



Joint System Owners Customer Information Meeting
Thursday, December 7, 2017
Environmental Service Building



City of Tacoma

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Presenters: Steve Victor, Deputy City Attorney – City of Tacoma
 Scott Heinze, Deputy Director – Pierce County Emergency Management
 Steve Taylor, Information Technology Manager – City of Tacoma
 Tim Lenk, Communications Systems Manager

Questions & Answers Discussed During the Presentation

1 – Q What is meant by the term governance?

1 – A SAFECOM is an ongoing Department of Homeland Security *Office for Interoperability and Compatibility* program that provides best practices for achieving interoperability as defined in the Interoperability Continuum. [Governance](#) is one of the five key Interoperability Continuum Elements. Governance defines the role, structure and operations of the groups charged with establishing and improving communications interoperability. A formalized governance structure provides a unified framework and approach in which relevant public safety stakeholders across multiple jurisdictions and disciplines can participate, collaborate and make decisions reflecting common objectives.

Interoperability Continuum Element	Baseline Assessment Subelement
<i>Governance</i>	Leadership Decision-Making Groups Agreements Interoperability Funding Strategic Planning
<i>Standard Operating Procedures</i>	Policy, Practices, and Procedures Command and Control
<i>Technology</i>	Approaches Implementation Maintenance and Support
<i>Training and Exercises</i>	Operator Training Exercises
<i>Usage</i>	Frequency of Use and Familiarity

2 – Q What does MSC stand for in the Administrative timeline of the VHF/800 MHz ERA?

2 – A Chartered in 2005, the Metro Steering Committee (MSC), is a law enforcement, fire services, dispatch, and radio system owners committee representing 43 agencies collaborating to identify and improve interoperable communications gaps in Pierce County which at that time (VHF/800 Era) included:

1. Lack of standardized radio communications, dispatch capabilities and protocols throughout Pierce County
2. Governance for standard communications operating procedures in the county that is linked to the Puget Sound TICP and the State Communication Interoperability Plan (SCIP)
3. Limited redundancy of communications and dispatch operations
4. Lack of comprehensive training and exercise programs for all first responders and dispatchers
5. Disparate radio and dispatch networks with limited abilities to communicate effectively whenever and wherever necessary

The Committee released the countywide VHF/800 Era Interoperability Charter in 2009 and conducted countywide Interoperable Communications Awareness Training in 2010. Monthly MSC meetings were suspended indefinitely in 2012 as Pierce County and Tacoma began development of the Proposition 1 funded P25 700/800 MHz radio systems. Two new temporary groups, the Radio System Owner's Group (RSOG) and System Integration Group (SIG) were established to provide collaboration and progress updates.

3 – Q What does it mean when you say technical interoperability in Pierce County has been achieved?

3 – A The SAFECOM Continuum outlines 5 levels of Technical radio interoperability, from lowest to highest:

1. Swapping cache radios among agencies
2. Using fixed or field deployed radio gateways
3. Using shared channels on common frequencies
4. Use of shared proprietary systems
5. Using shared standards based systems (P25)

Pierce County's law enforcement and fire agencies have achieved level 5, the highest level, of technical interoperability by operating over 4,100+ P25 radios with 276 shared law enforcement/fire channels across the Tacoma and CCN shared P25 systems. Within the next 2-3 years another 15,000 P25 radios will be deployed for law enforcement and fire agencies in King County using shared P25 systems. With collaborative interoperability governance in place, this means that nearly 20,000 law enforcement and fire radios will be fully interoperable across the two counties.

4 – Q Why does the CCN use Total Cost of Ownership(TCO) methodology?

4 – A When all costs are known, strategic and deliberate decisions can be made by Policy regarding adjustments and/or reductions. TCO doesn't require you to budget to 100%; to date, the CCN has not fully funded TCO.

5 – Q Why are both communications systems so expensive to operate?

5 – A Components of the legacy analog systems were less complex with fewer features and capabilities and components typically lasted 10-15 years. P25 systems are significantly more complex, have more features, and use components with 3-5 year life cycles. This results in increased costs for continual hardware, software, antivirus and security upgrades.

6 – Q Does the 800 MHz system have different radio frequency characteristics than the 700 MHz which would increase the in-building coverage?

6 – A 700 MHz and 800 MHz frequency characteristics are the same. The CCN system uses 700 MHz frequencies; the Tacoma system uses 700/800 MHz frequencies. In-building coverage issues equally affect both systems and are caused by combinations of environmental factors. These factors include the proximity of a building to radio sites, the type of building materials used, tree

density, radio frequency interference and electrical interference. Concrete and steel walls as well as reflective glass are particularly difficult for a radio signal to pass through. Structures built with these materials weaken or can at times completely prevent radio signals from entering and leaving buildings. Other factors include electrical interference from computers, refrigeration systems, fans, lighting fixtures and motorized devices. Radio frequency interference from other devices with close to the same frequencies also weaken the signals by creating radio “noise”.

7 – Q Are you saying that the system owners do not set the subscriber rate of \$30.00 and \$31.50?

7 – A That is correct, the \$30.00 and \$31.50 subscriber rates were set by the South Sound 911 Operations Board and approved by the Policy Board.

In 2016 and 2017 both radio system owners provided to SS911 their annual budget representing the costs to operate, maintain and enhance their systems. Both systems spread these costs equally to the primary users of their systems in the form of an access fee per radio.

In 2016 SS911 proposed that both systems would invoice member agencies a net monthly access fee of \$30/radio. In 2017 SS911 proposed a 5% monthly increase of \$31.50/radio.

Because the proposed access fees are well short of each system owners’ ability to recover their costs, under a 2016 Memorandum of Agreement SS911 agreed to fully fund the deficit by transferring \$2.5 million in operating funds to the system owners. Under a 2017 MOA, SS911 agreed to partially fund the deficit by transferring \$1 million to the system owners.

8 – Q Why is the CCN 700 MHz system so much more expensive to operate vs. the Tacoma 800 MHz system?

8 – A The CCN 700 MHz system infrastructure and coverage is much larger than Tacoma 800 MHz system

- The Tacoma 800 MHz system has 10 sites with an annual budget of \$1,675,525 or around \$168,000 per site. Tacoma utilizes pre-existing fiber optics.
- The CCN 700 MHz system has 21 sites with an annual budget of \$3,778,670 or around \$180,000 per site. The CCN utilized 22 DC power plant and 96 new microwave systems.

9 – Q Currently we have to turn a channel on our radio to affiliate to another system. South Sound 911 presented the single system equivalent automatic roaming as the solution to traveling throughout the County and maintaining connection to the systems. Were the system owners involved in that discussion regarding automatic roaming capability in the 800 MHz and 700 MHz systems?

9 – A The system owners were not asked to participate in discussions with Motorola or to help develop the proposed solutions. Motorola presented SS911 a *single system* proposal in late 2015 and an ISSI (Inter Sub System Interface) proposal in early 2016.

Single System - Motorola proposed combining both systems into a single system over a period of approximately 2 years. The cost was \$5.45 million including reprogramming law enforcement and fire radios but not including approximately \$500,000 of additional infrastructure equipment connecting the radio and master sites. Motorola noted the company had never successfully undertaken the combination of two fully functioning P25 networks, noting that additional analysis and testing were required to fully understand and potentially mitigate the risk.

In King County the Valley Com, King County, EPSCA and City of Seattle systems were designed from the onset to be single shared system using a single master site under governance by all system owners. In contrast Tacoma and the CCN each have a master site. The Puyallup sub-system uses Tacoma’s master site.

ISSI - Motorola proposed that SS911 purchase ISSI “roaming licenses” and configuration services for at a cost of \$390,558. The proposal did not include radio costs to upgrade radio configurations, code plugs, fleetmaps, radio reprogramming, determination of additional system capacity impacts due to roaming, enabling emergency calls across channel partitions or determining which channels should be enabled for automatic roaming.

Automatic console roaming across the ISSI has been in effect across all dispatch consoles since late 2014. The degree to which automatic radio roaming across the ISSI can occur throughout the coverage areas of both systems should be determined by balancing law enforcement and fire roaming needs with the capacity of the systems to absorb additional radio traffic. The system owners recommended that this determination should be made within the context of the broader scope of interoperability collaboration and governance based on the SAFECOM Continuum.

10 – Q Why are some Fire Service agencies on 800 MHz and some on 700 MHz?

10 – A During the P25 system design process, agencies using the legacy Tacoma 800 MHz system made decisions to remain on the new Tacoma P25 system. Other law enforcement and fire agencies made their own decisions about which system to use.

Recommended Next-Steps

Broad cross-discipline discussions with all stakeholders, customers, and system owners about

Interoperability

- Formalize an interoperability governance and operations agreement
- Establish formal, recurring interop training and exercises schedule
- Maximize usage of P25 system capabilities

Cost Methodology

- How the two systems can support resilient connections to the new PSAP
- Systems operations, maintenance and sustainment costs

Rate Methodology

- How the 1/10 of 1% should be allocated to support both the public safety communications systems and the PSAP facility

WELCOME

Joint 800 MHz / 700 MHz Radio System Owners Customer Information Meeting



December 7, 2017
2:00pm – 3:00pm



Environmental Service Building (ESB) – East Room

City of Tacoma

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AGENDA

- **Interoperability**
 - What does this term mean
 - The interoperability customers have now
 - Looking forward
- **System Cost Methodology**
 - What does this term mean
 - Why this methodology is used when budgeting
 - Looking forward
- **Subscriber Rate Methodology**
 - What does this term mean
 - How it was established
 - Looking forward

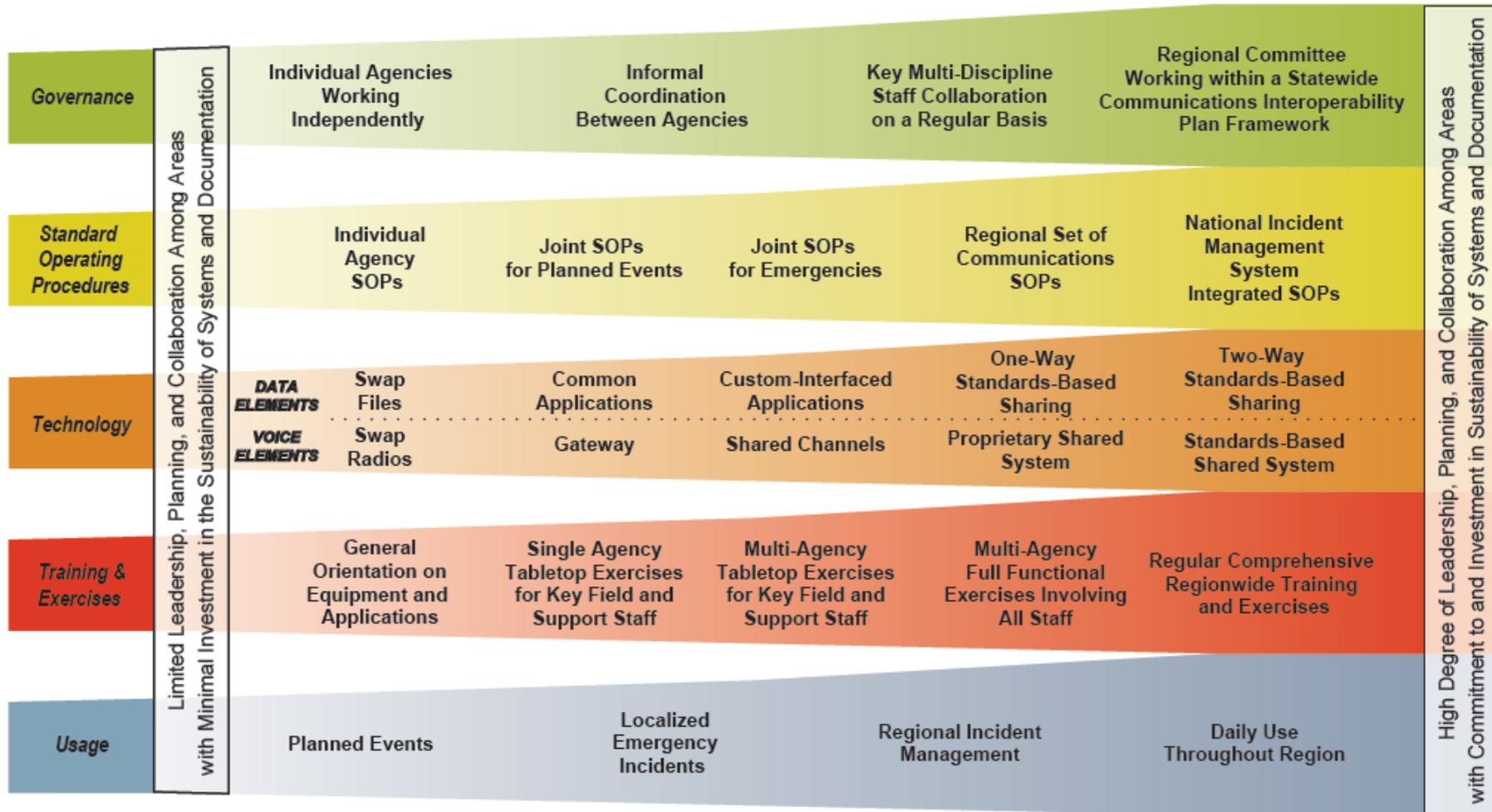


INTEROPERABILITY



Homeland Security

Interoperability Continuum



INTEROPERABILITY

Radio interoperability definition

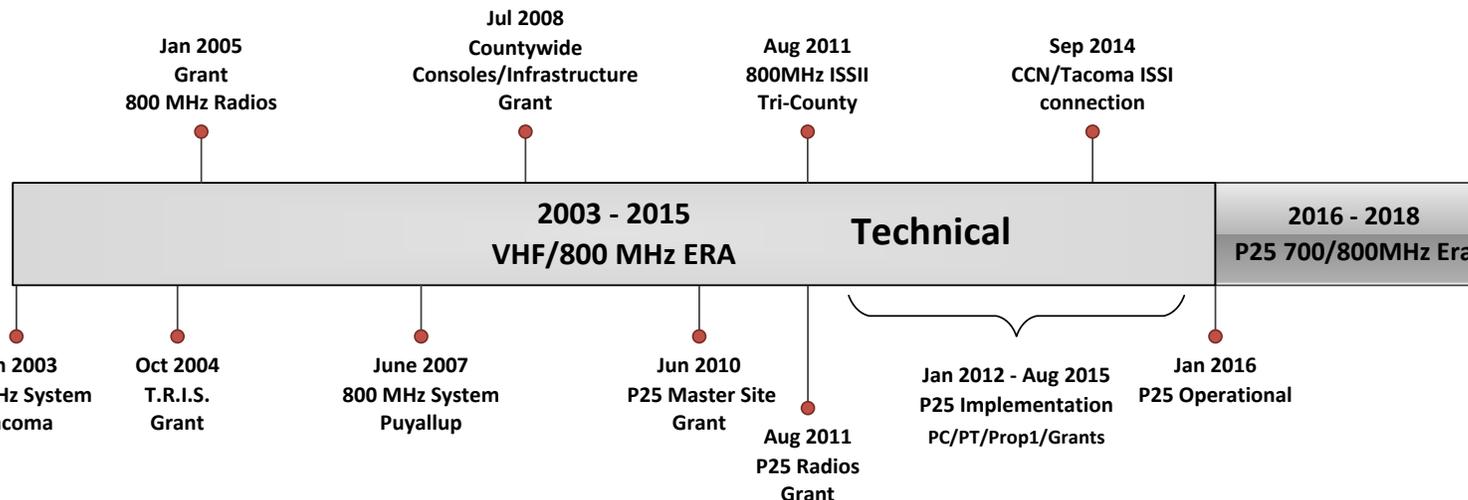
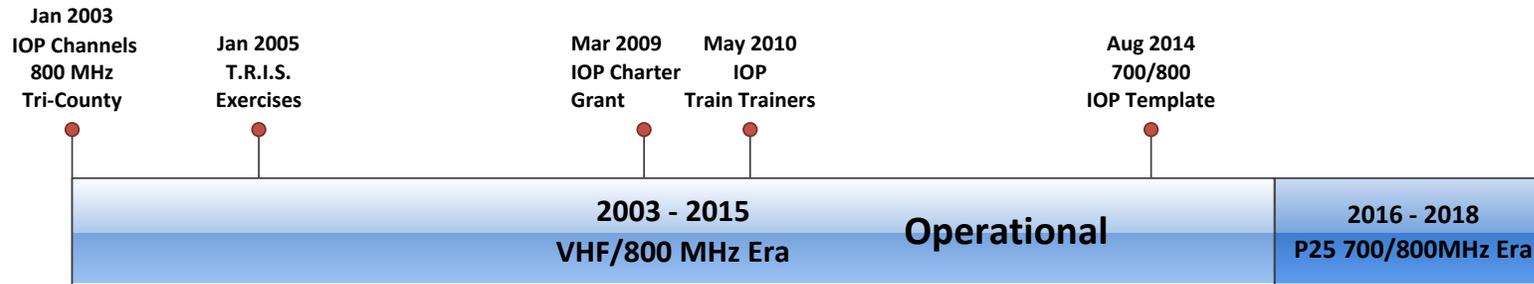
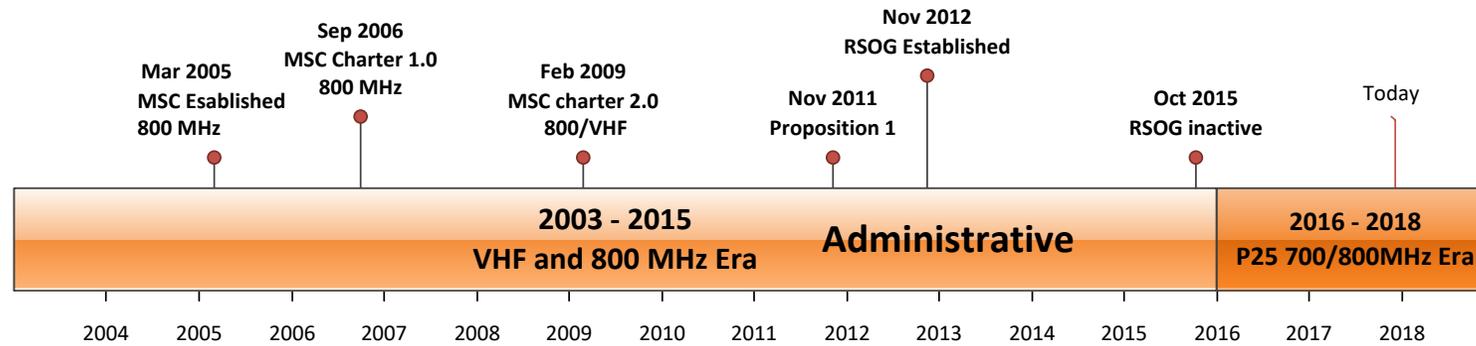
- The ability for multiple agencies to simply and effectively communicate with each other on-scene in real time using their everyday radios.

The highest radio interoperability level requires 3 integrated components

- Administrative Establishing leadership, collaboration and governance.
- Operational Developing standard operating procedures and establishing frequent training and usage.
- Technical Using standards based radio technology such as P25.



INTEROPERABILITY – VHF/800 MHz ERA



- Metro Steering Committee established in 2005. Monthly meetings through 2012.
- Broad based law enforcement, fire services, dispatch, and radio system membership & participation.
- VHF/800 MHz IOP governance and training established in 2009.
- 2012 MSC sunset during P25 funding and planning.
- \$128.3 million technical funding to date.



INTEROPERABILITY - P25 ERA

Technical interoperability in Pierce County has been achieved.

- P25 standards based Tacoma/CCN system fully implemented and in use.
- 4,100+ P25 radios in daily use by Pierce County law enforcement and fire agencies.
- 276 common LE/Fire interop channels.

Renewed collaborative effort to achieve Administrative and Operational components needed to achieve best practices interoperability.

- Formal, collaborative and broad based.
- Linkage to Puget Sound Tactical Interoperable Communications Plan.



INTEROPERABILITY - NEXT STEPS

Recommended next steps Establish P25 Era Interoperability

By February 2018

- Integrate administrative, operational and technical Interop components.
- Re-charter a metro steering group that is commensurate with the P25 ERA.
 - Regular meetings schedule.
 - Law enforcement, fire services, dispatch, and radio systems participation.

By December 2018

- Finalize Pierce County Interoperability Charter that includes.
 - Formal interoperability governance and operations agreement.
 - Formal recurring interop training and exercises schedule.
 - Maximize usage of P25 system capabilities.



CCN – SYSTEM COST METHODOLOGY

- **Total Cost of Ownership (TCO)** means that all cost related to operations, maintenance, replacement, and reserves for the business are documented so that the fully loaded cost of doing business can be identified.
- **This methodology is used when budgeting so that all near term, long term and future costs are understood and managed to.**
 - When all costs are known, strategic and deliberate adjustments and/or reductions can be identified.
 - Focus on funding operational requirement of our customers **and** preserving the systems' certified design for public safety use



TACOMA - SYSTEM COST METHODOLOGY

Radio infrastructure component

- Captures 24x7 radio infrastructure costs to operate, upgrade and maintain the radio network, facilities and backhaul.
- Includes annual Motorola system/security upgrade and board repair costs, building / tower / HVAC maintenance. Includes credit for Tacoma radio site revenue.
- Does not include costs for building and tower replacement.

Dispatch console component

- Captures 8x5 support costs for dispatch consoles using Tacoma Core.
- Includes Motorola console/security upgrade and Tacoma board repair costs.



SUBSCRIBER RATE METHODOLOGY

The subscriber rate is the monthly charge to a radio customer who utilizes the system to communicate.

Both the 700 MHz and 800 MHz system owners used a finance methodology to determine the cost per unit spread equally across all system customers.

- 2016 South Sound 911 established the \$30.00 base rate, determining a rate independent of system owner costs.**
- 2017 South Sound 911 established the \$31.50 base rate, determining a rate independent of system owner costs.**

Looking forward, there are several thoughts among system owners, system customers and South Sound 911 regarding what the rate should be and how that rate could be funded.



SYSTEM OWNERS COLLABORATION

- Implemented an ISSI for shared interoperable talk groups across the system
- Share technical resources
- Site sharing at DuPont and Tiki Hut
- Sharing CCN microwave and Tacoma's fiber network
- Distributed Antenna System (DAS) at the County City Building campus and Corrections
- Collaborating on coverage areas



NEXT STEPS

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QUESTIONS?

