIONS LAW

TALK GROUP PRIORITY LEVEL	NEW P25 L3HARRIS TALK GROUP ID	CURRENT ASSOCIATED MOTOROLA TALK GROUP ID	Top Radio Display Alias	Encryption	Restricted Talk Group (Agency Approval)
	12 CHARACTER		8 CHARACTER	YES/NO	YES/NO
LEVEL 2	IR_Law 1	IRN LAW 1	IR Law 1	NO	NO
LEVEL 2	IR_Law 2	IRN LAW 2	IR Law 2	NO	NO
LEVEL 2	IR_Law 3	Bhrudds-cnv800	IR Law 3	NO	NO
LEVEL 2	IR_Law 4	CDRLW 1-N	IR Law 4	NO	NO
LEVEL 2	IR_Law 5	CDRLW 2-S	IR Law 5	NO	NO
LEVEL 2	IR_OPS 1	NEW	IR OPS 1	NO	NO
LEVEL 2	IR_SWAT 1	NEW	IR SWAT1	NO	NO
LEVEL 2	IR_SWAT 2	NEW	IR SWAT2	NO	NO

CEDAR COMMUNICATIONS FIRE

TALK GROUP PRIORITY LEVEL	NEW P25 L3HARRIS TALK GROUP ID	CURRENT ASSOCIATED MOTOROLA TALK GROUP ID	Top Radio Display Alias	Encryption	Restricted Talk Group (Agency Approval)
	12 CHARACTER		8 CHARACTER	YES/NO	YES/NO
LEVEL 2	IR_FIRE1	IRN FIRE 1	IR FIRE1	NO	NO
LEVEL 2	IR_FIRE2	IRN FIRE 2	IR FIRE2	NO	NO
LEVEL 2	IR_FIRE3	NEW	IR FIRE3	NO	NO
LEVEL 2	IR_FIRE TAC1	NEW	FRE TAC1	NO	NO
LEVEL 2	IR_FIRE TAC2	NEW	FRE TAC2	NO	NO

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CEDAR COMMUNICATIONS OPS

TALK GROUP PRIORITY LEVEL	NEW P25 L3HARRIS TALK GROUP ID	CURRENT ASSOCIATED MOTOROLA TALK GROUP ID	Top Radio Display Alias	Encryption	Restricted Talk Group (Agency Approval)
	12 CHARACTER		8 CHARACTER	YES/NO	YES/NO
LEVEL 2	IR_EVNT1	IN OPS 6	IR EVNT1	NO	NO
LEVEL 2	IR_EVNT2	IN OPS 7	IR EVNT2	NO	NO
LEVEL 2	IR_EVNT3	IN OPS 8	IR EVNT3	NO	NO
LEVEL 2	IR_EVNT4	NEW	IR EVNT4	NO	NO
LEVEL 2	IR_EVNT5	NEW	IR EVNT5	NO	NO
LEVEL 2	IR_SAR1	NEW	IR SAR1	NO	NO
LEVEL 2	IR_SAR2	NEW	IR SAR2	NO	NO

CEDAR COMMUNICATIONS AUXILARY

TALK GROUP PRIORITY LEVEL	NEW P25 L3HARRIS TALK GROUP ID	CURRENT ASSOCIATED MOTOROLA TALK GROUP ID	Top Radio Display Alias	Encryption	Restricted Talk Group (Agency Approval)
	12 CHARACTER		8 CHARACTER	YES/NO	YES/NO
LEVEL 6	IR_C2C	NEW	IR C2C	NO	NO
LEVEL 6	IR_ENC2C	NEW	IR ENC2C	NO	NO
LEVEL 6	IR_BHC2C	NEW	IR BHC2C	NO	NO
LEVEL 6	IR_SUUC2C	NEW	IRSUUC2C	NO	NO

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CEDAR COMMUNICATIONS PUBLIC WORKS					
TALK GROUP PRIORITY LEVEL	NEW P25 L3HARRIS TALK GROUP ID	CURRENT ASSOCIATED MOTOROLA TALK GROUP ID	Top Radio Display Alias	Encryption	Restricted Talk Group (Agency Approval)
	12 CHARACTER		8 CHARACTER	YES/NO	YES/NO
LEVEL 6	IR_ENPW1	NEW	IR ENPW1	NO	NO
LEVEL 6	IR_ENPW2	NEW	IR ENPW2	NO	NO
LEVEL 6	IR_ENPW3	NEW	IR ENPW3	NO	NO
LEVEL 6	IR_ENPW4	NEW	IR ENPW4	NO	NO
LEVEL 6	IR_ENPW5	NEW	IR ENPW5	NO	NO
LEVEL 6	IR_CCPW1	NEW	IR CCPW1	NO	NO
LEVEL 6	IR_CCPW2	NEW	IR CCPW2	NO	NO
LEVEL 6	IR_CCPW3	NEW	IR CCPW3	NO	NO
LEVEL 6	IR_CCPW4	NEW	IR CCPW4	NO	NO
LEVEL 6	IR_CCPW5	NEW	IR CCPW5	NO	NO
LEVEL 6	IR_CCAIR	NEW	IR CCAIR	NO	NO

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INTEROPERABILITY						
STATE WIDE TALK GROUPS					CONVENTIONAL	
Zone 9	Zone 10	Z11	Z12	Z13	Z14	Z15
BRCALL	BRCALL	OQCALL	NECALL	SECALL	STRPT01	7TAC51
WFCALL	BRTAC1	OQTAC1	NETAC1	SETAC1	STRPT02	7TAC52
OQCALL	BRTAC2	OQTAC2	NETAC2	SETAC2	STRPT03	7TAC53
MTCALL	BRTAC3	OQTAC3	NETAC3	SETAC3	STRPT04	7TAC54
NECALL	BRTAC4	OQTAC4	NETAC4	SETAC4	STRPT05	7TAC55
CNCALL	BRTAC5	OQTAC5	NETAC5	SETAC5	STTA01	7TAC56
SECALL	WFCALL	MTCALL	CNCALL	SWCALL	STTA02	7FIRE63
SWCALL	WFTAC1	MTTAC1	CNTAC1	SWTAC1	STTA03	7FIRE83
	WFTAC2	MTTAC2	CNTAC2	SWTAC2	STTA04	7MED65
	WFTAC3	MTTAC3	CNTAC3	SWTAC3	STTA05	7MED86
	WFTAC4	MTTAC4	CNTAC4	SWTAC4	7CALL50	8TAC91
	WFTAC5	MTTAC5	CNTAC5	SWTAC5	8CALL90	8CALL90
					8TAC92	8TAC92
					8TAC93	8TAC93
					8TAC94	8TAC94
CALL	CALL	CALL	CALL	CALL	CALL	CALL

STATEWIDE INTEROPERABILITY ZONES

9-15

Talk Group Nomenclature



User Talk Groups

“Police, Fire,
EMS User
Communication
Paths”



Pioneer = SL-XXX

UTLAW1= UT-XXX

PRCLW 1-N = CA-XXX

TWO LETTER IDENTIFIER-TALK GROUP TYPE

Talk Group Nomenclature



Car 2 Car

State c2c
County c2c
City c2c

These are agency specific Talk Groups designated for agencies to communicate of their main talking group. These were referred to as Car 2 Car in the previous system.

The new Fleet Map provides AUX Talk Groups for agencies requiring car 2 car Talk Groups.



AUX

STAUX1
CBAUX1
DPSAX1

Talk Group Nomenclature

Call TALK GROUPS are designated for a regional interoperability Communications.

“Communicate Home”

REGIONAL



NORTH
SALT LAKE
NORTHEAST
SOUTHWEST
SOUTH CENTRAL
SOUT EAST

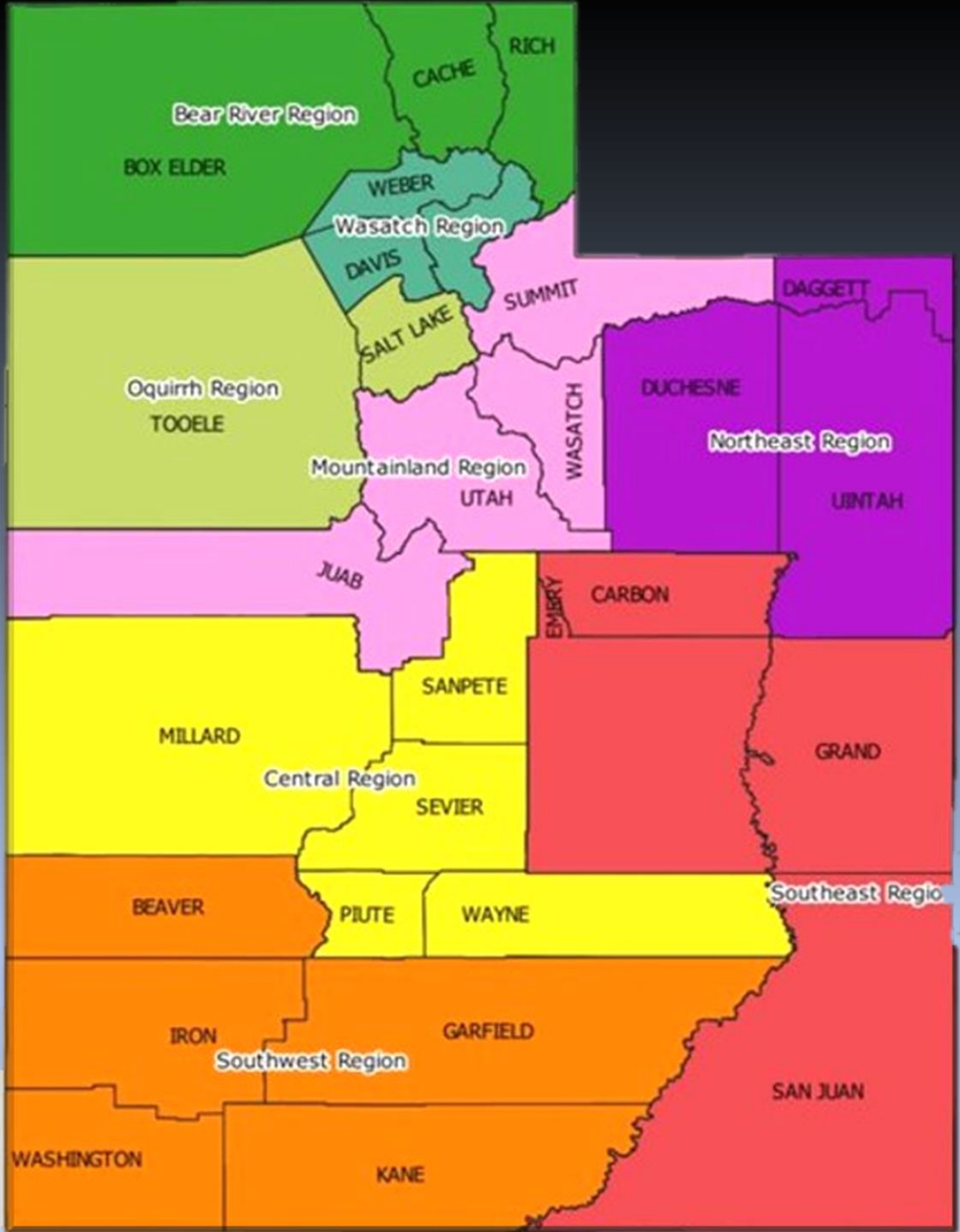


CALL



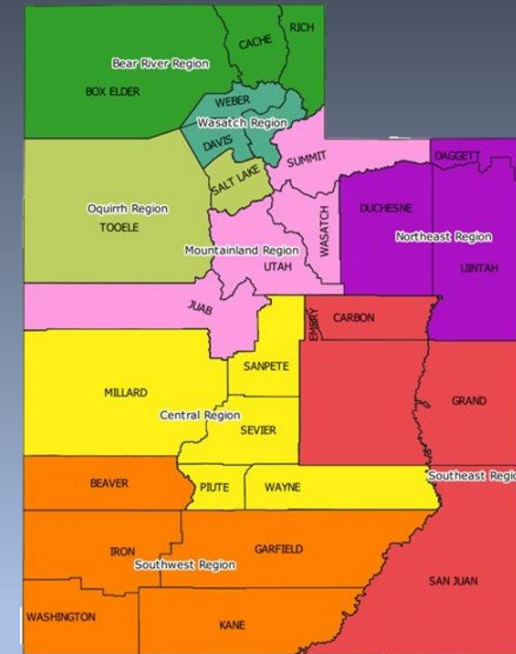
BEAR RIVER
WASATCH
OQUIRH
MOUNTAIN LAND
NORTHEAST
CENTRAL
SOUTHEAST
SOUTHWEST

New CALL (Regions)



Talk Group Nomenclature

“Communicate Home”



These are localized Talk Groups designated for agencies to interoperate with each other on a temporary basis.

An example of this would be if an EMS in one county needs to talk to a PD from a different county.

Another example would be a local event that doesn't need to be handled on a main dispatch Talk Group.

This should be coordinated via dispatch.

Talk Group Nomenclature

COUNTY EVENT TALK GROUPS

"Collaborative County Interoperable

Communication

CBEVNT1

CBEVNT2

CBEVNT3

CBEVNT4

CBEVNT5



These are Countywide Talk Groups designated for agencies to interoperate with each other on a temporary County basis. EVNT Talk Groups are reserved for events and when multiple agencies from around the County need to interoperate outside their normal daily operations. EVNT TALK GROUPS are not normally cross utilized for cross county coordination.

“Collaborative County and State Interoperable Communication ”

Talk Group Nomenclature



OPS

“Collaborative County Special
operations
Interoperable Communication ”

SWAT
Drug Task Force
Fire SAFTEY/Rehab

OPS TALK GROUPS

“Collaborative County interoperable

Communication

These are Countywide Talk Groups designated for agencies to interoperate with each other on a regular basis. OPS Talk Groups are reserved for operational activities and when multiple agencies from around the County need to interoperate outside their normal daily talk groups. Examples: SWAT, Interdiction, Fire Ground operations, etc.

CBOPS1

CBOPS2

Talk Group Nomenclature



EVENTS
1-16



TAC
1-40

- BR TAC
- WA TAC
- OQ TAC
- MT TAC
- NE TAC
- CT TAC
- SW TAC
- SE TAC

“Collaborative Statewide Interoperable Communication”

Talk Group Nomenclature

“Collaborative Statewide Interoperable
Communication”

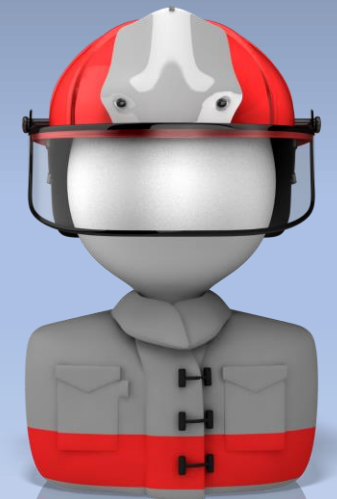


TAC

These are Statewide Talk Groups designated for agencies to interoperate with each other on a temporary, Statewide basis. TAC Talk Groups are reserved for major events and when multiple agencies from around the State need to interoperate.

Examples of proper use would be interoperability exercises, natural disasters, Executive events, funerals for fallen officers/fire fighters, etc.

The new Fleet Map Increases the Number of TAC Talk Groups and moves the control over to each Region



TALK GROUP

RECORDING

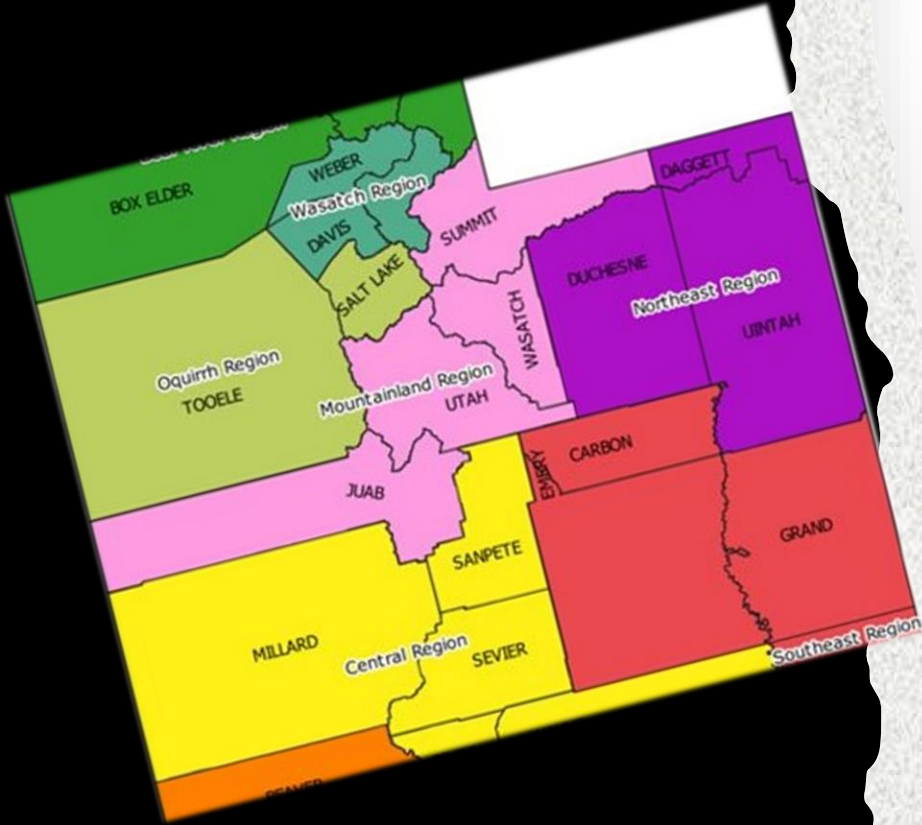
As part of procuring the new statewide P25 system, the talk groups identified will be recorded at the core level. Each agency will be provided access to its talk group recordings for records management, retention, and distribution. Agencies that still want to record from their PSAP or at an agency level can do so but must provide all necessary connections to the system.

All primary Public Safety
Talk Groups will be recorded
from the core.

Non-Public Safety
and auxiliary Talk
Groups will not be
recorded by UCA.

Local Wide Area Coverage

- Industry best practice to reduce the over all cost of operation is to segment primary traffic to sites that provide service to the user's geographic location.
- This allows for a site that provides an agency that serves a municipality with hundreds of thousands of residences to have maximum channel capacity locally. Limiting capacity at sites that are only used for secondary users to be accessing while passing through or providing mutual aid.
- An example would be the population centers of Provo, Ogden, Salt Lake have the largest cells of capacity ranging from 20 to 12 talk paths for the users to conduct daily communications where a rural site has only 5 talk paths. If a user from the population center were to tie up a rural site for the convenience of listening to there traffic this will not allow the rural user to conduct their mission.
- To address and allow the system to police the users a surrounding site approach would allow for all the local traffic to be accessed beyond the user's home area but limited to just the neighboring county. If a Utah county user lives in Juab they would be able to drag traffic but not outside a neighboring county to Utah county.



Training

Every User Statewide

Available
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<https://www.uca911.org/Interoperability-Division>

Michael Veenendaal

385.910.4224

mveenendaal@uca911.org

