P25 CAP Advisory Panel:

Quarterly Update

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Office of Interoperability and Compatibility

Science and Technology Directorate

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    - Red Grasso – State of North Carolina
    - Eric Dye – State of California
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P25 CAP Updates

- P25 CAP 2016/2017 Approved Equipment List
  - Airbus
  - Codan
  - EFJohnson
  - Harris
  - ICOM
  - Kenwood USA
  - Motorola Solutions
  - Radio Activity
  - Standard
- Still 2010 SDOC/STR
  - Sepura/PowerTrunk, BK Technologies, Tait – waiting on interoperability test lab availability
  - Unication – awaiting an interoperability test
  - Simoco/RCA – no response to date
- Deadline for TDMA CAI testing – March 31, 2019

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Conformance Testing

Conformance Test Cases

- RFSS, CSS and Console with RFSS equipment included in test requirements and test cases

- Single link testing of either the ISSI or CSSI against test tool

- Testing of FDMA and TDMA traffic

- Testing of Group and Unit based calls

- Testing of Supplementary Data features

ISSI	CSSI
▪ Emergency Unconfirmed Group Call	▪ Emergency Unconfirmed Group Call
▪ Confirmed Group Call (Delayed Resources)	▪ Confirmed Group Call (Delayed Resources)
▪ Confirmed Group Call (No Resources)	▪ Confirmed Group Call (No Resources)
▪ Emergency Alarm	▪ Emergency Alarm
▪ Emergency Alarm Cancel	▪ Emergency Alarm Cancel
▪ Group Emergency Cancel	▪ Group Emergency Cancel
▪ Unconfirmed Group Call	▪ Unconfirmed Group Call
▪ Call Alert	▪ Console to Unit Call
	▪ Call Alert

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P25 Conformance Testing Update

- Valid8 testing with a Zetron MAX dispatch console
- Valid8 has verified the Emergency Alarm test case with Zetron
  - Emergency Alarm
  - Confirmed Group Call (delayed resources)
- Webinar held on February 13
- Meetings held with the DOI test lab to bring them up to speed
  - Trunked testing is new for DOI
  - DOI lab needs to be accredited for conformance testing

Typical ISSI/CSSI Message Examined During Conformance Testing

F2:

INVITE sip:000010010064@p25dr;user=TIA-P25-SG SIP/2.0
Via: SIP/2.0/UDP 02.002.00002.p25dr;branch=z9hG4bK89a7
Route: <sip:TIA-P25-Groupcall@01.001.00001.p25dr;lr>
Max-Forwards: 70
From: <sip: 000010010064@p25dr;user=TIA-P25-SG>;tag=a2c16544
To: <sip: 000010010064@p25dr;user=TIA-P25-SG>
Call-ID: 2-54801@192.168.0.2
CSeq: 1 INVITE
Contact: <sip: 000010010064@02.002.00002.p25dr;user=TIA-P25-SG>
Priority: 8;a
Allow: ACK, BYE, CANCEL, INVITE, REGISTER
Accept: application/sdp; level=1, application/x-tia-p25-issi
Content-Disposition: session; handling=required
Content-Type: application/sdp
Content-Length: 160

v=0
o=- 14492751 44927511 IN IP4 192.168.0.2
s=TIA-P25-Groupcall
t=0 0
c=IN IP4 192.168.0.2
m=audio 25000 RTP/AVP 100
a=rtpmap:100 X-TIA-P25-FullRate/8000

SIP= Session Initiation Protocol

RFC 3261 defines SIP as: "an application-layer control (signaling) protocol for creating, modifying, and terminating sessions with one or more participants."

SDP= Session Description Protocol

P25 uses SDP with SIP;
Describes the media – in this case:
a Full Rate Call (FDMA over the air)

P25 Conformance Test – Next Steps

- P25 CAP Conformance documents circulated for 30-day public review
  - Comments are sought; please submit to P25CAP@hq.dhs.gov
- The Conformance Test CAB and the SDOC template are available on the P25 CAP webpage
- Conformance test case documents and STR template available by request at P25CAP@hq.dhs.gov
- Continue with:
  - Valid8 adding test cases to tool
  - DOI Lab reviewing test cases for understanding by lab personnel
  - Support DOI lab accreditation submittal
  - Process for FNE manufacturers to become involved with pre-testing of the Conformance test tool

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Interoperability Testing

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Interoperability Test Cases

- RFSS, CSS and Console with RFSS equipment included in test requirements
- Single link testing of either the ISSI or CSSI
- Testing of FDMA and TDMA traffic
- Unit and Group Test Combinations as defined by TIA-TR8 (no roaming test cases)

ISSI

- Unit Registration
- Unconfirmed Group Call
- Confirmed Group Call (Delayed Resources)
- Unit to Unit Call
- Broadcast Group Call
- Talkgroup Registration
- Announcement Group Call
- Emergency Group Call
- Encrypted Group Call

CSSI

- Unconfirmed Group Call
- Confirmed Group Call (Delayed Resources)
- Console to Unit Call
- Broadcast Group Call
- Announcement Group Call
- Emergency Group Call
- Encrypted Group Call

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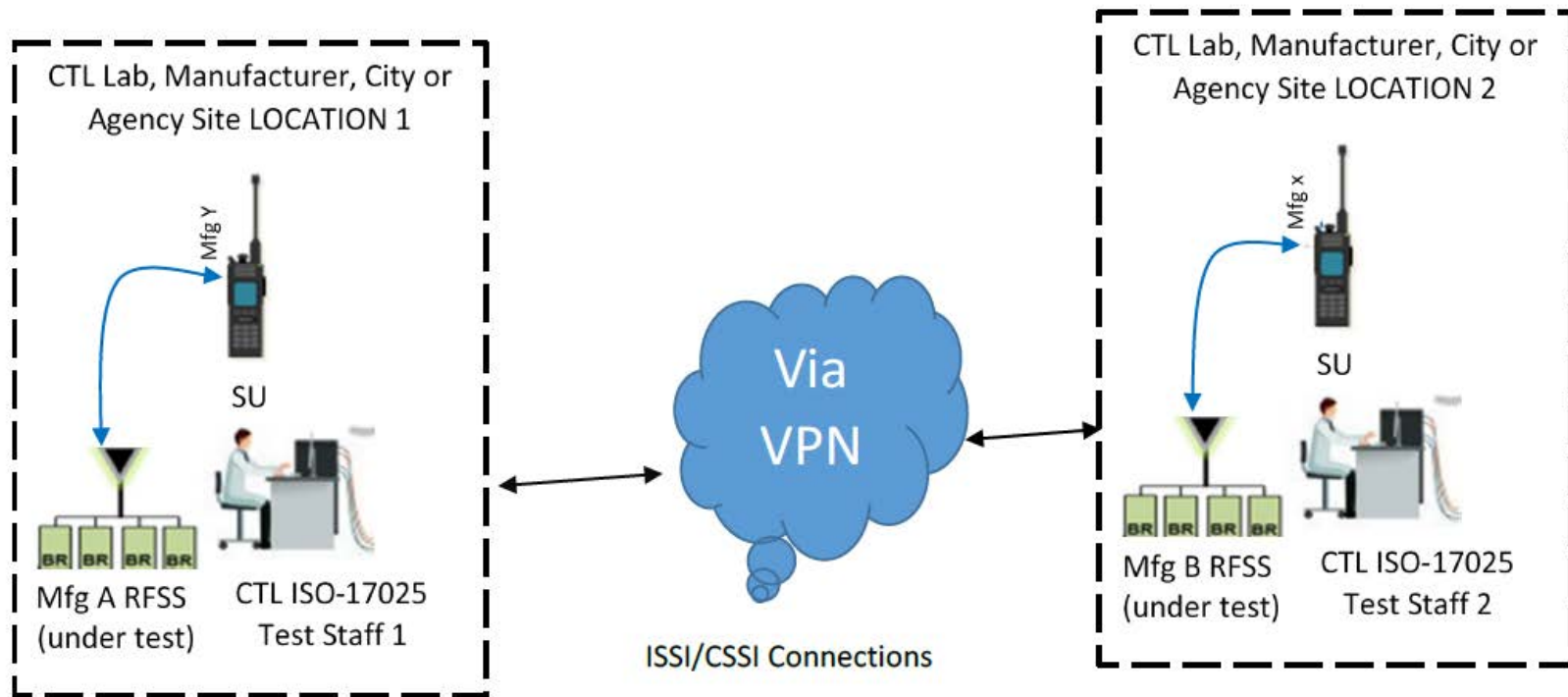Science and Technology

P25 CAP Interoperability Test Documents

- **P25 CAP ISSI CSSI Interoperability Testing Documents**
    - P25 CAB ISSI CSSI Interoperability Test Requirement - End of March
    - ISSI CSSI Equipment Interoperability Test SDOC template - End of March
    - ISSI CSSI Equipment Interoperability Test STR template - End of March

- **TIA-TR8 ISSI CSSI Interoperability Testing Document - Available now**
    - TIA-102.CACD-D *Inter-RF Subsystem Interface Interoperability Test Procedures for Trunked Voice Operation Involving the ISSI*

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P25 ISSI CSSI Interoperability Testing Policy

- P25 CAP/DHS agrees with the FPIC-endorsed field testing procedure for ISSI CSSI equipment

- P25 CAP/DHS will require an accredited P25 test lab for ISSI CSSI interoperability testing in the field

- P25 CAP/DHS will update and issue the P25 ISSI CSSI Interoperability Test Requirements CAB so that a P25 Test Lab can seek accreditation

- The P25 CAP/DHS shall add Emergency Alert, Emergency Alarm Cancel and Group Emergency Cancel test cases to the Test Requirements CAB after the test cases are developed

- ISSI CSSI Interoperability test case results can be submitted and posted before the conformance test case results are submitted and posted

- Manufacturers shall submit test case results for conformance testing after P25 CAP Conformance Testing is made available

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ISSI/CSSI RFSS to RFSS Testing Proposal

P25 Interoperability Test – Next Steps

- Complete P25 CAB for ISSI CSSI Interoperability test requirements document based on the limitations of the current TIA test procedure documents

- Develop STR and SDOC templates to accompany P25 CAB ISSI CSSI Test Requirements

- Continue working with:
  - FPIC, CAPPTG, APIC, P25 Steering Committee and TIA-TR8 to get additional emergency alarm and cancel test cases developed

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What's the Next Key Focus for the CAP AP?

- The P25 CAP ISSI/CSSI Conformance testing program; test case documentation, test tool and test lab

- The P25 CAP ISSI/CSSI Interoperability testing program, both test lab and field testing

- Publicly push for Conventional TDMA Standard development

- Collaborate toward the development of situational awareness feature standards that would be interoperable between P25 (TIA-102) and 3GPP (ATIS)

- Conduct a gap analysis on the currently published TIA-102 Standard to determine what features are defined in the TIA-102 Standard, what features are missing and what needs to be added based on user feedback for compliance testing

- Engage P25 stakeholders to identify what ISSI/CSSI features have been demonstrated to be interoperable (for posting on website)

- P25 CAP Outreach and Communications

Next P25 CAP AP Open Meeting

- June 2019
  - Perhaps with the June TIA-TR8 meeting in Des Moines, IA
  - June 18-20, 2019
- APCO 2019
  - Baltimore, MD
  - August 11-14, 2019
- SAFECOM Fall 2019
  - Location, date TBD

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DIVERSE PERSPECTIVES + SHARED GOALS = POWERFUL SOLUTIONS