Standards Development & Requirements Gathering

http://www.pscr.gov

Public Safety Communications Research Program
Department of Commerce – Boulder Labs

Sponsor Acknowledgment

- Funding for this work is provided by FirstNet

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Standards Agenda

- Pre-FirstNet Standards
- FirstNet Standards
- Standards Strategy
- 3GPP Release Process & Structure
- Current focus

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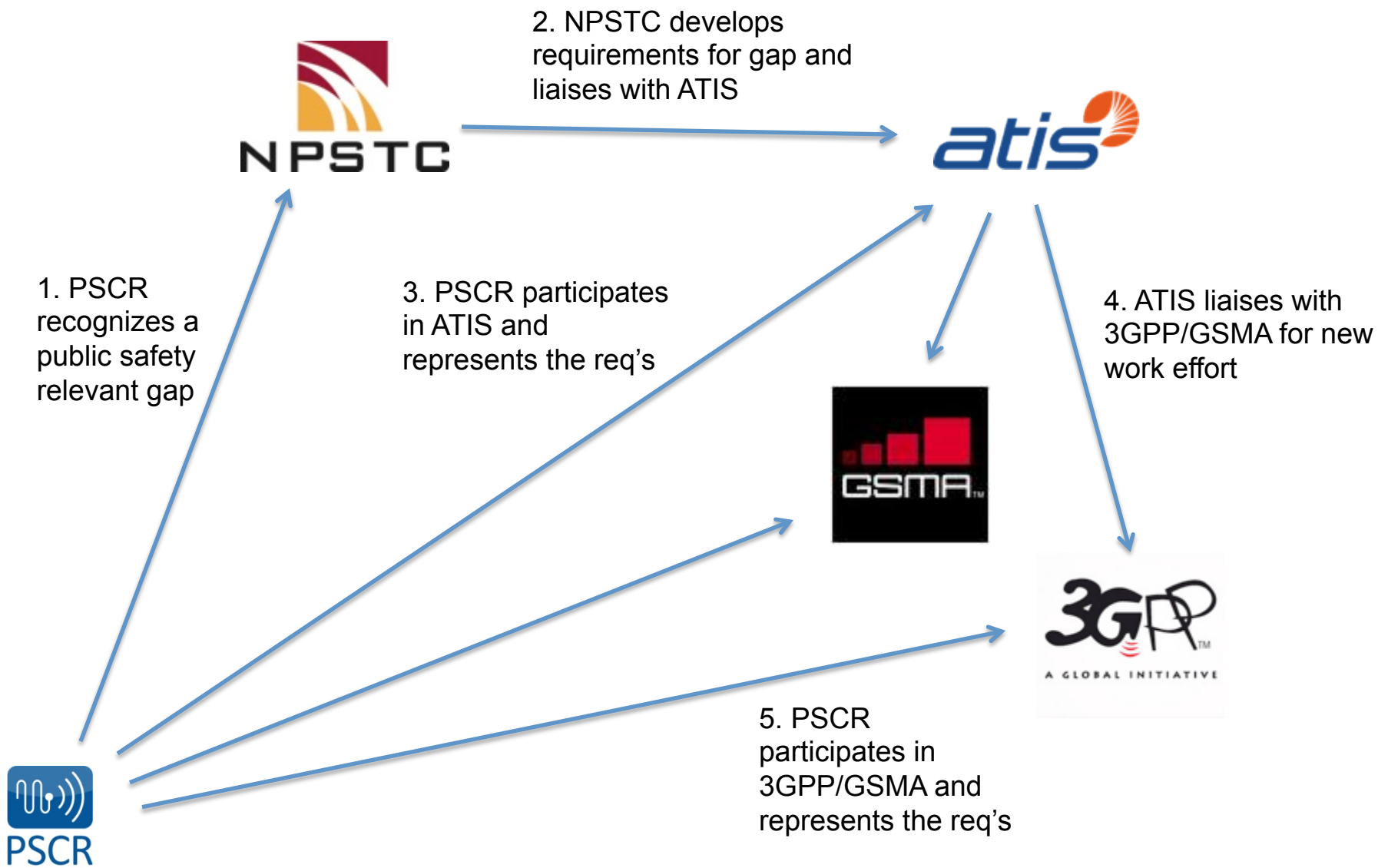
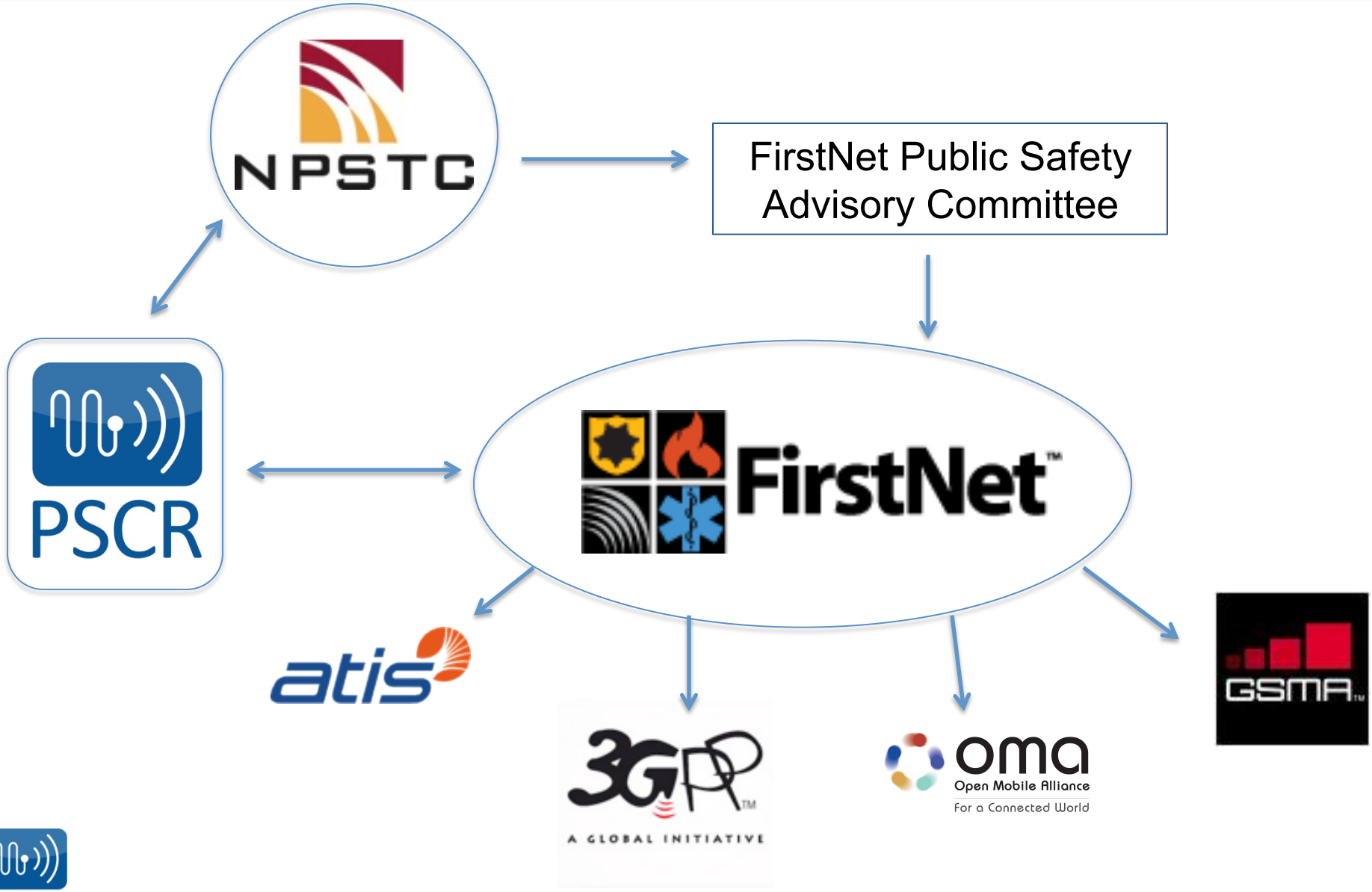
Pre-FirstNet Broadband Standards Efforts



FirstNet Standards Process



FirstNet Standards Strategy

- Mission Critical Voice
  - Use MC PTT as the goal for what needs to be standardized in LTE barring errors found
- Global Reach
  - Ensure global public safety market
- Widen Manufacturer Base
  - More diverse vendor set given the move to a globally accepted commercial technology

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Mission Critical Voice

- Two modes of operation acceptable
  - Push To Talk
  - Traditional Cellular Telephony
- Direct Mode
- Group Communications
- Audio Quality
- Speaker Identification
- Emergency Alerting

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Global Public Safety Market

- U.S. estimated at 3-5 Million Public Safety users
  - 60,000+ agencies, 8000+ land mobile radio networks
- U.K. estimated at 300k Public Safety users
- Canada, France, Australia, Germany, South Korea, etc.
- Global estimate of 45 Million Public Safety users

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Standards Cont.: 3GPP Release Process

- 3GPP uses a system of parallel "releases" to provide developers with a stable platform for implementation and to allow for the addition of new features required by the market
- Each release has three phases of a "freeze" which means that no additional features can be added after each successive freeze

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Standards Cont.: 3GPP Release Process

- Release 12
  - Stage 1 Freeze is March 2013
    - slipped to June 2013
  - Stage 2 Freeze is December 2013
    - slipped to March 2014
  - Stage 3 Freeze is June 2014
    - slipped to December 2014
    - Protocols stable 3 months later
- Release 13
  - Stage 1 Freeze is September 2014
    - expected to slip 3 months
  - Stage 2 Freeze is June 2015
  - Stage 3 Freeze is March 2016
- Typically a desired feature will appear 2 years after a Stage 1 Freeze or 1 year after a Stage 3 Freeze

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Standards Continued: 3GPP Structure

Technical Specifications Group (TSG) Structure

TSG GERAN
GSM EDGE Radio Access Network

GERAN WG1
Radio Aspects

GERAN WG2
Protocol Aspects

GERAN WG3
Terminal Testing

TSG RAN
Radio Access Network

RAN WG1
RL 1 Spec

RAN WG2
RL 2 Spec
RL 3 RR Spec

RAN WG3
Lub, Iur, Iu specs
UTRAN O&M Reqs

RAN WG4
Radio Perf
Protocol Aspects

RAN WG5
Mobile Terminal
Conformance Testing

TSG SA
Service & Systems Aspects

SA WG1
Services

SA WG2
Architecture

SA WG3
Security

SA WG4
Codec

SA WG5
Telecom Mgt

TSG CT
Core Network & Terminals

CT WG1
MM/CC/SM (Iu)

CT WG3
Interworking w/ Ext networks

CT WG4
MAP/GTP/BCH/SS

CT WG6
Smart Card App Aspects

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Standards Continued: Direct Mode

- 3GPP: Proximity Services (Direct Mode) – REL 12/13
  - Current progress to date for REL 12
    - Communications
      - In and out of network included
    - Discovery
      - In network only included
    - Relaying
      - Ue-to-Ue and Ue-to-Network not included
  - Next steps
    - REL 13 work to include REL 12 unaddressed work
    - Looking at adding priority to LTE direct mode

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Standards Continued: Group

- 3GPP: Group Efficiency (Group communications) – REL 12/13
  - Current progress to date
    - Normative, standards track
  - Next steps
    - Group Management back for REL 13
    - Determine potential to test eMBMS in laboratory

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Standards Continued: PTT

- 3GPP: MC PTT – REL 13
  - Current progress to date
    - Normative, standards track
    - Stage 1
      - In progress at 60% completion
        - » Note that there was objection to rapporteur estimation of 60%
      - Large unknown with OMA and TCCE requirements
    - Stage 2
      - Began two weeks ago, largely informative discussion
      - No formal approval of WID (June SA Plenary)
      - Potential contention regarding where to standardize PTT

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Standards Continued

- What we have learned
  - Public safety LTE is a global market
    - We have worked closely with:
      - TETRA CCA
      - APCO Global Alliance
        - » In particular USA, Australasia, Canada, and Britain
      - Canadian government & Canadian Interoperability Technology Interest Group (CITIG)
    - We have been successful because of the global partnerships
  - Each effort requires different partners depending on varied business interests

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Standards Upcoming Events

- Events:
  - [3GPP] SA1 Working Group – May 2014 – Sapporo
    - MC PTT week of May 12, critical meeting for progress, REL 13 starts for PRoSe and GCSE_LTE
  - [3GPP] SA3 Working Group – May 2014 – Sapporo
    - Security aspects for PRoSe and GCSE_LTE
  - [3GPP] SA2 Working Group – May 2014 – Phoenix
    - Working begins on MC PTT, along with continued discussions for REL 13 PRoSe and GSCE_LTE
  - [3GPP] RAN1 & RAN2 Working Groups – May 2014 – Seoul
    - Continued standardization of ProSe
  - [3GPP] RAN & SA Plenary – June 2014 – Sophia Antipolis
    - Expected discussion about what, if any, breakup of standardization of MC PTT across 3GPP, OMA, and ETSI

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PSCR Requirements Gathering

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Sponsor Acknowledgment

- Funding for this work is provided by the Department of Homeland Security's Office for Interoperability and Compatibility

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Requirements Agenda

- Where we have been?
- Where we are going?
- Requirements development process

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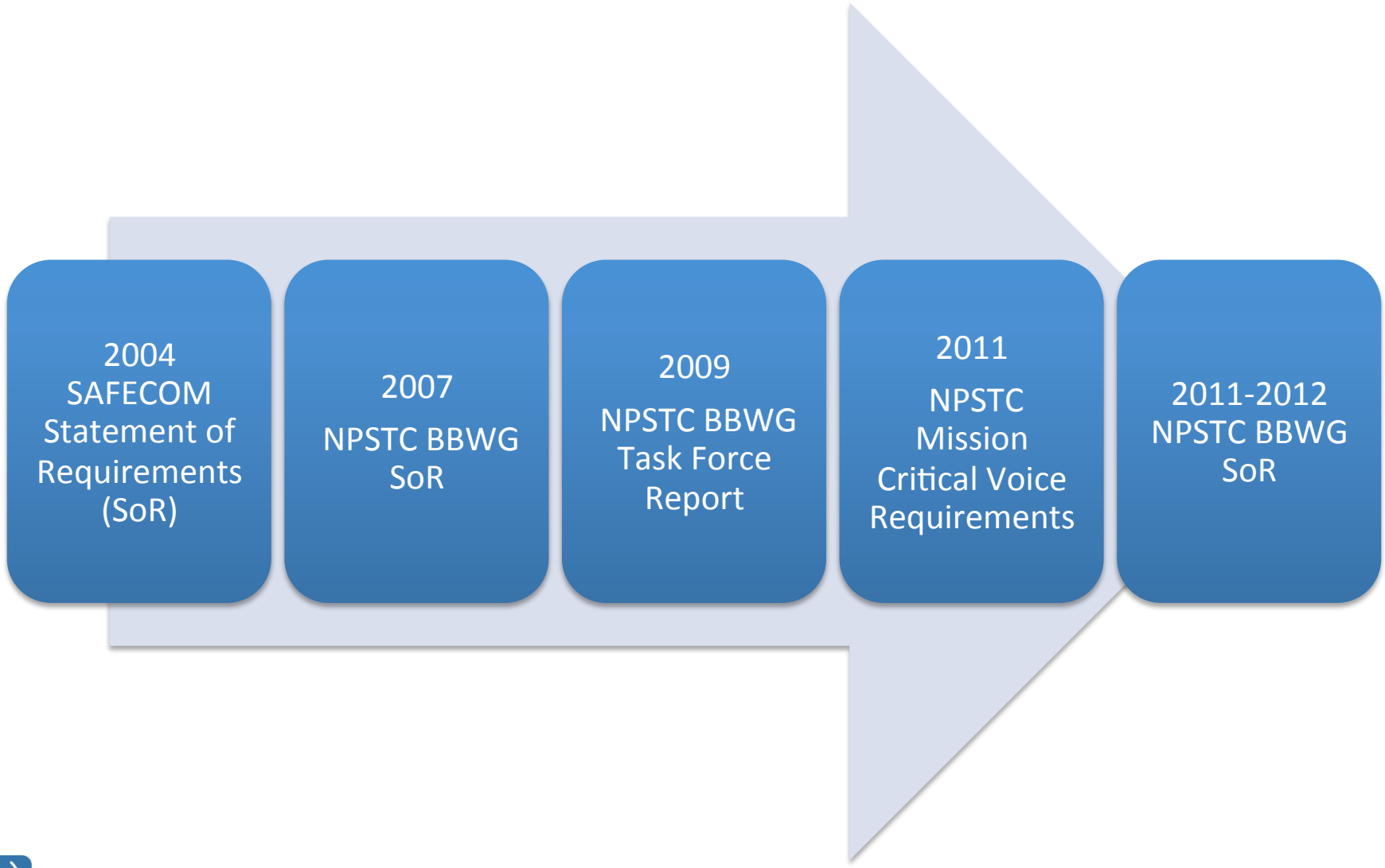
Requirements



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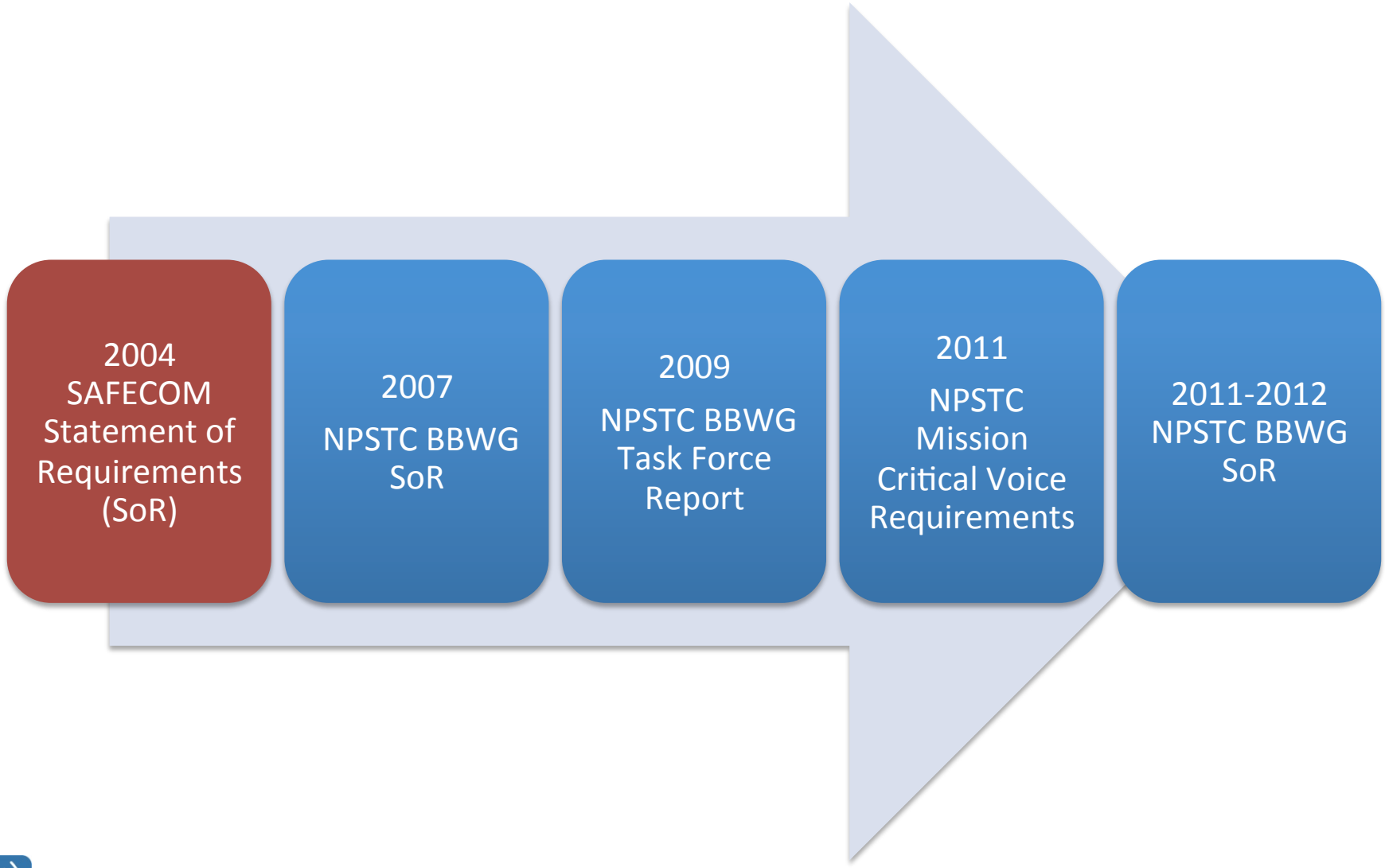
Requirements – Where have we been?



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Requirements – Where have we been?

- 2004 SAFECOM Statement of Requirements
  - Who, what, why, when operational understanding
  - Readers digest of future public safety thinking

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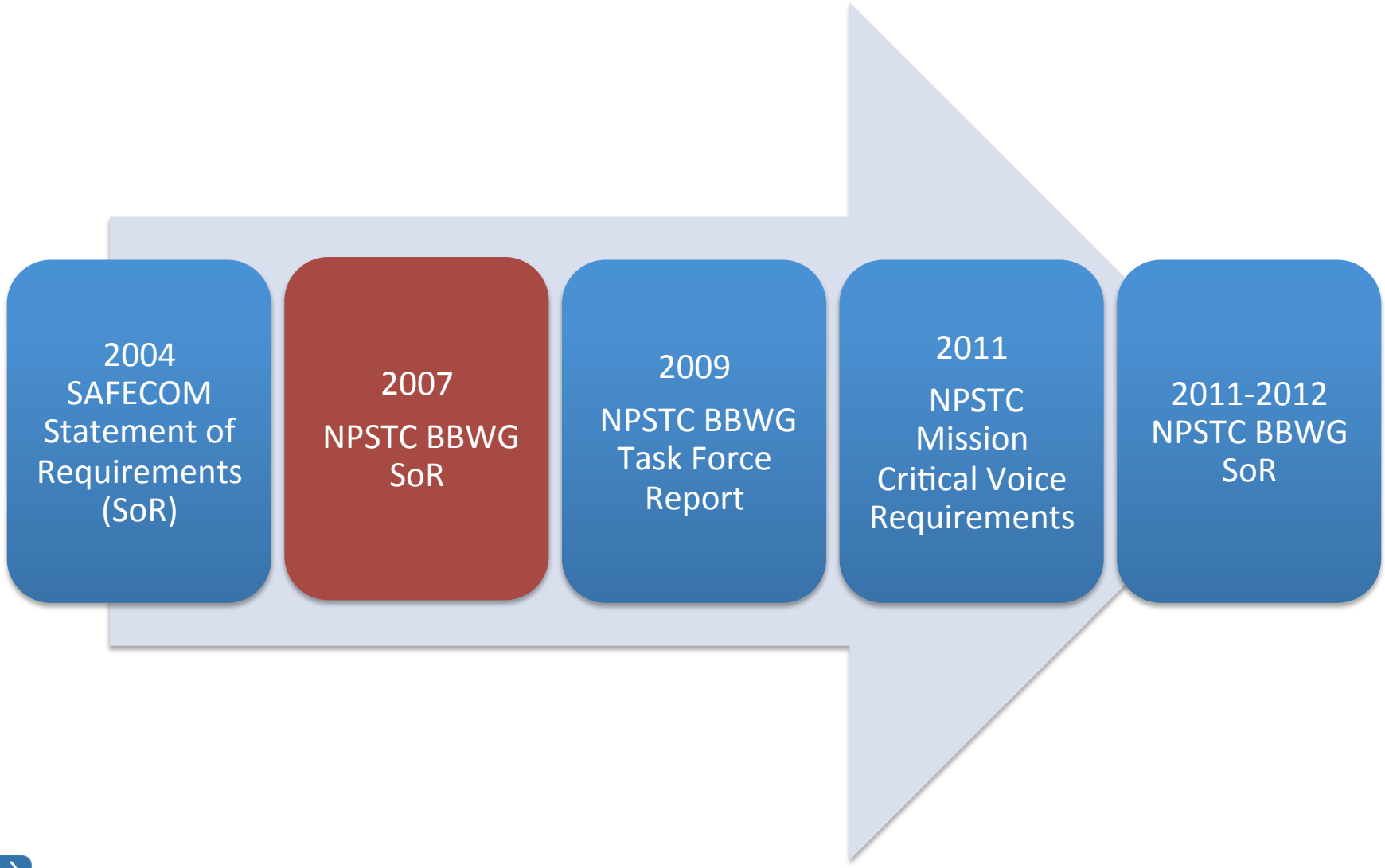
Requirements – Where have we been?



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Requirements – Where have we been?

- 2007 National Public Safety Telecommunications Council (NPSTC) Broadband Working Group (BBWG) Statement of Requirements
  - Based on public-private partnership

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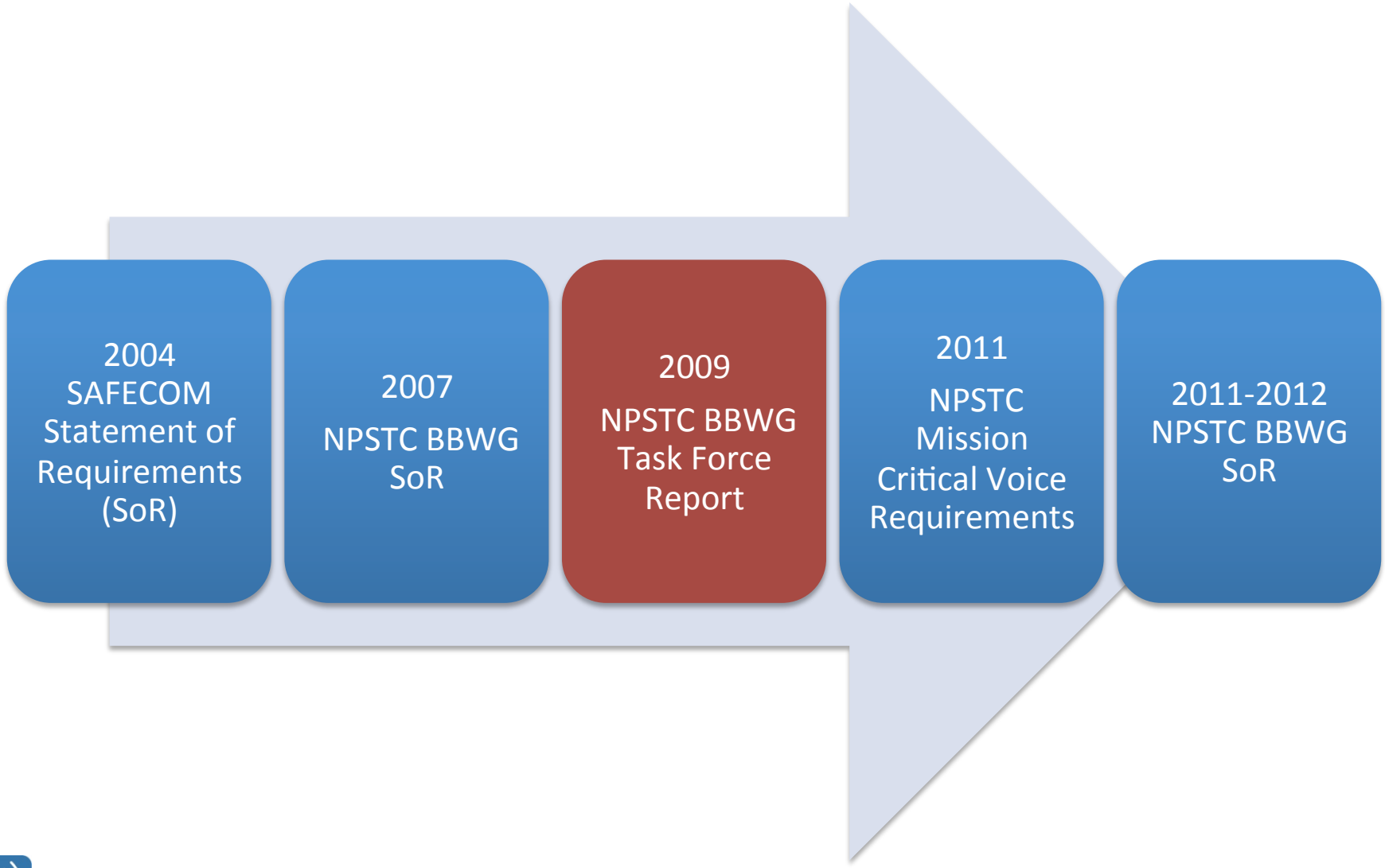
Requirements – Where have we been?



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Requirements – Where have we been?

- 2009 NPSTC BBWG Task Force Report
  - Public safety selects LTE
  - LMR model for procurement and operation

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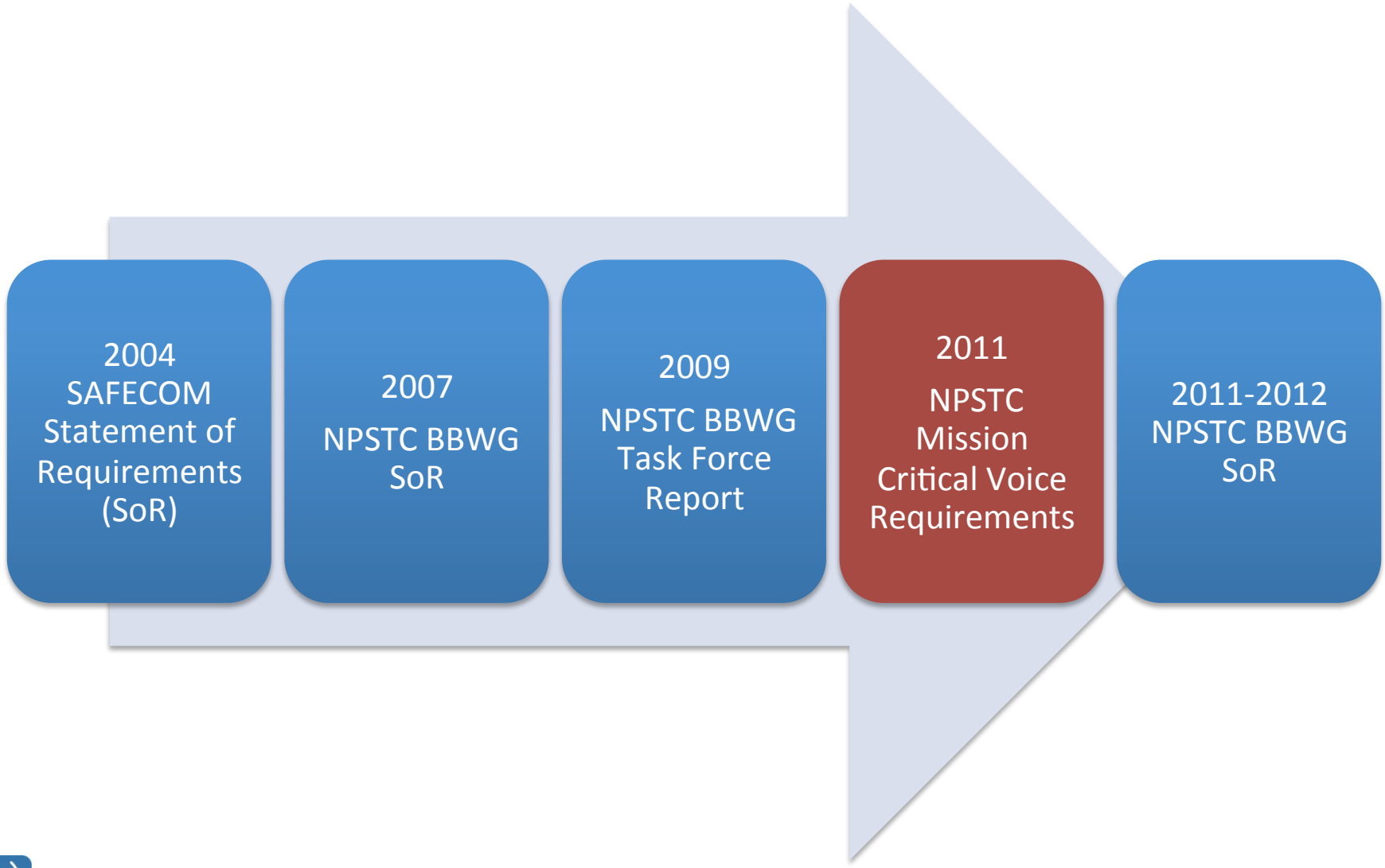
Requirements – Where have we been?



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Requirements – Where have we been?

- 2011 Mission Critical Voice Requirements
  - BBWG seeks to define features/functions that make up mission critical voice
    - direct mode (standards work)
    - push to talk (standards work)
    - cellular telephony (TBD)
    - voice quality (audio quality testing)
    - emergency alerts (TBD)
    - group communications (standards work)

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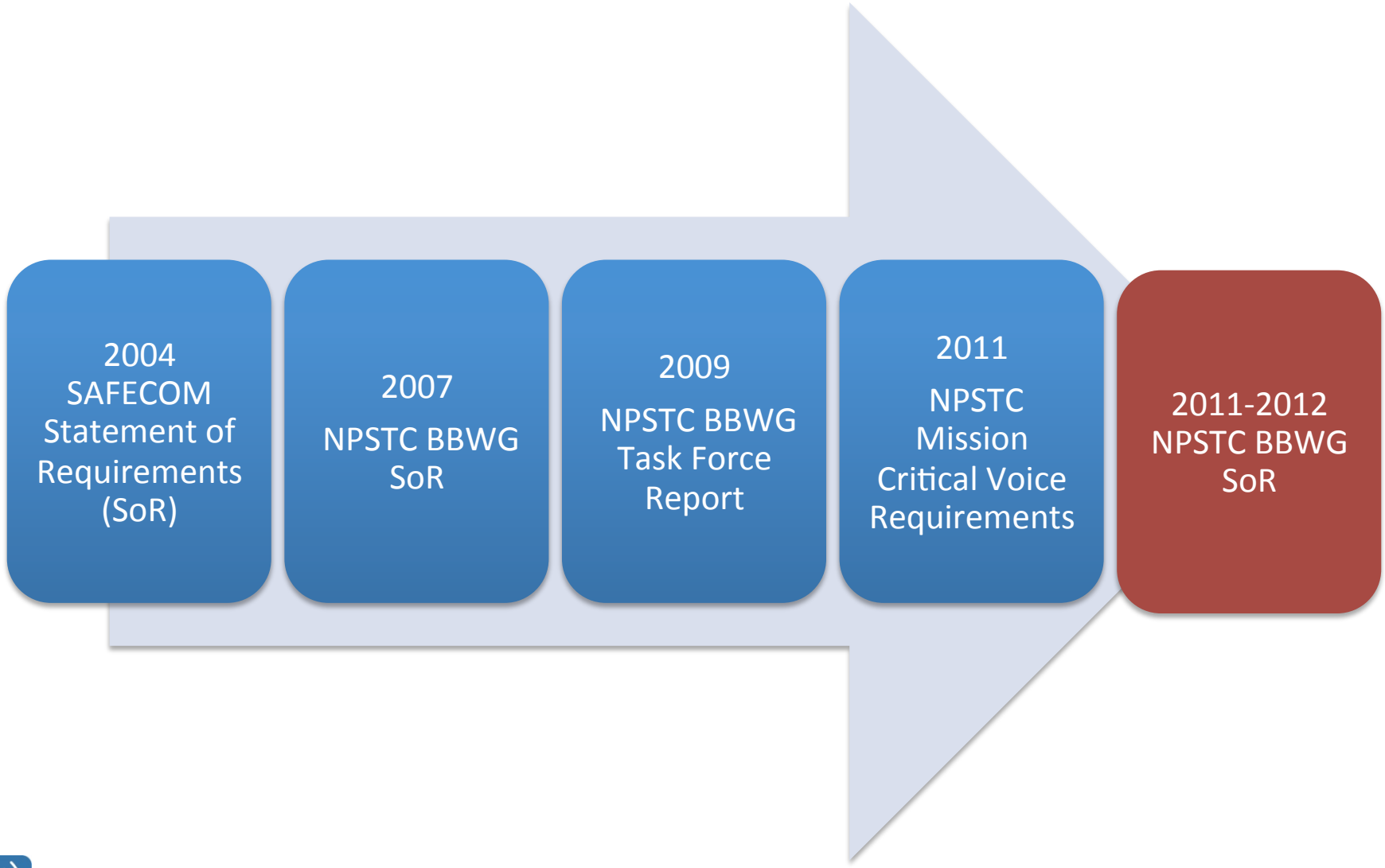
Requirements – Where have we been?



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Requirements – Where have we been?

- 2011-2012 NPSTC BBWG Task Group Efforts
  - Priority/quality of service
  - Local control
- 2012 NPSTC BBWG Launch Statement of Requirements
  - Delivered a qualitative only, what not how set of requirements to FirstNet BoD
  - Answered the question of what would Firstnet need to do that public safety would feel compelled to take service

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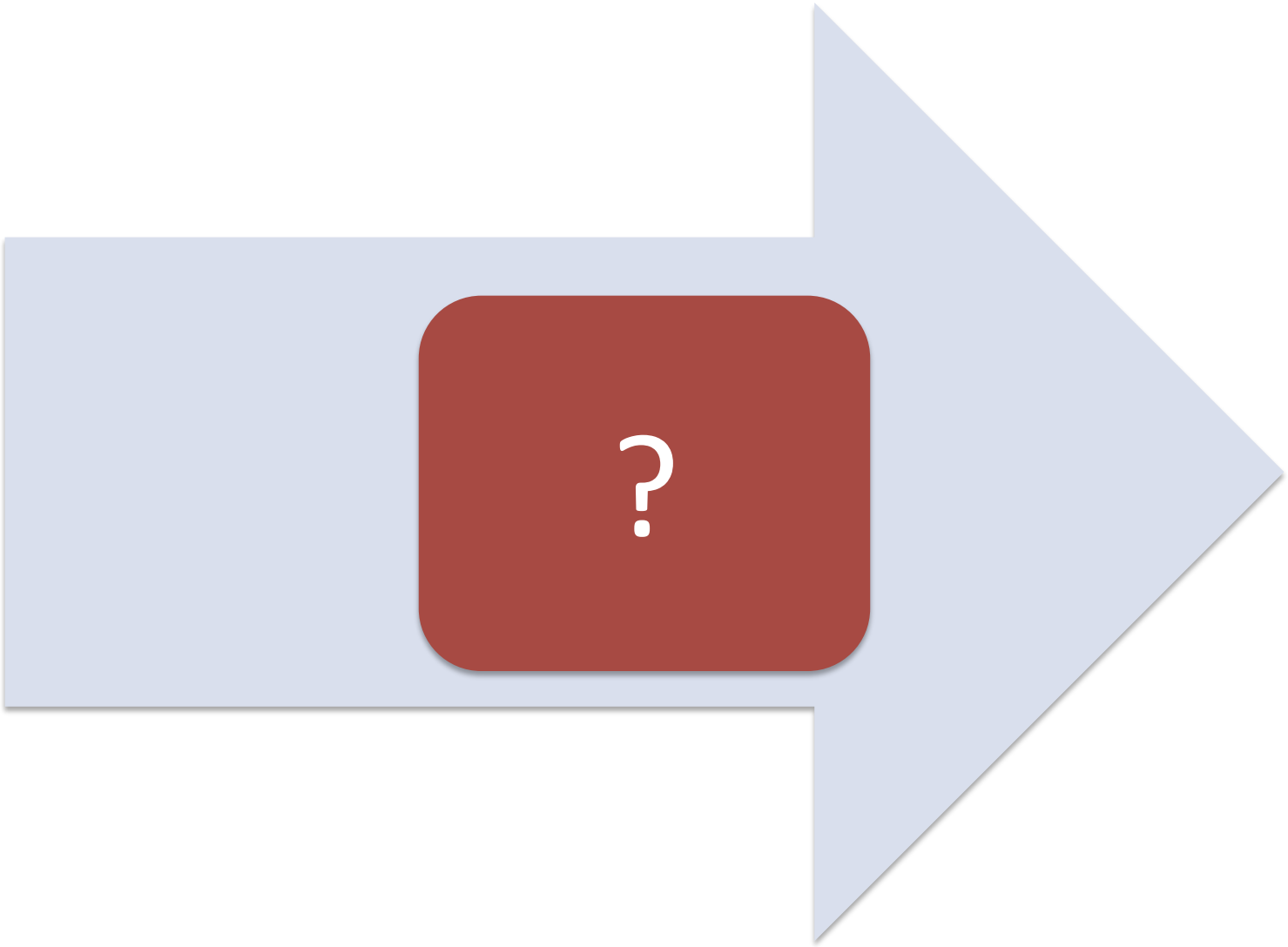
Requirements – Where are we going?



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Requirements – Where are we going?

- Launch SoR Part 2 – Quantitative
- Task Forces
  - Priority, QoS, Pre-emption
  - Local Control
- …

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Mission Critical Voice

- Two modes of operation acceptable
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- Direct Mode
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- Audio Quality
- Speaker Identification
- Emergency Alerting

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NPSTC

NATIONAL PUBLIC SAFETY TELECOMMUNICATIONS COUNCIL

Console LTE Task Team

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June 4, 2014

Task Team Co-Chairs

Pam Montanari, NPSTC

Randy Richmond, Zetron

The member organizations of the National Public Safety Telecommunications Council are grateful to the Department of Homeland Security's Science and Technology Directorate, Office for Interoperability and Compatibility (OIC) and the National Protection and Programs Directorate, Office of Emergency Communications (OEC)

Points of view or opinions expressed are those of the originators and do not necessarily represent the official position or policies of the U.S. Department of Homeland Security.

Console LTE Task Team

Purpose/Goal

- Examine and define the public safety requirements for the functionality and interfaces for command and control consoles connected to the LTE network. The final report is intended primarily for use by FirstNet to fully understand the mission requirements of the public safety community and to provide guidance on the design and Implementation of the NPSBN as it relates to current and future console operations.

Console LTE Task Team - Requirements

- Console Requirement categories
  - Network, Data Management, Location, Messaging, Priority, Security and User Equipment.
- Console Requirement Functionality
  - Interface with existing networks
  - Support legacy and future technologies
  - Provide robust functionality for voice, video and data services
  - Support the ability to prioritize users and applications in support of an incident or event
  - Provide functionality to manage network priority within an incident
  - Allow seamless transfer of synchronized data sets to other locations
  - Support the use of analytics to receive, organize, prioritize, and selectively route large amounts of data

Console LTE Task Team – Existing Functionality

- The group is not documenting existing console functionality (CAD, 911, Radio).
- The group is not recommending the creation of a single new console that will provide all features and functionality.

Console LTE Task Team – Timeline

- Initial meeting, November 2013.
  - Public Safety and Industry
- Face-to-face meeting, March in Boulder.
  - Discipline specific use cases developed, action items reviewed, requirements developed.
  - 48 public safety requirements and interfaces
- Draft Report was completed in April 2014
  - Currently in review process
- Final Report, August 2014.

NPSTC

NATIONAL PUBLIC SAFETY TELECOMMUNICATIONS COUNCIL

Public Safety Statement of Requirements

NPSTC Process

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SOR Process Goals

- **Inclusive**
  - Public Safety representatives from all disciplines
  - Industry participants are critical
- **Transparent**
  - Open meetings and conference calls
  - Publish documents and meeting notes
- **Thorough**
  - Serial document reviews
  - Collaboration with NPSTC Governing Board representatives

NPSTC Member Organizations

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Member Organizations

- American Association of State Highway Transportation Officials
- American Radio Relay League
- Association of Fish and Wildlife Agencies
- Association of Public-Safety Communications Officials – International
- Forestry Conservation Communications Association
- International Association of Chiefs of Police
- International Association of Emergency Managers
- International Association of Fire Chiefs
- International Municipal Signal Association
- National Association of State Chief Information Officers
- National Association of State Emergency Medical Services Officials
- National Association of State Foresters
- National Association of State Telecommunications Directors
- National Emergency Number Association
- National Sheriffs' Association

Associate Member Organizations

- Alliance for Telecommunications Industry Solutions
- Canadian Interoperability Technology Interest Group
- National Council of Statewide Interoperability Coordinators
- Telecommunications Industry Association
- Utilities Telecom Council

Liaison Organizations

- Federal Communications Commission
- Federal Emergency Management Agency
- Federal Partnership for Interoperable Communications
- National Telecommunications and Information Administration
- DHS Office for Interoperability & Compatibility
- DHS Office of Emergency Communications
- Public Safety Communication Europe
- SAFECOM
- U.S. Department of Justice
- U.S. Department of the Interior

NPSTC is a federation of organizations whose mission is to improve public safety communications and interoperability through collaborative leadership.

NPSTC Member Organizations

Member Organizations

- AASHTO
- ARRL
- AFWA
- APCO – International
- FCCA
- IACP
- IAEM
- IAFC
- IMSA
- NASCIO
- NASEMSO
- NASF
- NASTD
- NENA
- NSA

Associate Member Organizations

- ATIS
- CITIG
- NCSIC
- TIA
- UTC

Liaison Organizations

- FCC
- FEMA
- FPIC
- NTIA
- DHS OEC
- DHS OIC
- PSCE
- SAFECOM
- DOJ
- DOI

Public Safety SOR Process

- All Committee & Working Group activities are open to all interested parties.
- Industry, commercial, and general government entities are welcome to join public safety representatives in all groups.
- Participants can join a process at any time, up through the final week of the project.

Public Safety SOR Process Steps

1. NPSTC task teams, including industry and public safety, develop requirements statements:
   - Qualitative
   - Quantitative
2. A Public Safety Review Team, including “new eyes”, conducts a final review of the document
   - Readability
   - Comprehension
   - Public Safety need articulated

Public Safety SOR Process Steps

3. Final draft document is sent back to the larger working group for comments, concerns and edits.
4. Document is concurrently sent to the Emergency Communications Preparedness Center (ECPC), for Federal review and input.
5. Final draft is sent to the NPSTC Governing Board for review, edit and approval.
6. Final document is posted on the NPSTC web site and is sent to the FirstNet Public Safety Advisory Committee (PSAC)

NPSTC Broadband Reports

- All reports are located on NPSTC website:
  www.npstc.org
  - Master 700 MHz Broadband SOR
  - Launch SOR Qualitative
  - Mission Critical Voice Over LTE
  - Multi-Media Emergency Services Use Case Report
  - Local Control Definitions
  - Priority and Quality of Service
  - Push to Talk Requirements for Public Safety
  - Public Safety Grade Requirements

NPSTC Participation Sign Up

Members | Organization | Events-Meetings | Participate-Volunteer | Resources | About Us | Library | NIIX

Volunteer Form

The purpose of the form is to volunteer for a NPSTC Committee or Working Group project. The form will be forwarded to the Committee or Working Group Chair and a confirmation will follow within 5-7 days with the immediate point of contact information and meeting schedule.

"Level of Commitment"

To stay abreast of what is going on in a Committee or Working Group and to participate in the discussions, please request an invite to the Committee(s) Yahoo listserv at volunteer@npstc.org.

If your commitment is to **work** on an actual project, which includes meeting participation, assigned tasks and member of the Committee's Yahoo listserv, please indicate which projects you would like to participate in below:

First Name: *

Last Name: *

Company or Member Association (if any): *

Email Address: *

Additional Committee(s) or Working Group(s) You Wish to Join:

- ☐ Interoperability Committee
  - ☐ Channel Naming WG
  - ☐ Cross Border WG
  - ☐ EMS WG
  - ☐ Radio IO Best Practices WG
- ☐ Spectrum Management Committee
- ☐ Technology Committee
  - ☐ Broadband WG
    - ☐ Launch SOR Quan TG
  - ☐ Radio PCR WG
  - ☐ VTAG WG
- ☐ NIIX

Comments:

Thank you for joining NPSTC in supporting the public safety telecommunications community.

If you should have any questions, please contact the Support Office at support@npstc.org.

submit

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Thank you!

Andrew Thiessen, andrew@its.bldrdoc.gov
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Barry Luke, bluke@npstc.org

For Additional Information:
http://www.pscr.gov