Florida – State Working Group, Interoperable Communications Committee

Guide of Interoperability Components

A Primer

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Foreword

This is a First Edition of an expected ongoing and living document that can greatly benefit from the input of individuals and groups involved in interoperable communications. Individuals could include communications managers, dispatch supervisors, subject matter experts, and technical personnel to name a few. Groups could include the State Working Group – Interoperable Communications Committee, Regional Domestic Security Task Force – Communications Committee, Joint Task Force Technical and SOP Committees, Emergency Medical Services Advisory Council – Technical Advisory Committee, Police Chiefs' and Sheriffs' Associations, and Region 9 Committee, to name a few.

As time progressed, the need for communications interoperability became more appreciated. Stories abound that describe the need for interoperable communications.

- Polly Clas
- Oklahoma City bombing
- Florida wildfires
- Florida hurricanes
- "9-11" that really brought attention to the forefront

A video was produced called "Why Can't We Talk" that included Marilyn Ward, who at the time was with Orange County, Florida.

Today, we appreciate many opportunities that provide funding for interoperable communications efforts and many systems implemented for interoperable communications (a.k.a., "tools in the toolbox"). We have an interoperability continuum to reference. Department of Homeland Security and FEMA provide support. The National Public Safety Telecommunications Council provides support. Federal, State, Local, Tribal, and other agencies appreciate the value of interoperable communications.

The following pages will guide you through the various interoperability components. After reading this "primer," you should have an appreciation of all the parts and how they inter-relate for a cohesive, big picture that contribute to the make-up of the interoperability effort. You will find hyperlinked text or hotlinks to the internet for additional research on topics of interest to you.

This First Edition is a compilation of knowledge from Carlton Wells, but is only a starting point. As more information is gained or provided, this document can be updated as warranted. Your input can be provided to Carlton Wells at carlton.wells@dms.myflorida.com.

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Interoperability Components

Table 1 below will be expanded on subsequent pages, as will the abbreviations, acronyms, and perceived hieroglyphics. It is presented here to show all the parts of interoperability at a glance in order to appreciate how comprehensive interoperability is.

This is only a start of what interoperability entails. It will most likely be expanded as this document and related activities/opportunities evolve.

Table 1:

Resources	**Funding**	**Planning**	**Agencies**	**Uses**	**References**
FIN	SHSGP	SCIP	SLERS	Daily	SAFECOM
Mutual Aid	UASI	NECP	Locals	Planned	DHS
SLERS	IECGP	LECP	Federal	Unplanned	NPSTC
EDICS	SLERS Enhancement	EMSCP	LE/EMS/Fire	Emergency	Project 25
MARC	PSIC	Region 9 Plan	Public Works	Disaster	CASM
EDWARDS	ASPR	NIMS-ICS	Tribal	Intercom	NIIX
	Local	APCO TERT Comm. Plan	NGOs	Conference	NIST-OLES
			CIIs	Patch	SWG-ICC
				Dispatch	FEMA Region IV
					FCC
					FEITC (a.k.a., SIEC)

The text to follow will serve more as a primer of all the interoperability components. Giving each component a full and comprehensive write-up would become to voluminous for this document and likely duplicate other documents that already provide the material. With that, hyperlinks for selected text or URLs will be provided for additional information.

In the conclusion, expect to find graphical relationships between interoperability components or referenced throughout.

Resources of Interoperable Communications

Florida Interoperability Network

The Florida Interoperability Network (FIN) is a statewide network of VHF, UHF and 800 MHz interagency and interoperability channels, and networking facilities for use by all public safety agencies. The network provides four basic functions:

A. *Radio Control:* Radio control functions on FIN benefit all Network Control Centers (see section 6.3.2) by enabling access the 800 MHz mutual aid calling and first tactical channel on the Statewide Law Enforcement Radio System (SLERS), as well access to other mutual aid channels statewide that are connected to FIN.

B. *Radio Patch:* Radio patching capabilities on FIN can be used to connect channels/talkgroups of an agency's primary radio system to channels/talkgroups of another radio system, particularly within an overlapping coverage area and in areas that have built out mutual aid channels whether on an agency's private systems or connected directly to FIN.

C: *Intercom:* Intercom capability on FIN to allows separate dispatch centers to communicate over non-radio paths.

D. *Conference:* Conferencing capability on FIN to allows up to eight (8) dispatch centers to communicate over non-radio paths when necessary for wide-area coordination.

More details on the Florida Interoperability Network are available at:

http://dms.myflorida.com/suncom/public_safety/radio_communications/florida_interoperability_network_fin

Mutual Aid Channels

Florida recognizes many mutual aid channels in various radio frequency bands. These channels serve Emergency Management, Law Enforcement, Fire, Emergency Medical Services, as well all other Public Safety agencies in general. These mutual aid channels have been implemented by State and Local agencies with varying degrees of visibility.

- MA-CALL and MA-TAC1 (rebanding to 8CALL90 and 8TAC91, respectively) has been implemented in Statewide Law Enforcement Radio System (SLERS).
- Most of the channels in the table below have been implemented in Local systems, but in coordination with SLERS MA-CALL and MA-TAC1 per the Florida – Region 9 Plan.

- Eight (8) of the channels in the table below have been implemented in FIN, but in coordination with SLERS and Local systems. The objective was to fill "known" gaps between licensed mutual aid radio coverage from other public safety agencies' systems. "Unknown" gaps remain to be addressed and acted on as funding permits.

Table 2 below provides:

- Transmit and receive frequencies
- Common channel names established in APCO/NPSTC ANS 1.104.1-2010.
- New 800 MHz frequencies resulting from "rebanding"
- Continuous Tone-Coded Squelch System (CTCSS) frequencies
- Radio service identifiers for the various rule references by the Federal Communications Commission
- Primary use for each mutual aid channel
- Area permitted for licensed operation

Table 2:

FREQUENCY Base TX/RX (MHz)	**NPSTC Name**	**New-Rebanded FREQUENCY Base TX/RX (MHz)**	**CTCSS (Hz)**	**RADIO SVC**	**PRIMARY USE**	**AREA**
39.10/39.10		-	156.7	PW	Emergency Management (Civil Defense)	Statewide
39.18/39.18		-	156.7	PW	Emergency Management (Civil Defense)	Statewide
45.86/45.86	LLAW3D	-	None	PW	Law Enforcement Emergency	Wide-Area
154.950/154.950		-	None	PW	Law Enforcement Emergency	Wide-Area
465.275/460.275		-	None	PW	Law Enforcement Emergency	Wide-Area
155.370/155.370		-	None	PW	Law Enforcement Intercity	Statewide
154.265/154.265	VFIRE22	-	None	PW	Fire Mutual-Aid "Red" (Mobile/Portable Only)	Statewide
154.280/154.280	VFIRE21	-	None	PW	Fire Mutual-Aid "White" (Base and Mobile)	Statewide
154.295/154.295	VFIRE23	-	None	PW	Fire Mutual-Aid "Blue" (Mobile/Portable Only)	Statewide
155.340/155.340	VMED28	-	None	PW	Air Secondary-EMS Air Transport	Statewide
468.175/463.175		-	167.9	PW	Statewide Medical Coordination-MED8	Statewide
468.1875/463.1875		-	167.9	PW	ESF 8 Medical Coordination – MED 82	Statewide
853.3875/808.3875		854.6375/809.6375	210.7	GE	Public Safety Mutual-Aid (FCC Channel (96 old) – (256 new))	Statewide
866.0125/821.0125	8CALL90	851.0125/806.0125	156.7	GE	National Public Safety Mutual Aid Calling (FCC Channel (601 old) – (01 new))	Nationwide
866.5125/821.5125		851.5125/806.5125	156.7	GE	National Public Safety Mutual Aid Tactical #1 (FCC Channel	Nationwide

	8TAC91				(639 old) – (39 new))	
867.0125/822.0125	8TAC92	852.0125/807.0125	156.7	GE	National Public Safety Mutual Aid Tactical #2 (FCC Channel (677 old) – (77 new))	Nationwide
867.5125/822.5125	8TAC93	852.5125/807.5125	156.7	GE	National Public Safety Mutual Aid Tactical # 3 (FCC Channel (715 old) – (115 new))	Nationwide
868.0125/823.0125	8TAC94	853.0125/808.0125	156.7	GE	National Public Safety Mutual Aid Tactical # 4 (FCC Channel (753 old) – (153 new))	Nationwide

Statewide Law Enforcement Radio System

"The goal of the Statewide Law Enforcement Radio System (SLERS) is to provide State law enforcement officers with a shared 800 MHz radio system. This digital system serves over 6,500 users with 14,000 radios in patrol cars, boats, motorcycles, and aircraft, wherever they may be located in the state.

By providing a common communications system for the Joint Task Force agencies, the State achieves:

- Effective interagency communications
- Coordinated communications with local public safety entities
- A solution to radio frequency congestion
- Replacement of older agency-specific systems without duplication of effort "[1]

Other users (or SLERS Subscribers) "…can join a state-of-the-market statewide system with minimum capital investment and at a fraction of the cost of installing a new local system. Third-party subscribers can also join the system as interoperability users and use SLERS as an auxiliary system for direct communications with other SLERS users on interagency and inter-local talk groups."[2]

More details on the SLERS are available at:

> http://dms.myflorida.com/suncom/public_safety/radio_communications/statewide_law_enforcement_radio_system_slers

1 http://dms.myflorida.com/suncom/public_safety/radio_communications/statewide_law_enforcement_radio_system_slers

2 http://dms.myflorida.com/suncom/public_safety/radio_communications/statewide_law_enforcement_radio_system_slers/third_party_subscribers

Emergency Deployable Interoperable Communications System

Emergency Deployable Interoperable Communications System (EDICS) was developed by the State of Florida to provide nine (9) tactical field-based systems in transportable mil-standard shock-mount cases capable of running on multiple power sources. Each system contains an ACU-1000 dual-shelf interconnect system with the following resources:[3]

- HF (2 – 30 MHz)
- SINCGAR (30 – 78 MHz)
- VHF-Low
- VHF Aircraft
- VHF-High
- VHF Marine
- UHF Low
- UHF High
- 700 MHz
- Trunking Type I, II/IIA (800 MHz)
- Nextel (800 MHz)
- LTR (800 MHz)
- Multinet (800 MHz)
- Cellular (800 MHz)
- STU-III
- Satellite
- VoIP
- FIN workstation

Mutual Aid Radio Cache

A Mutual Aid Radio Cache (MARC) was developed by the State of Florida in response to the 1998-99 wildfires in Florida to provide ten (10) tactical field-based transportable systems. Five (5) additional systems are expected to be purchased with Urban Areas Security Initiative (UASI) funds. Each system provides:

- Trailer-mounted mobile repeaters
- VHF-High mutual aid frequencies
- 800 MHz mutual aid frequencies
- 110-foot crank-up tower
- 125 handheld radio cache

[3] 09%20-%20Interoperability-Information%20Mgmt.pdf (rev. 11/10/2008), Chuck Hagan and Carla Boyce, Florida Division of Emergency Management, pg. 6

Emergency Deployable Wide-Area Remote Data System

An Emergency Deployable Wide-Area Remote Data System (EDWARDS) was developed by the State of Florida, now offered by TracStar Systems, to provide nine (9) tactical field-based systems in transportable mil-standard shock-mount cases capable of running on multiple power sources. Each system provides:[4]

- Satellite-based internet, 4 MB feed (2 MB up and 2 MB down)
- Wide-area (5-mile minimum) 802.11s footprint, plus one 30-mile long shot
- Six (6) tactical hand-out kits to MESH multiple command vehicles or sites within the footprint or at either end of the long shot
    - Four (4) VoIP telephone circuits per kit, 32 lines per system that includes an 8-port hub
    - 12-16 data users (8 wired)
- 4.9 MHz MESH government-secure networking between field sites
- Crisis Command software with interoperable desktop, web, and mobile technology for different kinds of data

[4] 09 - 0Interoperability-Information Mgmt.pdf (rev. 11/10/2008), Chuck Hagan and Carla Boyce, Florida Division of Emergency Management, pg. 8

Planning

National Emergency Communications Plan

"The National Emergency Communications Plan (NECP) focuses on the emergency communications needs of response personnel in every discipline, at every level of government, and for the private sector and non-governmental organizations (NGO). **Emergency communications** is defined as the ability of emergency responders to exchange information via data, voice, and video as authorized, to complete their missions. Emergency response agencies at all levels of government must have interoperable and seamless communications to manage emergency response, establish command and control, maintain situational awareness, and function under a common operating picture, for a broad scale of incidents.

Emergency communications consists of three primary elements:

1. **Operability** – The ability of emergency responders to establish and sustain communications in support of mission operations.
2. **Interoperability** – The ability of emergency responders to communicate among jurisdictions, disciplines, and levels of government, using a variety of frequency bands, as needed and as authorized. System operability is required for system interoperability.
3. **Continuity of Communications** – ability of emergency response agencies to maintain communications in the event of damage to or destruction of the primary infrastructure." [5]

"The NECP seeks to build on the substantial progress that we have made over the last several years. Among the key developments at the Federal, State, regional, and local levels are:

- Most Federal programs that support emergency communications have been consolidated within a single agency— **DHS**—to improve the alignment, integration, and coordination of the Federal mission.
- All 56 States and U.S. territories have developed Statewide Communication Interoperability Plans (SCIP) that identify near- and long-term initiatives for improving communications interoperability.
- The Nation's 75 largest urban and metropolitan areas maintain policies for interoperable communications.
- The SAFECOM Interoperability Continuum is widely accepted and used by the emergency response community to address critical elements for planning and implementing interoperability solutions. These elements include governance, standard operating procedures, technology, training and exercises, and usage of interoperable communications.

[5] National Emergency Communications Plan July 2008, pgs. 2.

- The DHS Federal Emergency Management Agency (FEMA) is establishing Regional Emergency Communications Coordination (RECC) Working Groups in each of the 10 FEMA regions to coordinate multi-state efforts and measure progress on improving the survivability, sustainability, and interoperability of communications at the regional level."[6] Florida is in FEMA Region IV.

Statewide Communications Interoperability Plan

A Statewide Communications Interoperability Plan (SCIP) has been developed for the State of Florida and is currently a protected document with restricted access. Access is through the National Interoperability Information Exchange (to be addressed later).

"Florida's …SCIP documents the types of communications resources available throughout the state, the various interoperable technologies or "tools" that have been implemented and/or deployed around the state, the agency that owns and/or manages each of those resources and the policies and procedures for the activation, mobilization, deployment, deactivation, demobilization and return of these resources.

This plan also brings together many of the existing communications plans that have been developed by the various disciplines, agencies and associations to ensure that these various plans do not conflict with one another for resources or that they do not create interference or any other issue that would cause failures in the execution of the SCIP or the state and local agencies ability to provide public safety responders with effective communications.

The purpose of this document is to identify all of the communications resources, plans and information needed so that public safety can quickly and efficiently implement the interoperable communications solutions needed for the situations that they face each and every day."[7]

The SCIP references a Tactical Interoperable Communications Plan (TICP) for each domestic security region in Florida. The TICPs are also protected documents with restricted access; therefore will not be addresses beyond this paragraph.

700 MHz Public Safety Interoperability Channel Plan

The 700 MHz Public Safety Interoperability Channel Plan was created address "…the Interoperable Use portion of the 700 MHz public safety spectrum allocated by the

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[6] National Emergency Communications Plan July 2008, message from the Secretary of Homeland Security, Michael Chertoff.

[7] Excerpt of the Executive Overview of Florida's SCIP, version 9, November 2, 2007, pg viii. (re-printed with permission from the Florida Domestic Security State Working Group, Interoperable Communications Committee)

Federal Communications Commission."[8] Florida accepted the responsibility to administer the 700 MHz interoperability frequencies by virtue of notifying the Federal Communications Commission via memorandum (see Appendix A).

Florida – Region 9 Plan for Public Safety Radio Communications, 800 MHz

The Florida – Region 9 Plan for Public Safety Radio Communications was developed "…by the Florida Region and Subregion Plan Committees, which represent a cross section of public safety radio users throughout the State of Florida. The process of developing the Plan has included representative individuals of agencies legally responsible for public safety radio communications interests at the State, County, and municipal levels to insure that all Public Safety and Special Emergency Radio Service eligibles have had an opportunity to participate."[9] "The Florida Region Plan has been developed to conform to the National Plan."[10] For more in the National Plan, See Improving Public Safety Communications in the 800 MHz Band, Report and Order, Fifth Report and Order, Fourth Memorandum Opinion and Order, and Order, 19 FCC Rcd 14969 (2004) (800 MHz Report and Order).

The Region 9 Plan establishes the process for Public Safety agencies to apply for 800 MHz radio frequencies (both trunked and conventional) in the 821-824/866-869 MHz bands (currently being rebanded into the 806-809/851-854 MHz band).

Florida – Region 9 Plan for Public Safety Radio Communications, 700 MHz

The Florida – Region 9 Plan for Public Safety Radio Communications, 700 MHz was developed similar to the 800 MHz plan presented above. By FCC rule, this plan must be separate from the 800 MHz plan, and the 700 MHz Region 9 Committee make-up must be distinctly separate from the 800 MHz Region 9 Committee. Both committee meetings may occur in succession at the same location, and may be comprised of the same committee members. However, one meeting must adjourn before the next meeting commences so common committee members are not simultaneously functional in two different meetings.

An official copy the 700 MHz plan can be obtained from the CAPRAD web site. It establishes the process for Public Safety agencies to apply for 700 MHz radio frequencies (both trunked and conventional) in the "General Use" allocation of the 700 MHz band

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[8] Florida's Interoperability Channel Plan, First Edition

[9] Florida – Region 9 Plan for Public Safety Radio Communications, Amendment 13, page 1-2

[10] Florida – Region 9 Plan for Public Safety Radio Communications, Amendment 13, page 1-4

plan – separate from the 700 MHz channels allocated for "Interoperability Use" and for "State Use."

Law Enforcement Communications Plan

The Law Enforcement Communications Plan (LECP) was created "…to develop a statewide system of regional law enforcement communications 'whereby maximum efficiency in the use of existing radio channels is achieved in order to deal more effectively with the apprehension of criminals and the prevention of crime generally.' This Statute[11] requires law enforcement agencies to obtain approval from the Department [of Management Services] before establishing or expanding their communications systems." This "…includes the law enforcement communications at the State and local levels."[12]

Emergency Medical Communications Plan

The Emergency Medical Communications Plan (EMSCP) was created "to develop a statewide system of regional emergency medical telecommunications."[13] Chapter 405.015, F.S., requires EMS agencies to obtain approval from the Department [of Management Services] before establishing or expanding their EMS communications systems.

The EMSCP "…is organized into two volumes. Volume I contains the general, administrative, and regulatory information needed by the managers of organizations involved in EMS operations. It further defines the broad concepts and goals of EMS communications within Florida.

Volume II contains the statewide radio frequency allocations as well as operational information for day-to-day EMS communications system operations. Volume II is formatted as a field manual to be carried as a standard reference on each permitted vehicle, either in hardcopy or electronic format."[14]

Florida 9-1-1 Plan

The Department of Management Services "…maintains responsibility for coordinating and updating the Emergency Telephone Number 911 Plan for the State of Florida. The department is guided by Florida Statutes 365.171-175, the State of Florida Emergency

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[11] Chapter 282.7101(5), F.S.

[12] Law Enforcement Communications Plan, July 2009, pg. 1-2.

[13] Chapter 401.015, F.S.

[14] Emergency Medical Services Communications Plan, Volume 1, Fourth Edition, page 1.

Telephone Number 911 Plan, and precedent established over the years since the 911 statute was originally passed in 1974.

The new Emergency Communication E911 State Plan is under development and scheduled to be posted in the 1st quarter of 2008. The existing State of Florida 911 Emergency Telephone Number Plan is available below." [15]

http://dms.myflorida.com/suncom/public_safety/florida_e911/florida_e911_plan

National Incident Management System, Incident Command System

The National Incident Management Systems (NIMS), Incident Command System (ICS) provides a structured approach to coordination, communications, and cooperation. A video addressing the issues of ICS can be viewed at:

http://video.google.com/videoplay?docid=5541253076032901123.

Assuming applicable DMS, DivTel staff has been trained on ICS100, ICS200, ICS700 and ICS800, further investment writing this section would be academic. Two other courses (ICS300 and ICS400) have been taken by a select few as Forward SERT personnel. Future courses for will likely be taken (COML or COML-Lite) that are still in preparation as of this writing.

FL-APCO Statewide Public Safety Communications Mutual Aid Plan

Florida Chapter of the Associated Public Safety Communications Officers, Inc. (APCO) created a Statewide Public Safety Mutual Aid Communications Plan. "This plan is intended to provide for the systematic mobilization, organization and operation of communications personnel resources from throughout the state to assist public safety agencies in mitigating the effects of a disaster. It is primarily designed to supplement other statewide disaster plans by providing competent, trained, communications professionals to requesting agencies during a major emergency."[16]

Planning Diagram

Appendix B illustrates a planning diagram of the aforementioned plans and the relationship between each. This diagram also shows the agency associated with each plan and primary authorization.

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[15] http://dms.myflorida.com/suncom/public_safety/florida_e911/florida_e911_plan

[16] APCO Mutual Aid Plan II-2005

Funding

State Homeland Security Grant Program

The State Homeland Security Grant Program (SHSGP) "…provides funds to build capabilities at the State and local levels and to implement the goals and objectives included in State homeland security strategies and initiatives in the State Preparedness Report"[17]

For interoperable communications, grant funds have been provided for projects like FIN (including the mutual aid build-out portion), EDICS, and MARC. These funds are becoming more competitive and in smaller amounts, which has put these three projects more in a "maintenance and sustainment" mode rather than continued growth. Alternate funding is fast becoming a necessity, particularly as SHSGP funds dwindle further.

Urban Areas Security Initiative

Urban Areas Security Initiative (UASI) is "…focuses on enhancing regional preparedness in major metropolitan areas. The UASI program directly supports the National Priority on expanding regional collaboration in the National Preparedness Guidelines and is intended to assist participating jurisdictions in developing integrated regional systems for prevention, protection, response, and recovery.[18]

For interoperable communications, funds have provided for ACU-1000 and ACU-T units by JPS or other equipment for Jacksonville, Orlando, Tampa, Ft. Lauderdale, and Miami. It also provided funding for creating a Tactical Interoperable Communications Plan (TICP) for each of these urban areas, which was extended to benefit each respective domestic security region (R3, R5, R4, R7, and again R7, respectively). This also benefited these regions for populating a tool known as Communications Asset Survey and Mapping (CASM) tool, which is described later as a reference source.

Interoperable Emergency Communications Grant Program

The Interoperability Emergency Communications Grant Program (IECGP) for 2009 "provides governance, planning, training and exercise, and equipment funding to States, Territories, and local and tribal governments to carry out initiatives to improve interoperable emergency communications, including communications in collective response to natural disasters, acts of terrorism, and other man-made disasters. According to the legislation that created IECGP, all proposed activities must be integral to interoperable emergency communications and must be aligned with the goals, objectives, and initiatives identified in the grantee's approved Statewide Communication Interoperability Plans (SCIP). IECGP will also advance DHS near-term priorities that are

[17] http://www.fema.gov/government/grant/hsgp/index.shtm#shsp

[18] http://www.fema.gov/government/grant/hsgp/index.shtm#shsp

deemed critical to improving interoperable emergency communications and are consistent with goals and objectives of the National Emergency Communications Plan. For FY 2009, two priority groups were identified that are deemed critical for advancing interoperable emergency communications in alignment with the criteria established for the SCIP process: 1) Gaps in Leadership and Governance and Common Operational Planning and Protocols; 2) Emergency Responder Skills and Capabilities Development Through Training and Exercises.

The Governor of each State and territory has designated a State Administrative Agency (SAA), which can apply for and administer the funds under IECGP. The SAA is the only agency eligible to apply for IECGP funds."[19]

Solely for interoperable communications, the grant application includes activities as follows:

- Video training that includes state communications plans
- Communications Unit Leader training
- Communications technical training
- FIN training
- Interactive radio coverage mapping program
- County EOC/field-based exercises

Statewide Law Enforcement Radio System

"The public/private partnership for the Statewide Law Enforcement Radio System (SLERS) has a unique funding strategy. A full description of this funding strategy can be found at:

http://www.dms.myflorida.com/suncom/public_safety_bureau/radio_communications/statewide_law_enforcement_radio_system_slers/funding

Public Safety Interoperable Communications Grant Program

The Public Safety Interoperable Communications (PSIC) grant program was created to "…provide funding to States and Territories starting in Fiscal Year 2007 to enable and enhance public safety agencies' interoperable communications capabilities. The PSIC Grant Program is a one-time grant opportunity to enhance interoperable capabilities with respect to voice, data, and/or video and encourage the use of innovative cost- and spectrum-efficient technology solutions."[20]

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[19] http://www.fema.gov/government/grant/iecgp/index.shtm

[20] http://www.fema.gov/pdf/government/grant/bulletins/info248_PSIC_FAQ.pdf, page 1. Also, this quote refers to Federal Fiscal Year 2007.

Each domestic security region and the State of Florida submitted an investment justification for PSIC funds. Specific to the State of Florida, the PSIC application included the following:

- SLERS 700 MHz aircraft P25 system
- SLERS mobile radio system (MRS) with 700 MHz P25 equipment
- SLERS MRS upgrade to 700 MHz P25
- Health and Medical Interoperable Communications Initiative (HMICI) for FIN workstations at Florida's trauma centers statewide
- Web-based training for public safety personnel
- Division of Forestry to upgrade radios to multimode P25

Office of Assistant Secretary for Preparedness and Response

The Office of the Assistant Secretary for Preparedness and Response (ASPR) provided a funding opportunity for a phase of the Health and Medical Interoperable Communications Initiative beyond a phase funded by PSIC grant program.

State and Local

Funding at State and Local levels of government is subject to available budget dollars and spending authority each year. Given the number of agencies at State and Local levels of government (including Law Enforcement, Fire, EMS, Transportation, Health, etc.), addressing this subject becomes too onerous within the scope of this document. State agency fiscal years are July 1 to June 30, whereas Local agency fiscal years are October 1 to September 30.

Suffice it to say, many State and Local agencies are challenged with funding their day-to-day communications needs before they can even begin to fund communications interoperability needs. It doesn't undermine the importance of communications interoperability, stressing how the aforementioned grant programs are continually needed.

Agencies

SLERS Agencies

"The goal of the Statewide Law Enforcement Radio System (SLERS) is to provide State law enforcement officers with a shared 800 MHz radio system. This digital system serves over 6,500 users with 14,000 radios in patrol cars, boats, motorcycles, and aircraft, wherever they may be located in the state."[21]

SLERS Partners

"The Department of Management Services encourages Local, State and Federal public safety entities to become third-party subscribers to the Statewide Law Enforcement Radio System (SLERS). Third-party users can join a state-of-the-market statewide system with minimum capital investment and at a fraction of the cost of installing a new local system. Third-party subscribers can also join the system as interoperability users and use SLERS as an auxiliary system for direct communications with other SLERS users on interagency and inter-local talk groups."[22]

Local Agencies

Local agencies include Law Enforcement, Fire, Emergency Medical Services, Public Works, Road and Bridge, to name a few eligible for public safety radio communications per the Federal Communications Commission (FCC). Local agencies play an initial and critical role for emergency response, and benefit from interoperable communications.

Federal

Federal agencies include U.S. Customs and Border Protection, U.S. Coast Guard, and U.S. Military to name a few. These agencies play an important role in support of State and Local emergency and disaster response (natural or man-made). State and Local agencies benefit from the support of Federal agencies during joint, mutual aid response, and the interoperable communications available.

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[21] http://dms.myflorida.com/suncom/public_safety/radio_communications/statewide_law_enforcement_radio_system_slers

[22] http://dms.myflorida.com/suncom/public_safety/radio_communications/statewide_law_enforcement_radio_system_slers/third_party_subscribers

State

State agencies normally not in an emergency or disaster response also benefit from interoperable communications. For instance, corrections officers involved in an inmate escape will need to communicate with emergency responders outside the corrections facility. While transferring inmates between facilities, corrections officers will need interoperable communications with local communications centers.

Tribal

Tribal agencies have a public safety component for law enforcement, fire, and/or emergency medical services. Tribal agencies benefit from interoperable communications for joint, mutual aid response, and during transport to an outside facility. Federal grant programs include Tribal agencies eligible to receive funding.

Non-Governmental Organizations

Non-governmental organizations (NGOs) provide a component for public safety agencies. For instance, a County will contract with an ambulance company (a.k.a., Provider) to provide EMS response and transport. Like Local agencies described above, NGOs play an initial and critical role for emergency response, and benefit from interoperable communications with public safety agencies.

Critical Infrastructure Industries

Critical Infrastructure Industries (CIIs) augment public safety agencies for the safety and welfare of the general public. For instance, railroads play a key role in transporting material in and out of areas and can be leveraged during an emergency or disaster environment. Utility companies provide and restore power and natural gas to the general public impacted by disasters. CIIs can benefit from interoperable communications with public safety agencies.

Uses

Daily

Communication "tools" used daily is what users are most familiar with. While those "tools" serve primarily operable communications, the extent those tools can be used for interoperable communications is a benefit. For instance, a shared, proprietary trunked radio system offers operable and interoperable communications; as does a standards-based trunked radio system.

Planned

Special events like football games, air shows, and other public gatherings offer the opportunity to determine ahead of time what communications tools will be necessary, whether the tools are operable or interoperable.

Unplanned

Unplanned events like train derailment, mass casualty incident, propane gas explosion do not offer the opportunity to determine ahead of time what communications tools will be necessary. These events rely of user knowledge of their operable and interoperable communications systems, at times calling on the communication manager and/or communication technician to provide guidance in a reactive mode.

Emergency

An emergency to a public safety responder is normally different than an emergency to the general public. The general public classifies an emergency to be a car wreck, house fire, medical trauma, etc. However, these are daily routines for the public safety responder (It's their business). These events usually involve operable communications, but as it may escalate with additional responders, interoperable communications can come into play.

Disaster

Hurricanes, fires, floods, droughts, and other events that tend to be catastrophic are considered disasters by both the general public and public safety responders. These events rely of user knowledge of their operable and interoperable communications systems, at times calling on the communication manager and/or communication

technician to provide guidance in a reactive mode. However, the scale of the response area may tax even the best known communications tools and may require supplemental communications tools for operable and interoperable communications.

Intercom

Intercom capability between communications centers minimizes delays in dialing the telephone or using a channel on the radio communications system. Communications centers can coordinate the emergency response, the resources allocated, and other information regardless of the event. Intercom can be done by various means:

- By a dispatch console, but is limited to the dispatch positions common to console electronics.
- By FIN, which has approximately 241 communications centers connected.

Conference

Conference capability between communications centers minimizes delays in dialing the telephone to multiple agencies or using a channel on the radio communications system. Communications centers can coordinate the emergency response, the resources allocated, and other information regardless of the event among the communications centers involved. Conference can be done by various means:

- By a dispatch console, but is limited to the dispatch positions common to console electronics.
- By FIN, which has approximately 241 communications centers connected.

Patch

The ability to connect two or more radio channels (or talkgroups) together (a.k.a., patch) the more disparate communications can interoperate. Patching can be done by various means:

- By a dispatch console, but is limited to a relatively small number of communications systems.
- By EDICS, but is limited to relatively small area of operation around the event and takes time to set up.
- By FIN, which has over 1000 radio resources connected and occurs within a few mouse clicks.

Dispatch

The ability to access one more radio channels (talkgroups) to communicate with public safety responders. Dispatch is done daily with the associated agency's dispatch console as is limited to the number of radio resources connected to the console. FIN offers a limited capability to provide dispatch communications, but has over 1000 radio resources connected. Except for at least one Local agency that uses FIN daily for their operable communications, FIN normally is used for interoperable communications.

Reference Sources

SAFECOM

"SAFECOM is a communications program of the Department of Homeland Security. SAFECOM provides research, development, testing and evaluation, guidance, tools, and templates on interoperable communications-related issues to local, tribal, state, and Federal emergency response agencies. The Office of Emergency Communications (OEC) supports SAFECOM's development of guidance, tools and templates. The Office for Interoperability and Compatibility (OIC) supports SAFECOM-related research, development, testing, evaluation and standards. OEC is managed by the Directorate for National Protection and Programs. OIC is managed by the Science and Technology Directorate."[23]

- **Interoperability Continuum**

"Developed with practitioner input by the Department of Homeland Security's SAFECOM program, the Interoperability Continuum is designed to assist emergency response agencies and policy makers to plan and implement interoperability solutions for data and voice communications. This tool identifies five critical success elements that must be addressed to achieve a sophisticated interoperability solution: governance, standard operating procedures (SOPs), technology, training and exercises, and usage of interoperable communications. Jurisdictions across the Nation can use the Interoperability Continuum to track progress in strengthening interoperable communications.

Interoperability is a multi-dimensional challenge. To gain a true picture of a region's interoperability, progress in each of the five interdependent elements must be considered."[24]

Appendix C provides an illustration of the Interoperability Continuum. A full brochure about the continuum is available at:

http://www.safecomprogram.gov/NR/rdonlyres/54F0C2DE-FA70-48DD-A56E-3A72A8F35066/0/Interoperability_Continuum_Brochure_2.pdf

- **Statement of Requirements**

"SAFECOM released the first-ever Statement of Requirements (SoR) for public safety communications interoperability in April 2004. This statement defines future

[23] http://www.safecomprogram.gov/SAFECOM/

[24] http://www.safecomprogram.gov/NR/rdonlyres/54F0C2DE-FA70-48DD-A56E-3A72A8F35066/0/Interoperability_Continuum_Brochure_2.pdf, pg. 2

requirements for crucial voice and data communications in day-to-day, task force, and mutual aid operations. The National Institute of Justice's CommTech Program (formerly AGILE) partnered with SAFECOM in formulating and releasing the requirements.

With the SoR, the nation's 60,000 emergency response agencies – for the first time – have a document that serves as a first step toward establishing base-level communications and interoperability standards for all emergency response agencies. The SoR helps the emergency response community convey a shared and vetted vision that ultimately will help private industry better align research and development efforts with critical interoperable communication needs."[25]

Of particular note is the graphical illustration of how radio communications systems can be portrayed from a "network" perspective. Appendix D shows how Extended Area Networks (EAN), Jurisdictional Area Networks (JAN), Incident Area Networks (IAN), and Personal Area Networks (PAN) interrelate. These can be correlated to radio communications system examples respectively as FIN, SLERS or Local radio communications system, EDICS or MARC, and the familiar Bluetooth technology. PAN is where the digital world and the radio world use a common technology. Appendix D provides an illustration of the original SoR illustration.

This SoR was updated to a two-volume set in 2008, which modified the original SoR illustration reference above. However, the original SoR illustration is maintained in this guide as a graphic representation of radio coverage analogous to networks.

Department of Homeland Security

- **National Interoperability Field Operations Guide**

"The National Interoperability Field Operations Guide (NIFOG) is a collection of technical reference material for radio technicians responsible for radios that will be used in disaster response."[26]

It "…is a pocket-sized listing of land mobile radio (LMR) frequencies that are often used in disasters or other incidents where radio interoperability is required, and other information useful to emergency communicators."[27]

National Public Safety Telecommunications Council

- **Channel Naming Convention**

[25] http://www.safecomprogram.gov/SAFECOM/about/default.htm
[26] http://www.npstc.org/documents/nifog-v1-4-personal-printing.pdf, Introduction
[27] http://www.npstc.org/documents/nifog-v1-4-personal-printing.pdf, pg. 1

The National Public Safety Telecommunications Council (NPSTC) created a channel naming plan for mutual aid channels that are used throughout the nation. The Channel Naming Report and Short Name Supplemental Addendum provides a guideline for communications plans like the Region 9, Law Enforcement, Emergency Medical Services and other Florida communications plans to reference.

"The requirement for a common naming protocol for public safety's interoperability frequencies was identified in early 2000 by the Public Safety National Coordination Committee (NCC), a Federal Advisory Committee chartered by the Federal Communications Commission (FCC) that operated from 1999 to 2003, and provided recommendations to the Commission on operational and technical parameters for use of the 700 MHz public safety band. …While the FCC declined at that time to mandate such a standard channel nomenclature, the NCC protocol …received wide acceptance within the public safety communications community, as communications interoperability for public safety's first responders continues to be a major issue. …A Task Group was convened and a public forum to address the issue was held on February 5, 2007, in Orlando, Florida. Six proponent organizations submitted recommendations for modification of the Standard Channel Nomenclature. These were heard and discussed at the forum, and a consensus format was adopted. The proposed revision (as a Report of Committee) was placed on public notice, and after a 90-day comment period, adopted as this revised protocol."[28]

This effort led to a channel naming standard known as APCO/NPSTC ANS 1.104.1-2010 was approved by ANSI on June 6, 2010.

Project 25

APCO Project 25 **"**… makes it easier for users to make the most informed decision possible when planning to convert existing analog system to digital systems. Each vendor's system will begin on a level playing field determined by an agreed upon base line set of standards. This allows users to more accurately compare the direct features and benefits of both entire systems and individual radio products. This will make bidding processes more competitive among prospective vendors. Plus, users have the opportunity to mix and match equipment among Project 25-compliant suppliers since their equipment will follow all basic standards."[29]

Communications Assets Survey and Mapping

"The Communication Assets Survey and Mapping Tool (CASM) software developed by ICTAP provides a Web-based tool that agencies can use to store interoperable

[28] http://www.apco911.org/new/commcenter911/documents/APCO-NPSTC-ANS1-104-1web.pdf, pg. 1

[29] http://www.apcointl.org/frequency/project25/information.html#benefits

communications equipment inventory and current radio communications infrastructure information. This collected data will reside in a secure SPAWAR database that is accessible only by the participating agencies. The CASM tool provides a geo-spatial representation of which agencies can communicate and the means of connectivity. This data can be revised by authorized users at anytime, making it a valuable ongoing tool for both agency assessments and urban area use. In addition, CASM can be useful in accessing and identifying an agency's resources to provide an efficient inter-agency communications interoperability solution."[30]

ICTAP stands for Interoperable Communications Technical Assistance Program.

SPAWAR stands for Space and Naval Warfare Systems and Command.

National Interoperability Information Exchange

"The National Public Safety Telecommunications Council (NPSTC) with the support of the Office for Interoperability and Compatibility is providing the National Interoperability Information Exchange (NIIX) as a free service to the public safety telecommunications community. You will find tools here to assist you as you collaborate within your organization to improve the issues that face public safety communications today.

NIIX provides a centralized, secure warehouse to house communications to be shared with other members within a specific community. Registered NIIX members can access peer-created documents and share information with each other. Members can also use NIIX tools to collaborate in the creation and development of their documents."[31]

The NIIX Security Policy prohibits unauthorized use of the NIIX web site.

National Institute of Standards and Technology, Office of Law Enforcement Standards

- **Voice over Internet Protocol (VOIP) Roundtable**

  "Voice over Internet Protocol (VoIP) is a technology that in recent years has shown promise for public safety communications. However, both public safety and industry hold varying perceptions about VoIP's most effective applications as well as its reliability. These perceptions have led to misunderstanding and misinformation between the two communities on VoIP's potential.

[30] http://www.ojp.usdoj.gov/odp/docs/ICTAP_Fact_Sheet.pdf, pg. 2

[31] http://www.niix.org/niix/index.jsp

To try to clarify the varying perceptions of and requirements for VoIP's role in public safety communications, the Office for Interoperability and Compatibility (OIC) and the National Institute of Standards and Technology's Office of Law Enforcement Standards (NIST/OLES) brought together key stakeholders from both the industry and the public safety communities for a series of roundtable discussions.

The initial roundtable was held August 22, 2006 in Washington, DC. Participants began discussions of standards for VoIP in public safety communications. A second roundtable, held February 20-23, 2007, advanced the discussions further by addressing implementation profile development for VoIP environments in public safety. Implementation profiles refer to the minimum set of standards parameters and values necessary to ensure interoperability in any given environment."[32]

The first priority was to develop a "bridging systems interface" (BSI) to connect disparate interoperability gateway solutions at the IP level, rather than at the analog voice level. Currently, the Radio Systems Interface (RSI) is being developed. Other operating environments are prioritized as follows:

1. Bridging Systems Interface
2. Radio Site Interface
3. Radio System to Radio System Interface
4. Dispatch Interface
5. System to Subscriber Unit (Last Mile Radio)
6. Wired End Unit to System Interface

State Working Group – Interoperable Communications Committee

The primary role of State Working Group – Interoperable Communications Committee (SWG-ICC) is operational oversight and management of interoperable communications issues

The SWG-ICC:

- Provides input and feedback to policies, standards and guidelines in development
- Works to ensure that national and statewide standards for interoperability are implemented in state, regional and local policies, standards and guidelines
- Serves as primary organization for coordinating actions as included in the interoperable communications plans
- Reviews regional interoperable communications plans to ensure that:
    - They meet the needs of the regional domestic security task force agencies
    - They do not conflict with each other
- Working through the regional committees, identifies existing communications systems throughout the state (and related inventories as needed)

[32] http://www.safecomprogram.gov/SAFECOM/library/technology/1293_roundtableon.htm

- Serves as primary organization to educate local community leaders regarding interoperable communications issues
- Compiles the communications needs and associated funding needs for all regional interoperable communications regions
- Prioritizes funding needs based on states strategy and national guidelines
- Promotes local participation by all entities
- Identifies issues and contributes to resolutions

See Appendix E for an organizational structure where the SWG-ICC fits within the domestic security effort in Florida.

Federal Emergency Management Agency, Region IV

The Federal Emergency Management Agency (FEMA) created regional operational areas. Florida is included in FEMA Region IV. "From its offices in Atlanta, FEMA's Region IV works in partnership with the emergency management agencies of Alabama, Florida, Georgia, Kentucky, Mississippi, North Carolina, South Carolina and Tennessee to prepare for, respond to and recover from disasters.

The Federal Region Center (FRC) is a key regional asset, located in Thomasville, Georgia. Staff at the FRC supports development of State and local emergency management capabilities, provides technical assistance in developing activities, and in response and recovery planning. In addition, it operates a system of State Liaisons to provide assistance and quick response to State/local emergencies and works with Federal agencies and departments to develop Federal plans and support Federal response activities and exercising."[33]

Federal Communications Commission

"The Federal Communications Commission (FCC) is an independent United States government agency. The FCC was established by the Communications Act of 1934 and is charged with regulating interstate and international communications by radio, television, wire, satellite and cable. The FCC's jurisdiction covers the 50 states, the District of Columbia, and U.S. possessions."[34]

"The FCC's Public Safety & Homeland Security Bureau (PSHSB) officially began operations on Monday, September 25, 2006. PSHSB is responsible for developing, recommending, and administering the agency's policies pertaining to public safety communications issues. These policies include 9-1-1 and E9-1-1; operability and interoperability of public safety communications; communications infrastructure protection and disaster response; and network security and reliability. PSHSB also serves

[33] http://www.fema.gov/about/regions/regioniv/index.shtm#what

[34] http://www.fcc.gov/aboutus.html

as a clearinghouse for public safety communications information and takes the lead on emergency response issues.

A primary goal of PSHSB is to support and advance initiatives that further strengthen and enhance the security and reliability of the nation's communications infrastructure and public safety and emergency response capabilities that will better enable the FCC to assist the public, first responders, law enforcement, hospitals, the communications industry and all levels of government in the event of a natural disaster, pandemic or terrorist attack."[35]

Florida Executive Interoperable Technologies Committee

The primary role of the Florida Executive Interoperable Technologies Committee (FEITC) is:

- Oversight and management of all interoperable communications issues (voice and data)
- Manage the interoperable radio frequency resources for the state (voice and data)
- For FCC purposes, serves
- as the Statewide Interoperability Executive Committee (SIEC)

The FEITC:

- Recommends policies on interoperable communications
- Develops and sets operational and technical standards and guidelines for statewide interoperability
- Ensures compliance to national and statewide interoperable communications standards and guidelines
- Develops a comprehensive strategy and migration plan to implement interoperable communications, including use of appropriate technologies
- Reviews new and existing national and statewide plans to:
    - Ensure needed frequency resources and equipment are available
    - Make sure there are no conflicts with other communications plans
- Researches current and developing technologies to determine usefulness as interoperability solutions
- Develops technical solutions for inclusion in plans
- Monitors interoperability technology projects
- Briefs legislative staff as needed and provides standardized briefing reports to IO SWG for dissemination at regional and local level
- Reviews and evaluates needs assessments and funding requests (appropriations and grants) and recommends priorities to legislature and DSOC when appropriate

[35] http://www.fcc.gov/pshs/about-us/

- Prepares executive and legislative briefings to educate and inform federal, state and local leaders of the needs and progress in interoperable communications
- Establishes liaisons with federal, state and local associations that impact interoperable communications to promote the policies, plans and needs of public safety agencies in the State
- Identifies issues and contributes to resolutions

See Appendix E for an organizational structure where the FEITC fits within the domestic security effort in Florida.

Graphical Relationships

Graphical relationships between interoperable components are depicted in Appendix F, G, H, and I. These are only four of the many relationship combinations that can be drawn from the components of interoperability that are identified in Table 1 and described throughout this document.

Appendix F depicts SLERS and numerous interoperable components that relate to that radio communications resource.

Appendix G depicts FIN and numerous interoperable components that relate to that interoperability network.

Appendix H depicts SHSGP and numerous interoperable components that relate to that funding source.

Appendix I depicts SCIP and numerous interoperable components that relate to planning document.

Appendix A – Letter of Intent to Administer the 700 MHz Interoperability Channels

STATE OF FLORIDA

STATE TECHNOLOGY OFFICE

4030 Esplanade Way • Tallahassee, Florida 32399-0950

MyFlorida.com

JEB BUSH
Governor

FRANK BROGAN
Lieutenant Governor

ROY CALES
Chief Information Officer

September 10, 2001

Ms. D'wana Terry, Chief
Public Safety and Private Wireless Division
Wireless Telecommunications Bureau
Federal Communications Commission
445 12th Street, SW
Washington, DC 20554

Re: Letter of Intent to Administer the 700 MHz Interoperability Channels
(per WT Docket No. 96-86, 4th Report and Order)

Dear Ms. Terry:

The State of Florida intends to perform the administrative and technical oversight of operations on the Interoperability spectrum at the "state level." Specifically, the State Technology Office (STO) will carry out this responsibility. Chapters 252, 282, 318, 395, and 401, Florida Statutes, authorizes STO collectively to plan and approve telecommunications systems and/or programs, which specifically includes mutual aid radio communications.

STO will address eligible license holders, resolve licensing issues, and develop the statewide Interoperability plan. In developing the statewide Interoperability plan, STO intends to seek input from Federal, State, County, Local, and other eligible users – in addition to the Florida Region Planning Committee. Albeit, forming a Statewide Interoperability Executive Committee (SIEC) will be considered at a later date as necessary.

We feel STO's responsibility for the Interoperability spectrum satisfies Paragraph 11 of the 4th Report and Order of WT Docket No. 96-86. Unless the Commission notifies STO of the contrary prior to December 31, 2001, STO will perform as stated in the aforementioned.

Should the Commission have any questions or comments, please call or email Mr. Carlton W. Wells at 850-922-7426 or carlton.wells@myflorida.com.

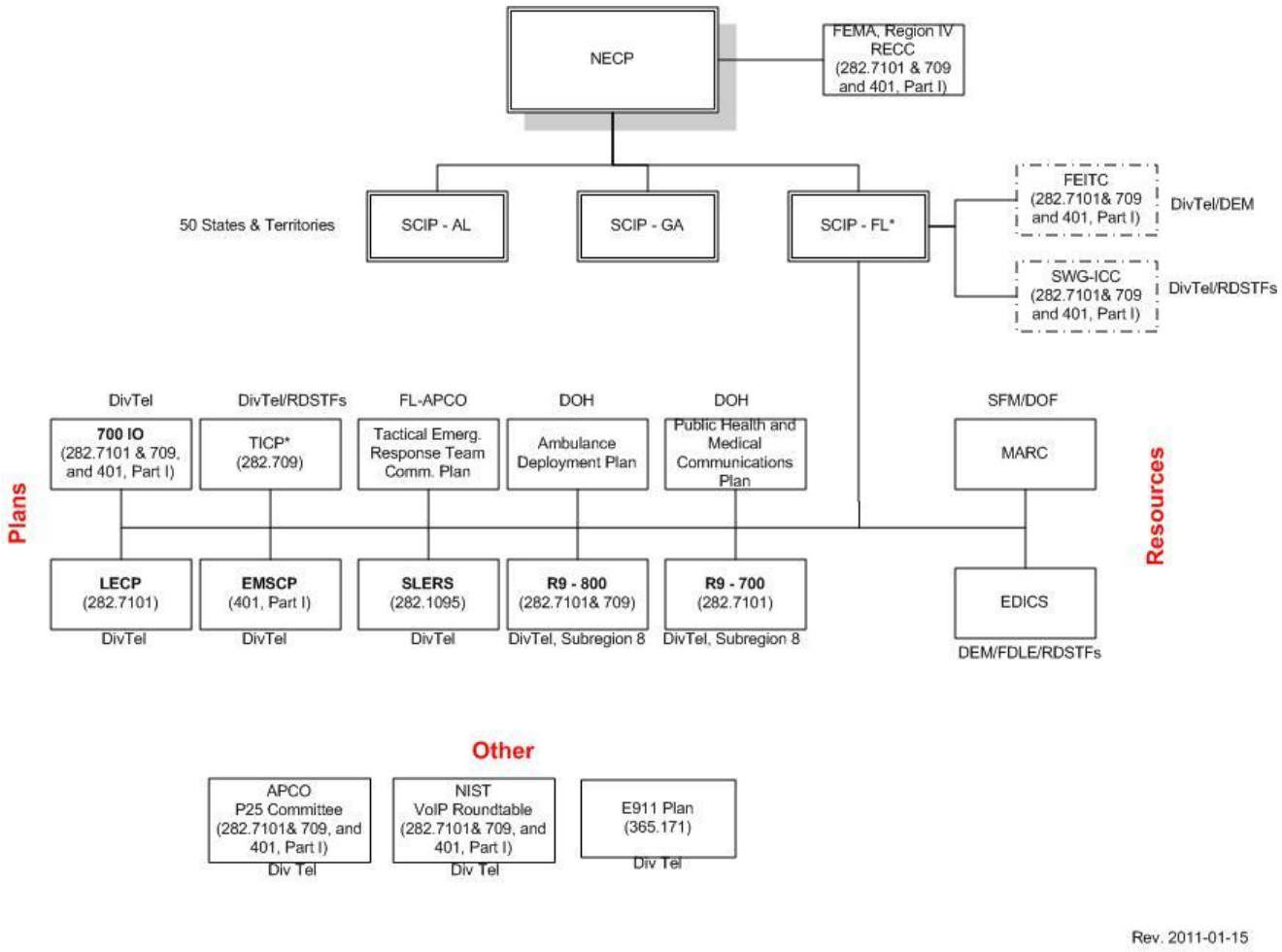
Sincerely,

Kimberly Bahrami
Acting Chief Information Officer
State of Florida

c:fcc/wt 96-86/ltr of intent – 700 IO.doc

Cc: Carlton W. Wells
Joe O'Brien
Jean-Pierre Saliba
Kourosh Bastani
Mark D. Pallans
Joy Alford

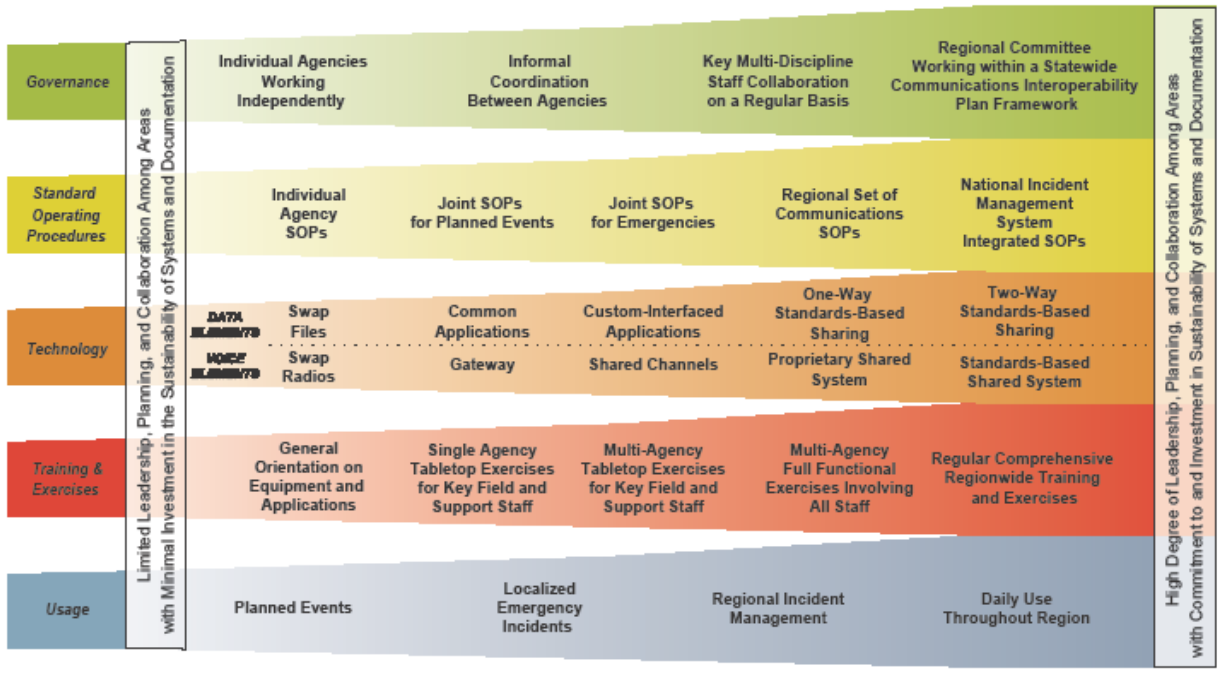
Appendix B – Planning Diagram



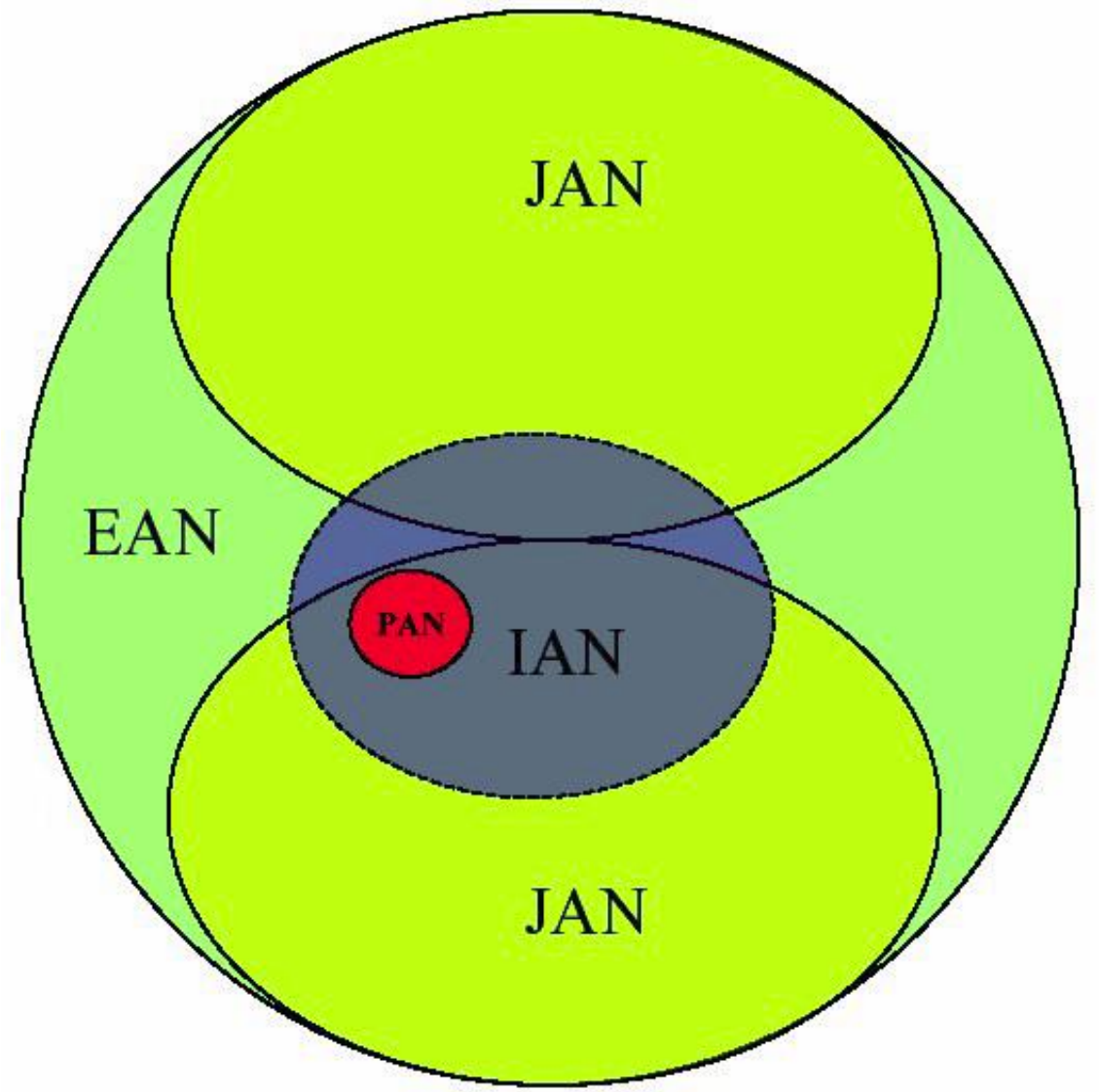
Rev. 2011-01-15

*Protected from public records act per Chapter 119, F.S.

Appendix C – SAFECOM Continuum

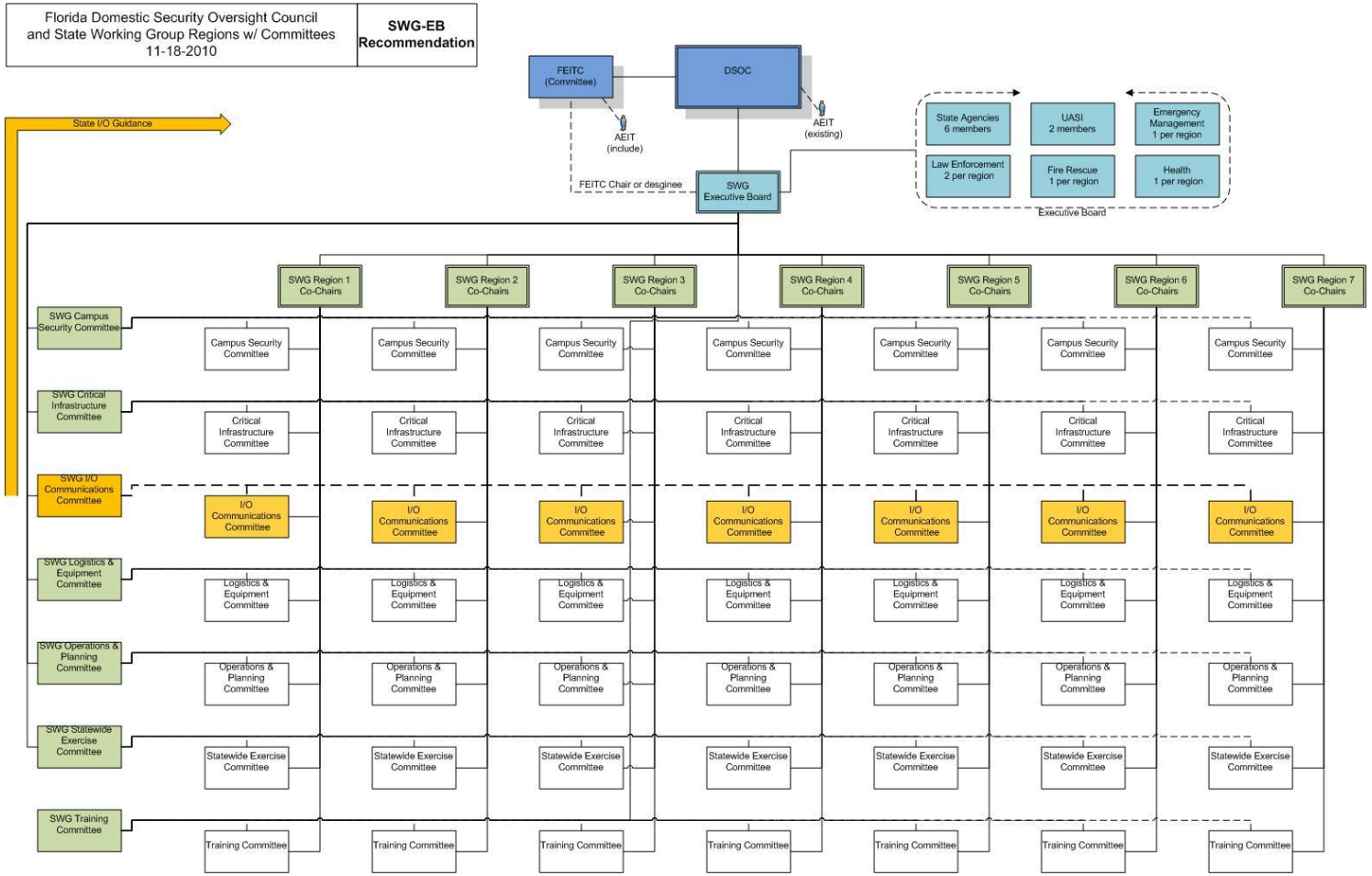


Appendix D – SAFECOM SoR Illustration[36]

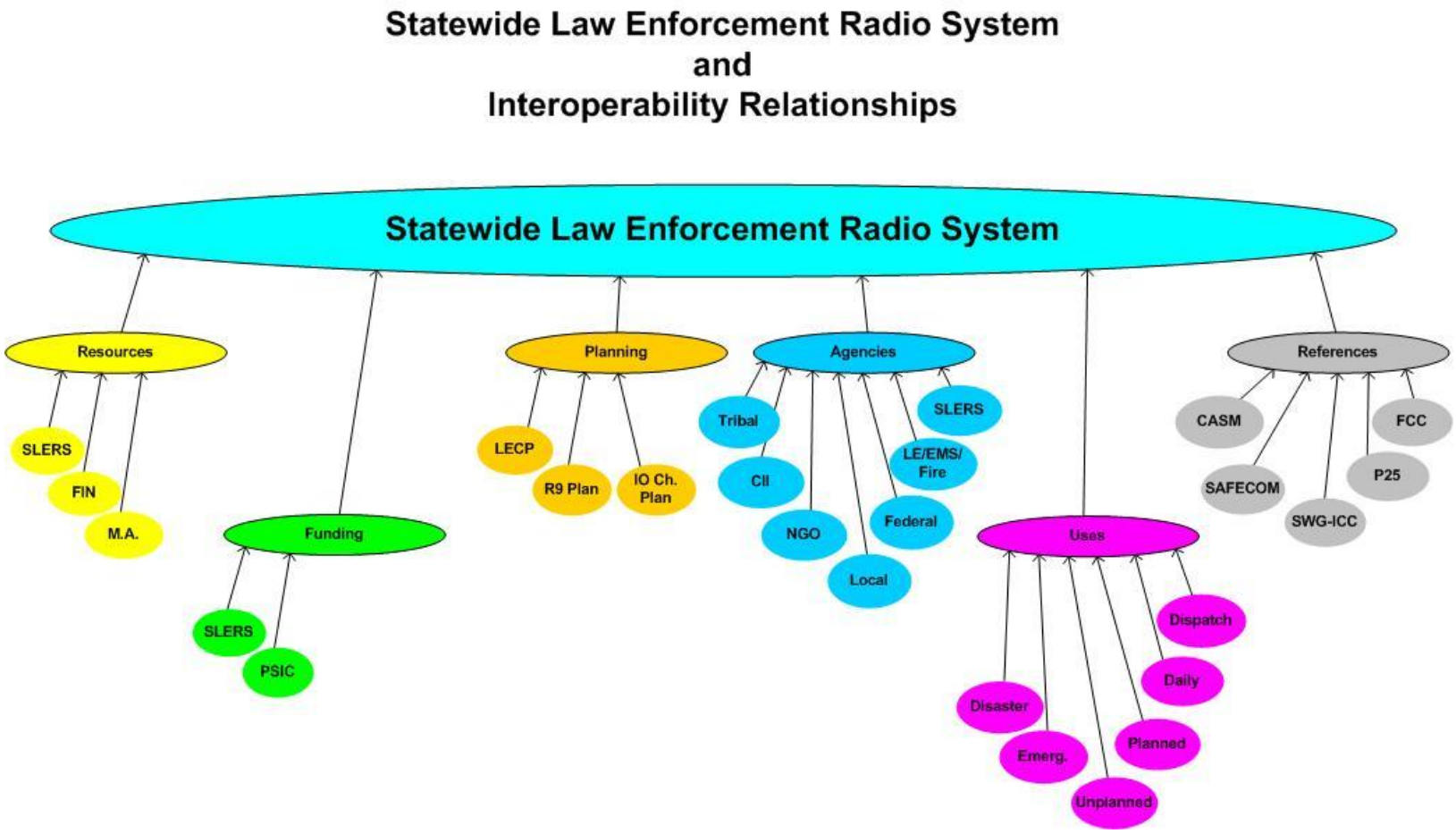


[36] http://www.antd.nist.gov/wctg/manet/docs/WirelessAndSoR060206.pdf

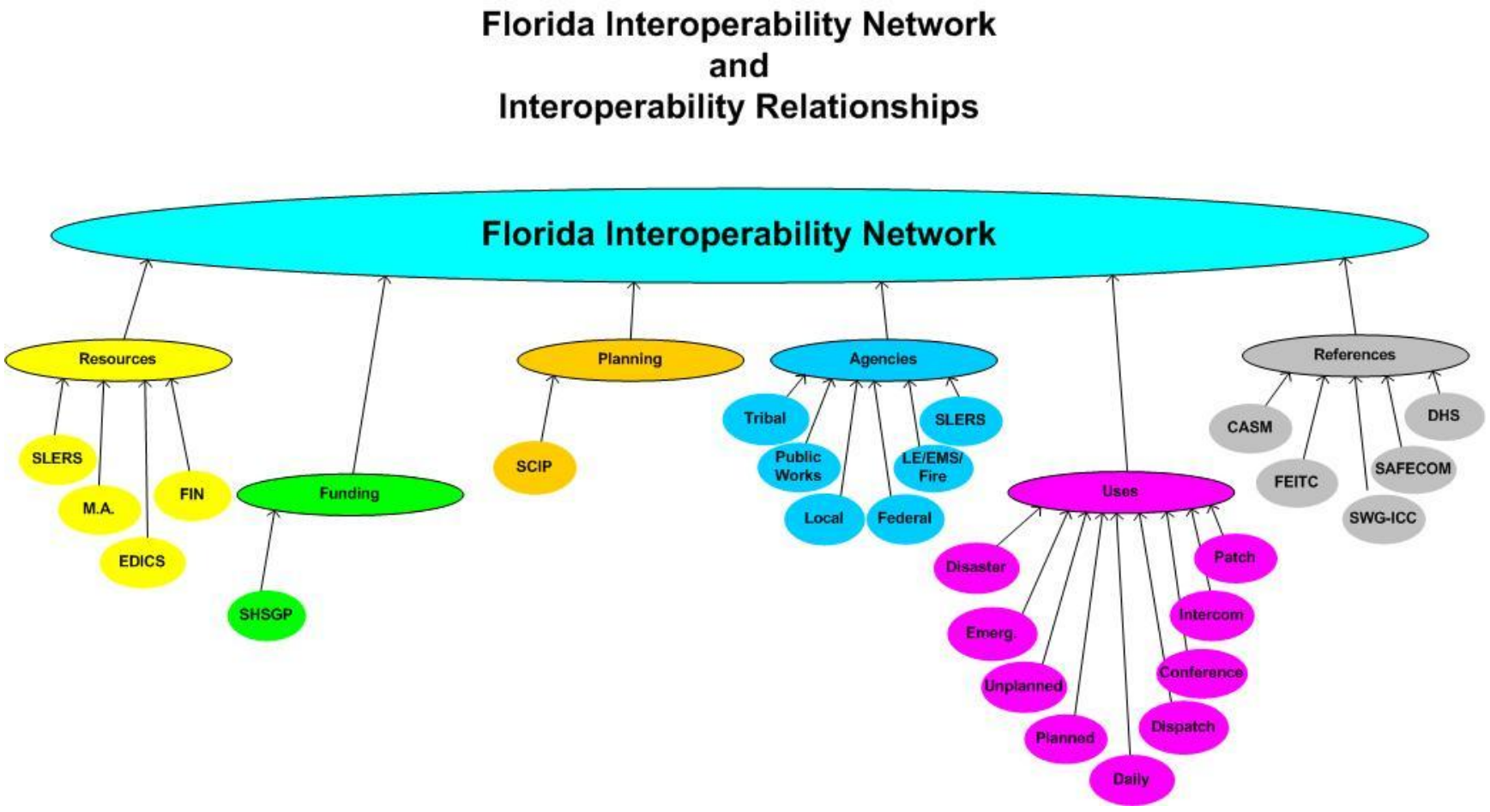
Appendix E – Domestic Security Oversight Council



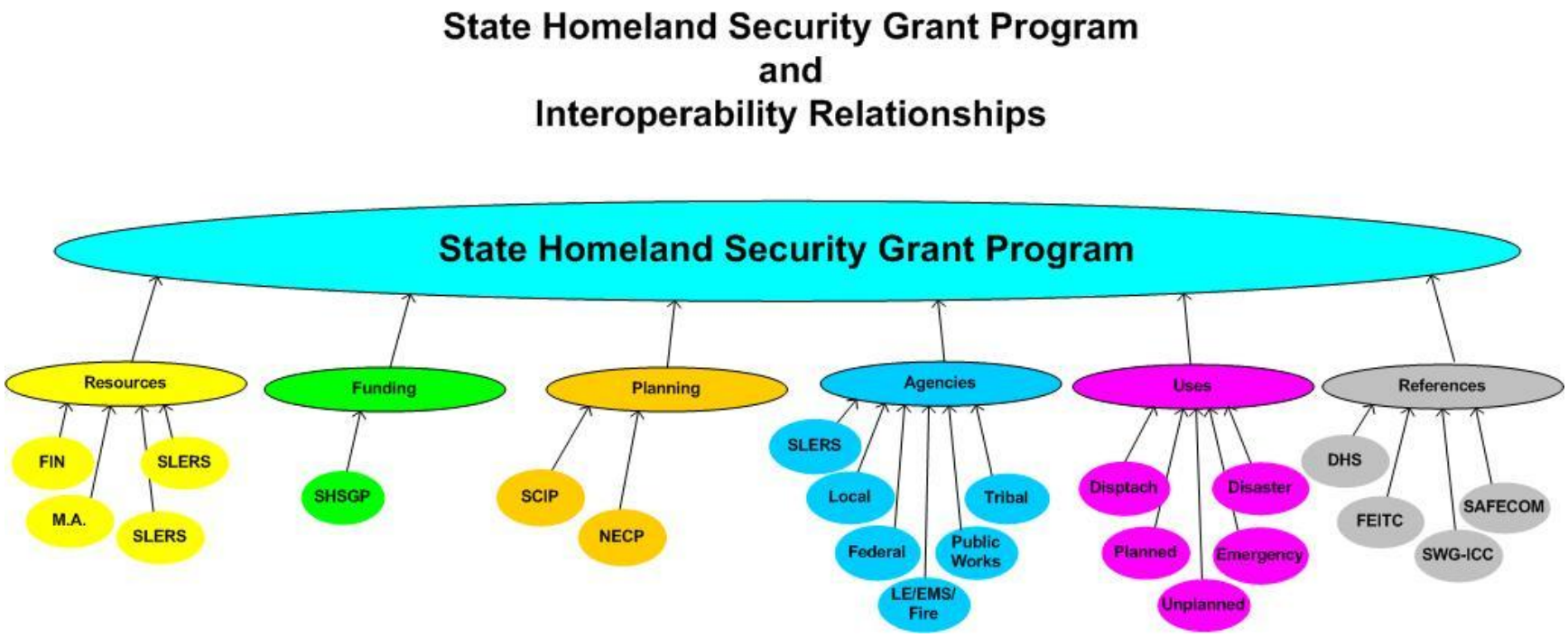
Appendix F – Interoperability Relationships with SLERS



Appendix G – Interoperability Relationships with FIN



Appendix H – Interoperability Relationships with SHSGP



Appendix I – Interoperability Relationships with SCIP