

North Central Texas Council of Governments

P25 Regional Overlay System Project

December 10, 2008



AGENDA

- **Revisit P25 System Overlay System Concept**
 - **System Architecture**
 - **Conceptual System Radio Coverage**
 - **Potential Radio Sites**
 - **Pros & Cons**

- **Present Alternate to Overlay System Concept**
 - **System Architecture**
 - **Radio Coverage**
 - **Potential Sponsors and Implementers**
 - **Pros & Cons**

- **Discussion**



ORIGINAL CONCEPT

**A 700 MHZ P25 OVERLAY SYSTEM
THE “OVERLAY” MODEL**

**A MASTER SITE WITH
NETWORKED TRUNKED SITES**

**MANAGED BY A
COMMUNICATIONS AUTHORITY**



Conceptual P25 Overlay System Design – Three Sites

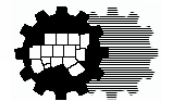
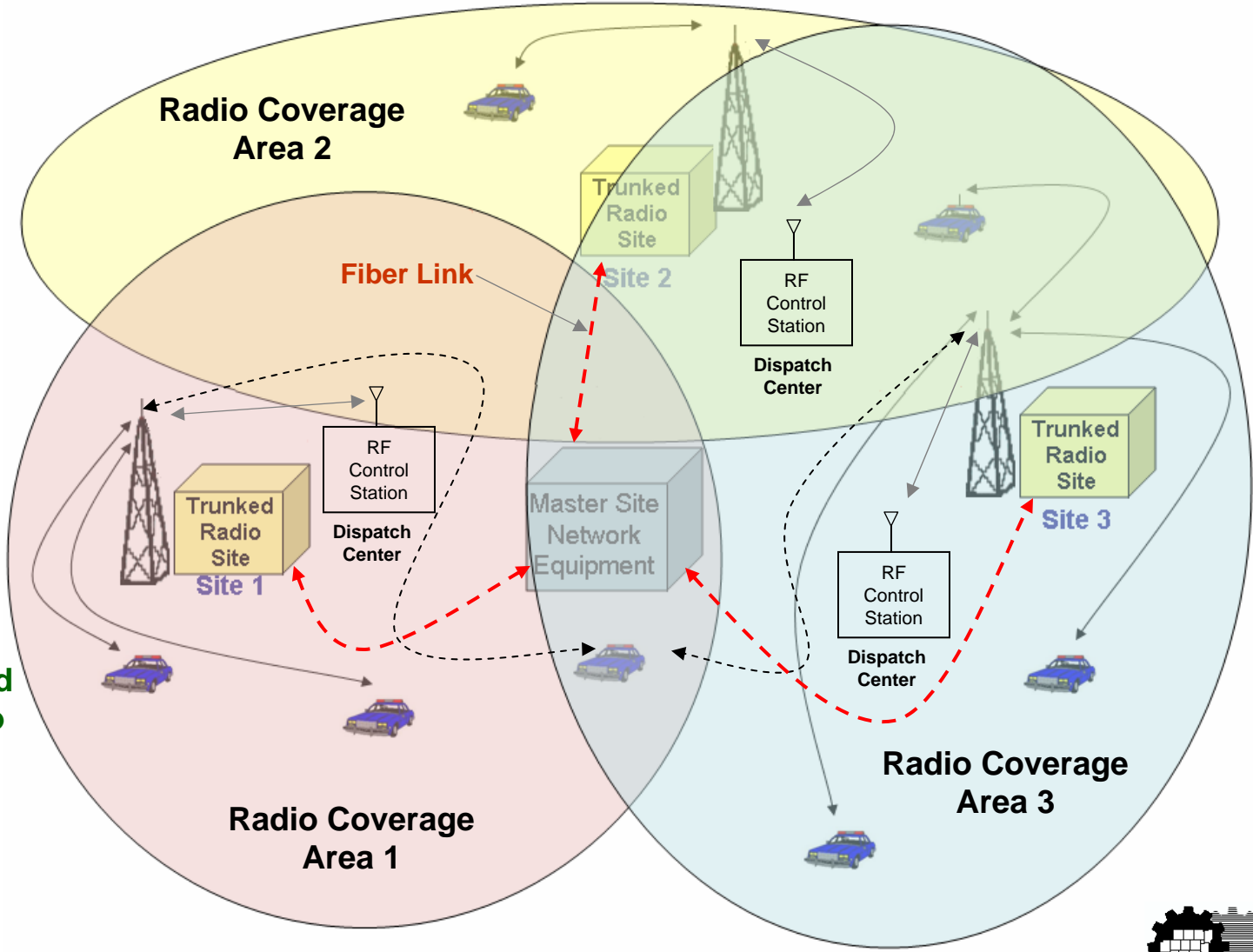
700 MHz 4 CHS
Per Site With
Three
"Networked"
Trunked Sites

SYSTEM USED FOR INTEROPERABLE COMMUNICATIONS

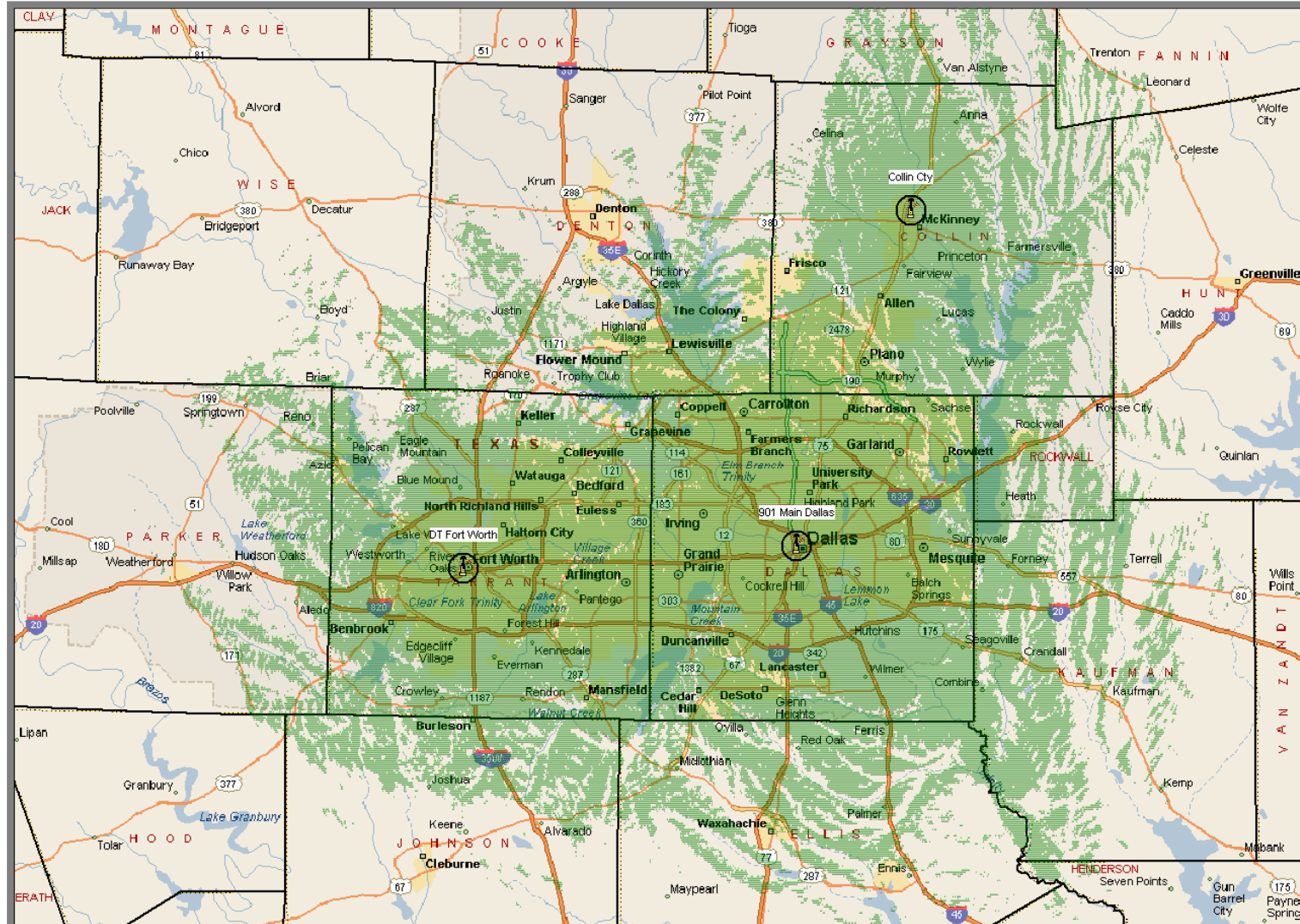
Master Site
Controls
Operation of
the Network

Connectivity
Required
Among
Trunked Sites
and Master
Site

System Designed
for Mobile Radio
Coverage



Conceptual System Design – P25 Overlay Example



**700 MHz
P25 Overlay
System**

PRELIMINARY

**Three Sites
Mobile
Talkback 30 W
with Gain
Antenna**

SITES

**Dallas
Fort Worth
Collin County**



Original P25 Overlay System Concept

- **Develop a Long Range Plan That Includes the Procurement of a P25 700 MHz Overlay System**
 - **System Architecture – Central Master Site Controlling Networked Trunked Radio Sites**
 - **Number of Sites Determined by Availability of Funding**
 - **Location of Master Site and Trunked Radio Sites to be Determined**
 - **Connectivity Method to be Determined**
 - **System Configuration Would Yield Mobile Radio Coverage & Limited Portable Coverage**
 - **Ownership of Master Site and Trunked Sites to be Determined**
 - **System to be Purchased via RFP Process**
 - **Communications Authority Model to be Developed & Entity Charged with System Sustainability**
 - **Operational Plan to be Developed**



Conceptual P25 Overlay System - Attributes

Attribute	Overlay System
Mobile Coverage	Yes
Portable Coverage	Limited
Master Site Ownership	Comm Authority
Trunked Sites	Leased ^{N1}
System Connectiivty	Leased ^{N2}
Equipment Procurement	Comm Authority
System Licensee	Comm Authority
System Manager	Comm Authority
Initial Funding	Comm Authority
On-Going Support	Comm Authority
Implementation Timeline	Comm Authority

Note 1: Use of Agency sites versus leased sites to be determined

Note 2: Use of existing fiber optic networks possible

Note 3: Communications Authority to be formed and duties to be defined



Pros & Cons - P25 Overlay System Concept

➤ Positives

- **Provides the Introduction of a Regional System Separate From Individual Agency Implementations**
- **Implementation Aids in the Flow of Grant Funds**
- **Provides a Self Governed System Used for Command & Control Communications**
- **System Can Be Implemented in a Timely Fashion Independent of Other Systems**

➤ Negatives

- **System Architecture Yields Wide Area Mobile Coverage But Portable Coverage will be Limited**
- **Determination of System Ownership May Slow Procurement Process and Place Grant Funds in Danger**
 - **Ownership of Infrastructure to be Determined – Master Site and Trunked Radio Sites**
 - **System Management to be Determined**
 - **System Sustainability Model to be Determined – Maintenance, Future Expansion**



ANOTHER CONCEPT
OVERLAY SYSTEM HOSTED BY
AN AGENCY WHO OPERATES A
P25 SYSTEM
THE “AGENCY” MODEL WITH P25
OVERLAY



Modified P25 Overlay System Concept

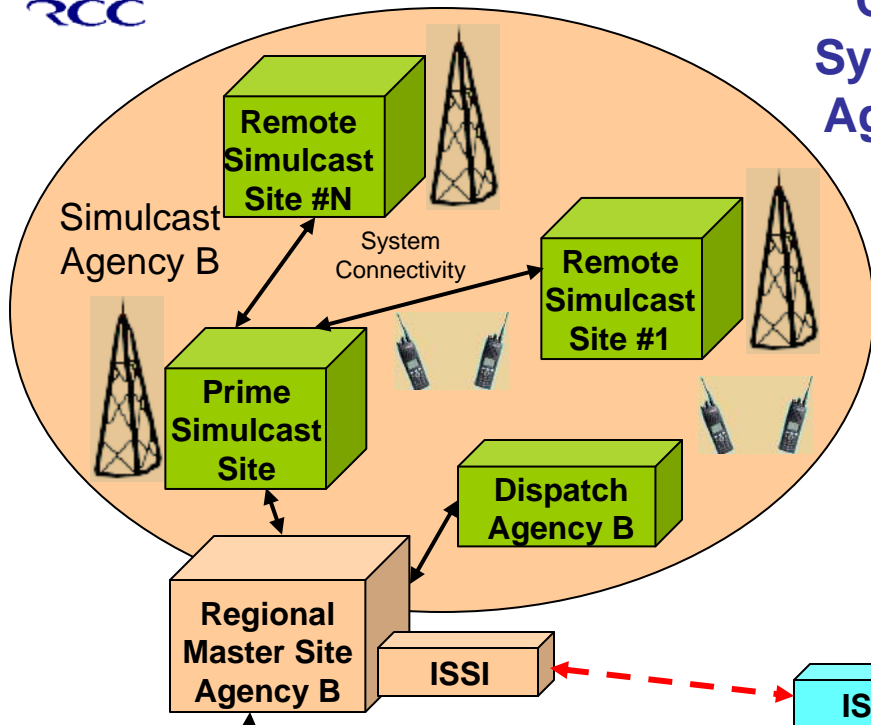
- **Utilize Planned “Agency” Implemented P25 System to Support Overlay System**
 - **System Architecture – Central Master Site Controlling Agency’s System as well as Networked P25 Overlay Site(s)**
 - **Number of Overlay Sites Determined by Availability of Funding**
 - **Master Site Owned and Operated by Agency – Overlay Site Ownership to be Determined but Could be Owned by Agency**
 - **Connectivity Method of Overlay Sites to be Determined**
 - **System Configuration Would Yield Mobile Radio Coverage for Overlay Sites but Portable Coverage for Agency System**
 - **System to be Purchased via Agency RFP Process and Supplemented by Grant Funds – Initially via PSIC Grant**
 - **Communications Authority to be Determined and to Provide Operational Plan for Overlay System and Distribution of Grant Funds**
 - **Agency Master Site can Host Systems of Other Agencies – a Multi-Agency System with Overlay System**



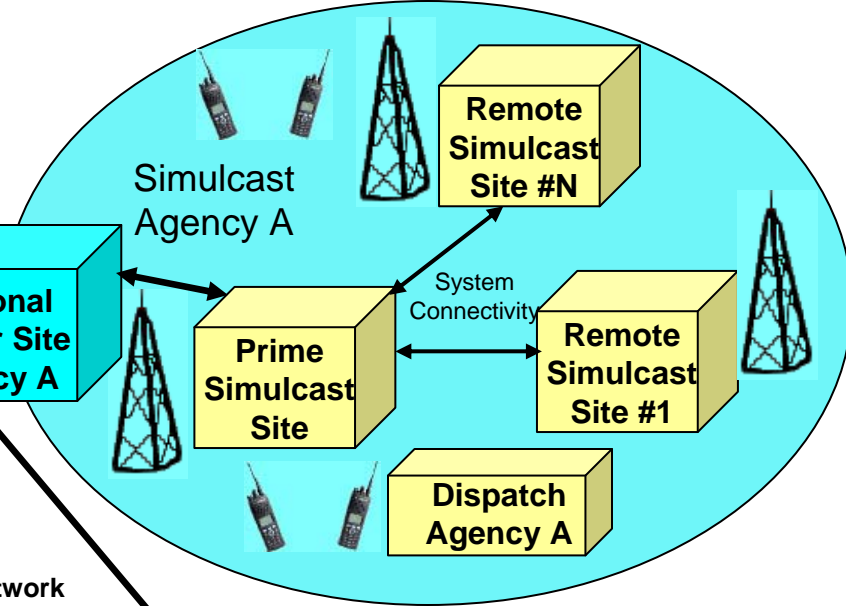


Conceptual System Design Agency Model with P25 Overlay

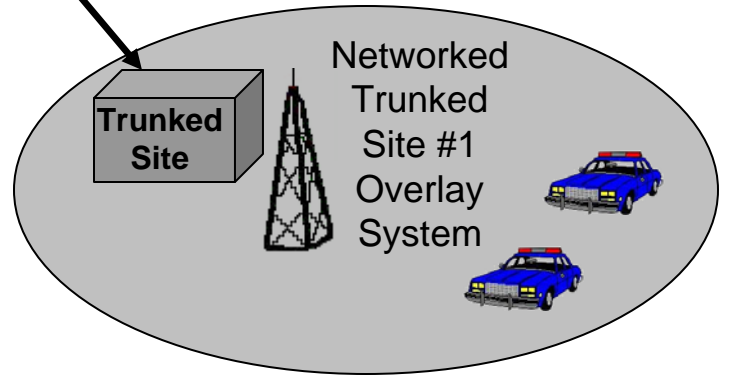
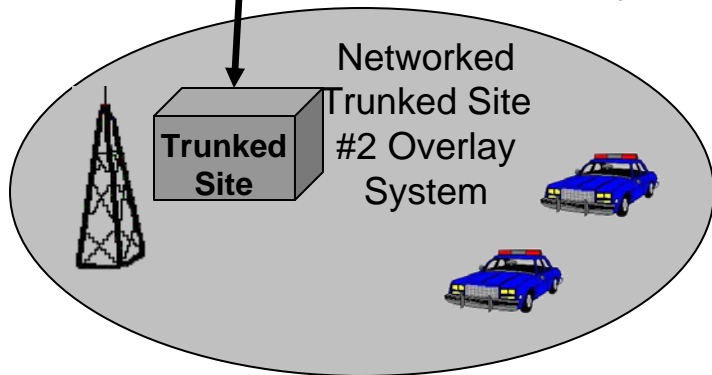
Agency System A with Master Site Controlling a P25 Overlay Site

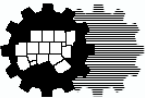


Agency System B with Master Site Controlling a P25 Overlay Site



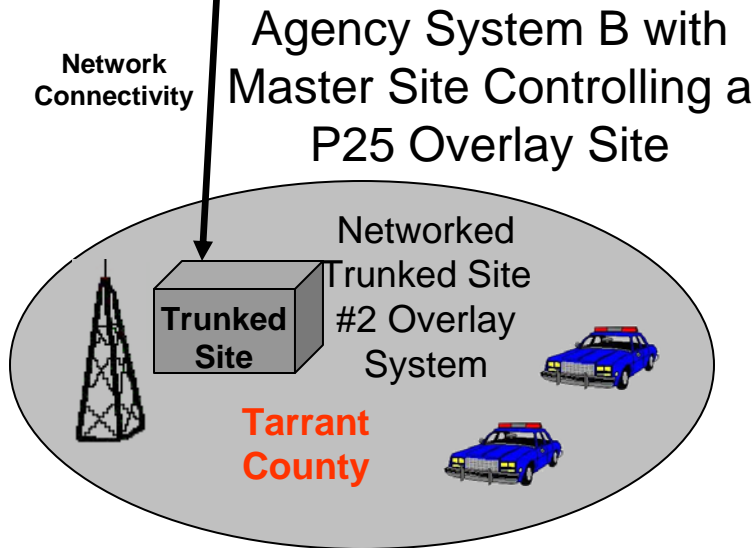
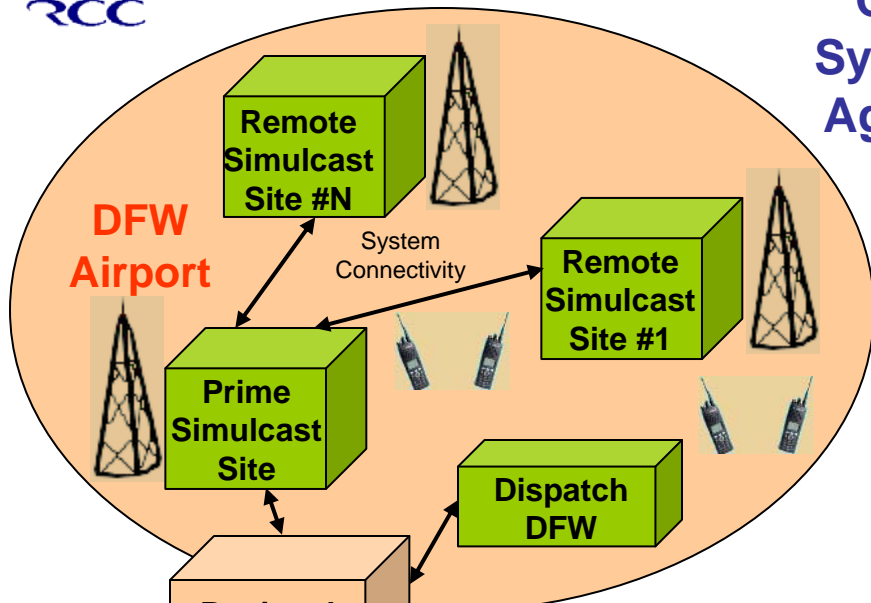
Network Connectivity



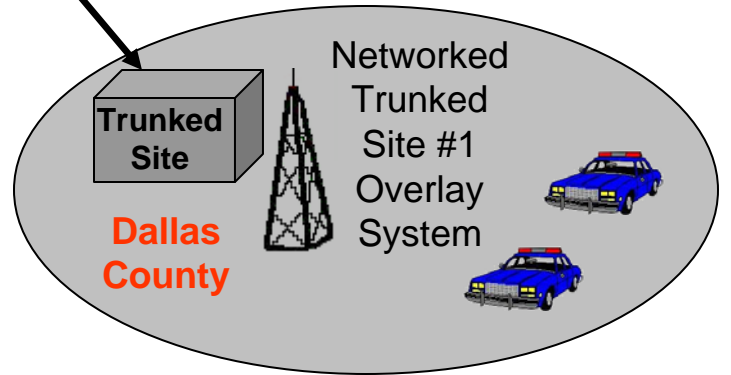
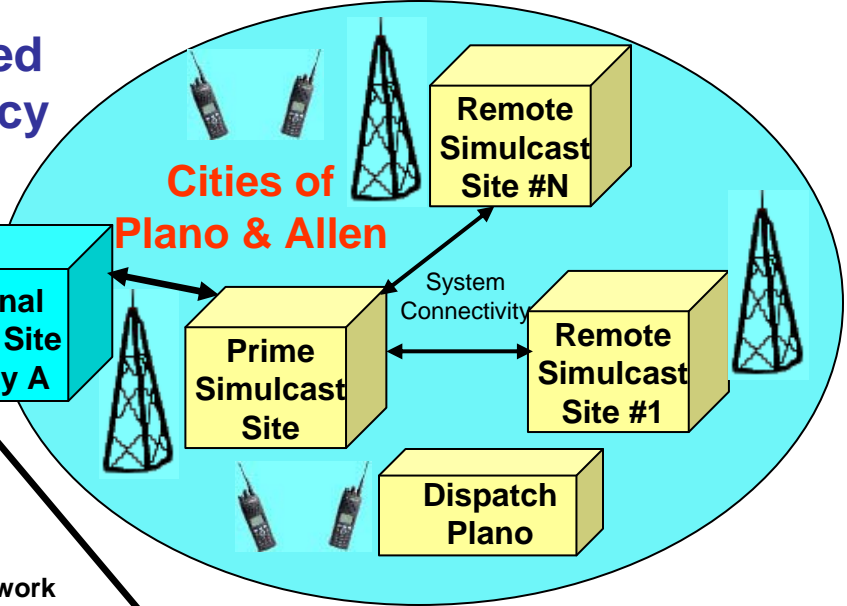


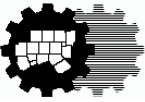
Conceptual System Design Agency Model with P25 Overlay

Named Agency

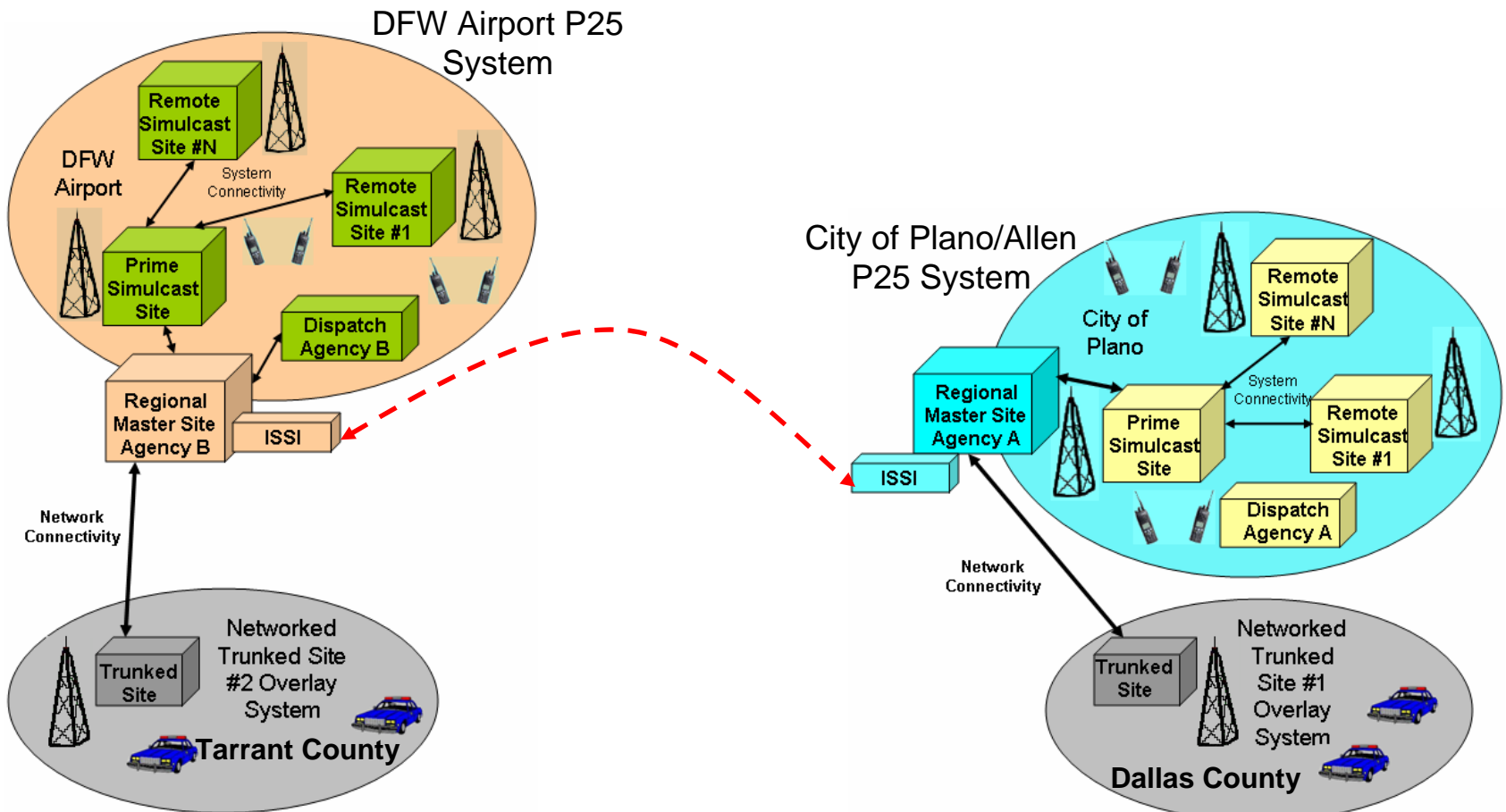


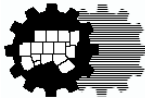
Agency System A with Master Site Controlling a P25 Overlay Site



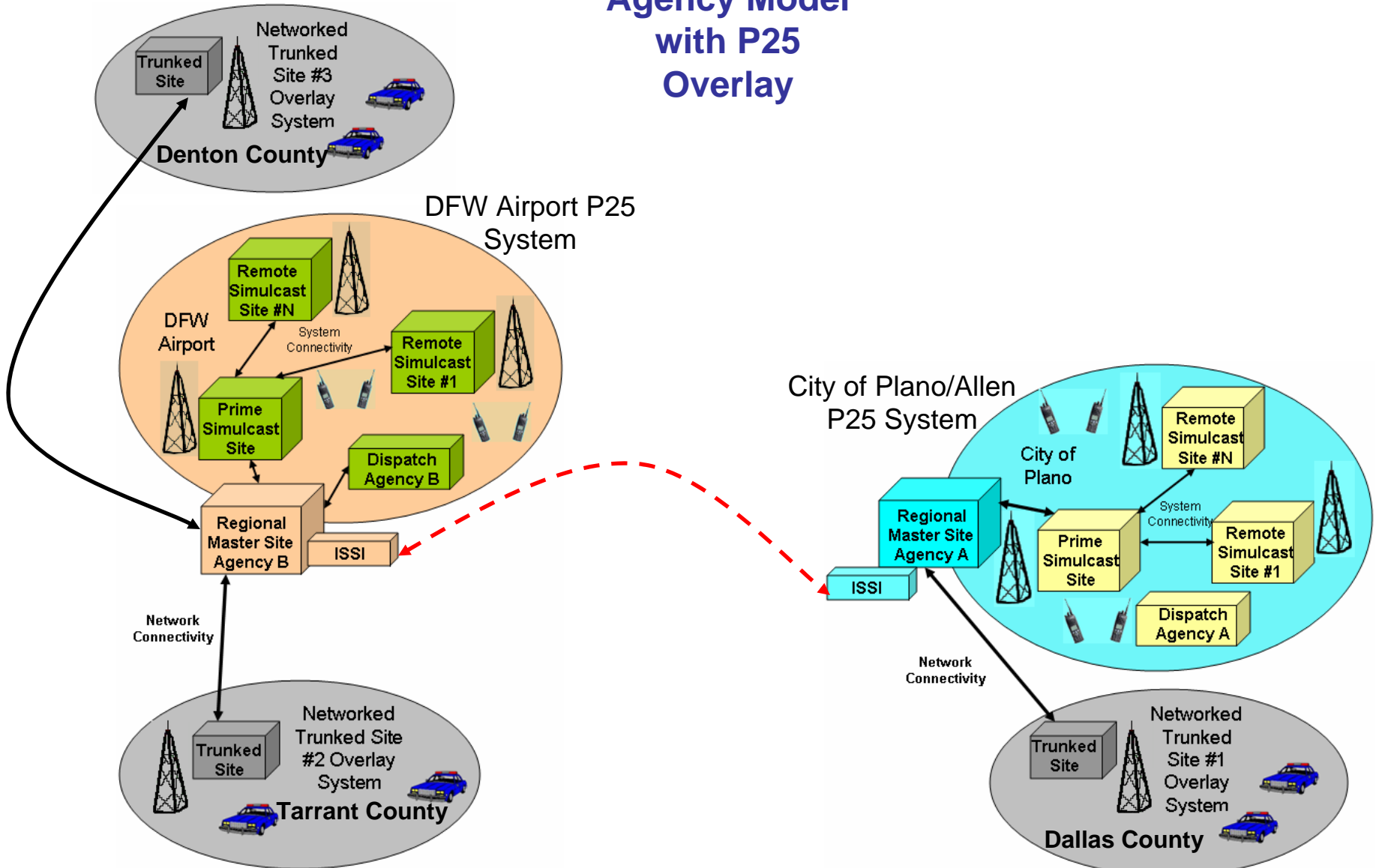


Conceptual System Design Agency Model with P25 Overlay



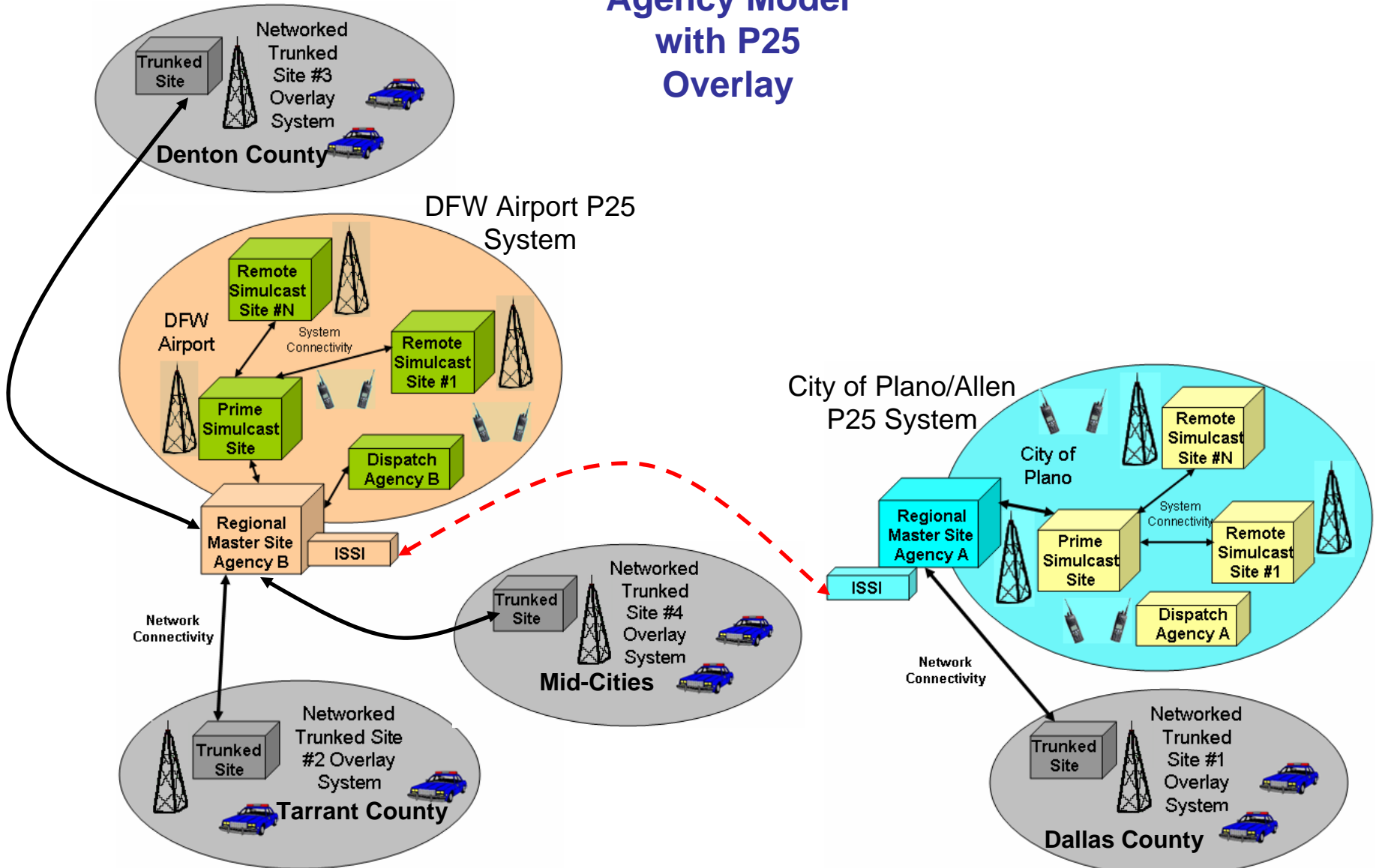


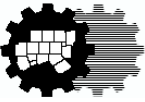
Conceptual System Design Agency Model with P25 Overlay



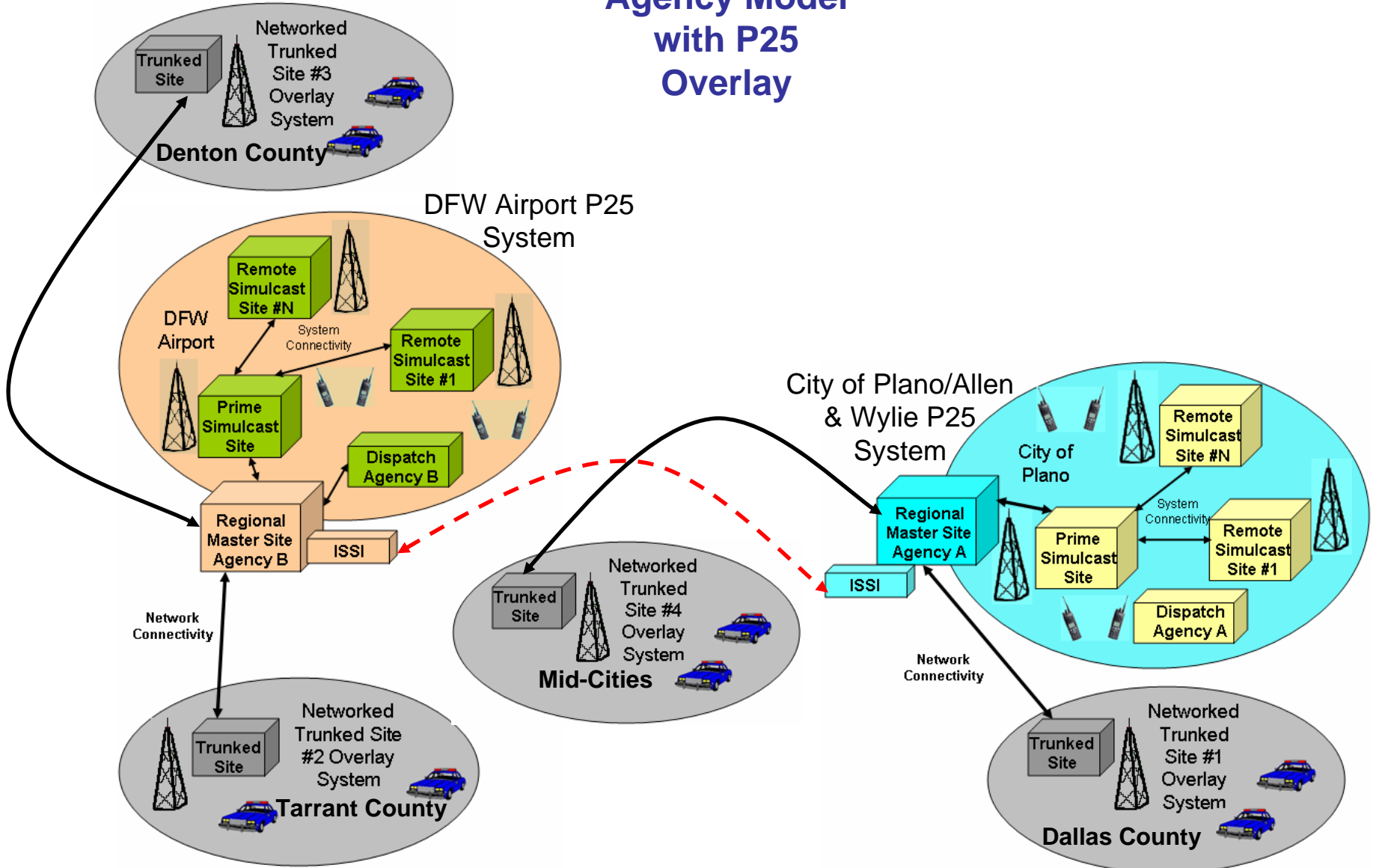


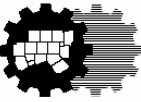
Conceptual System Design Agency Model with P25 Overlay



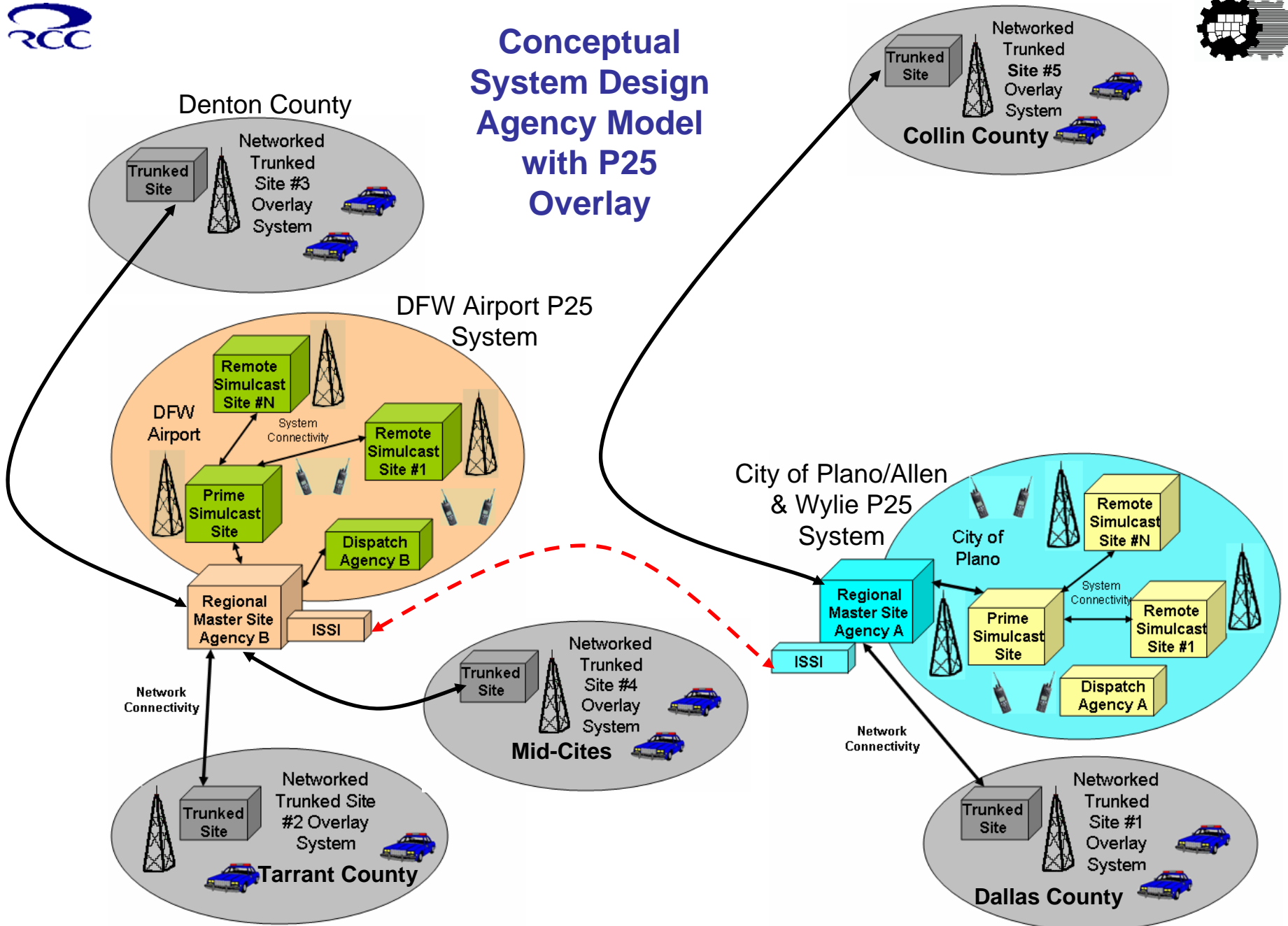


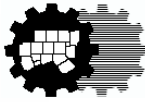
Conceptual System Design Agency Model with P25 Overlay



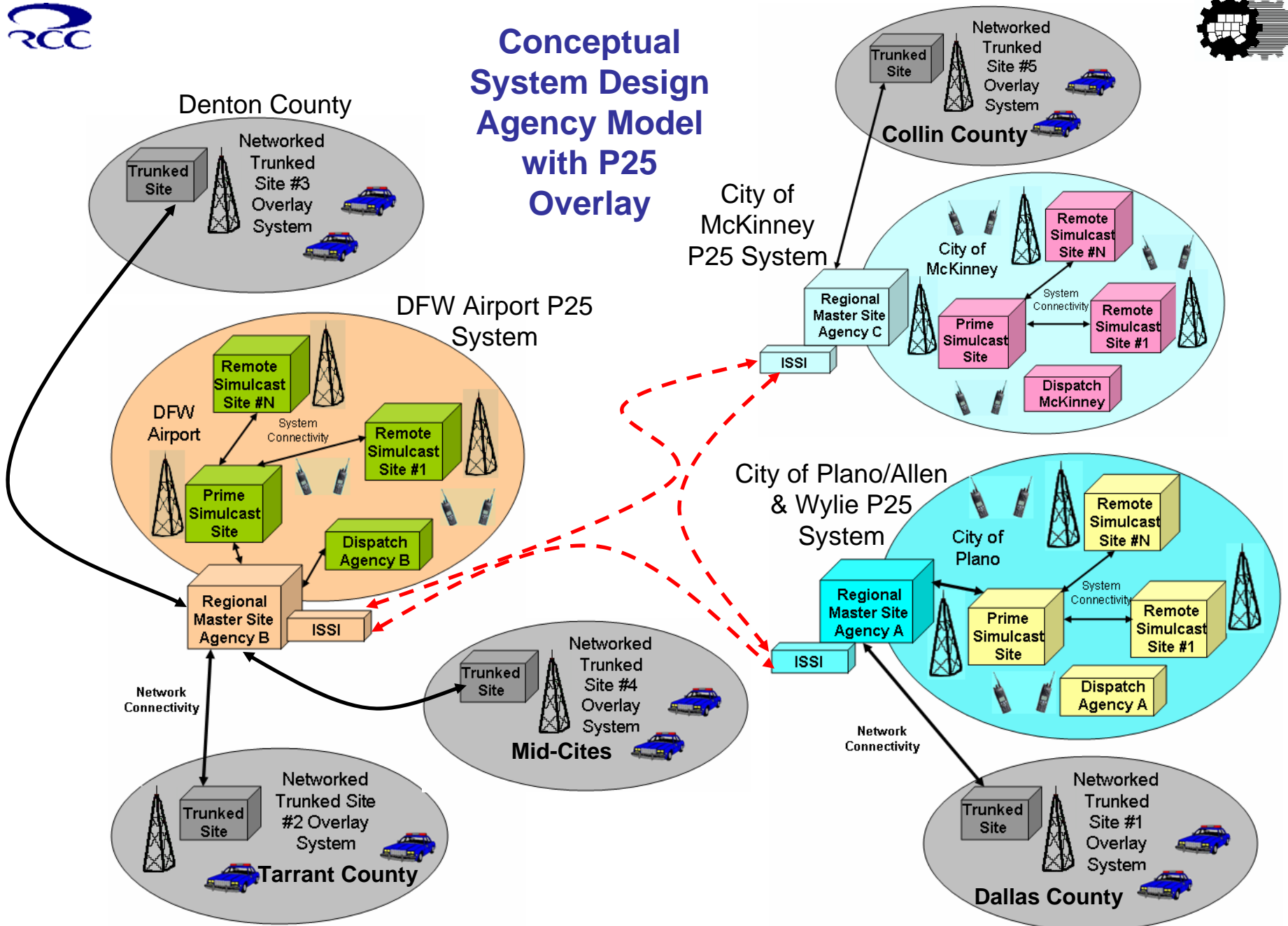


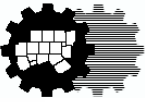
Conceptual System Design Agency Model with P25 Overlay



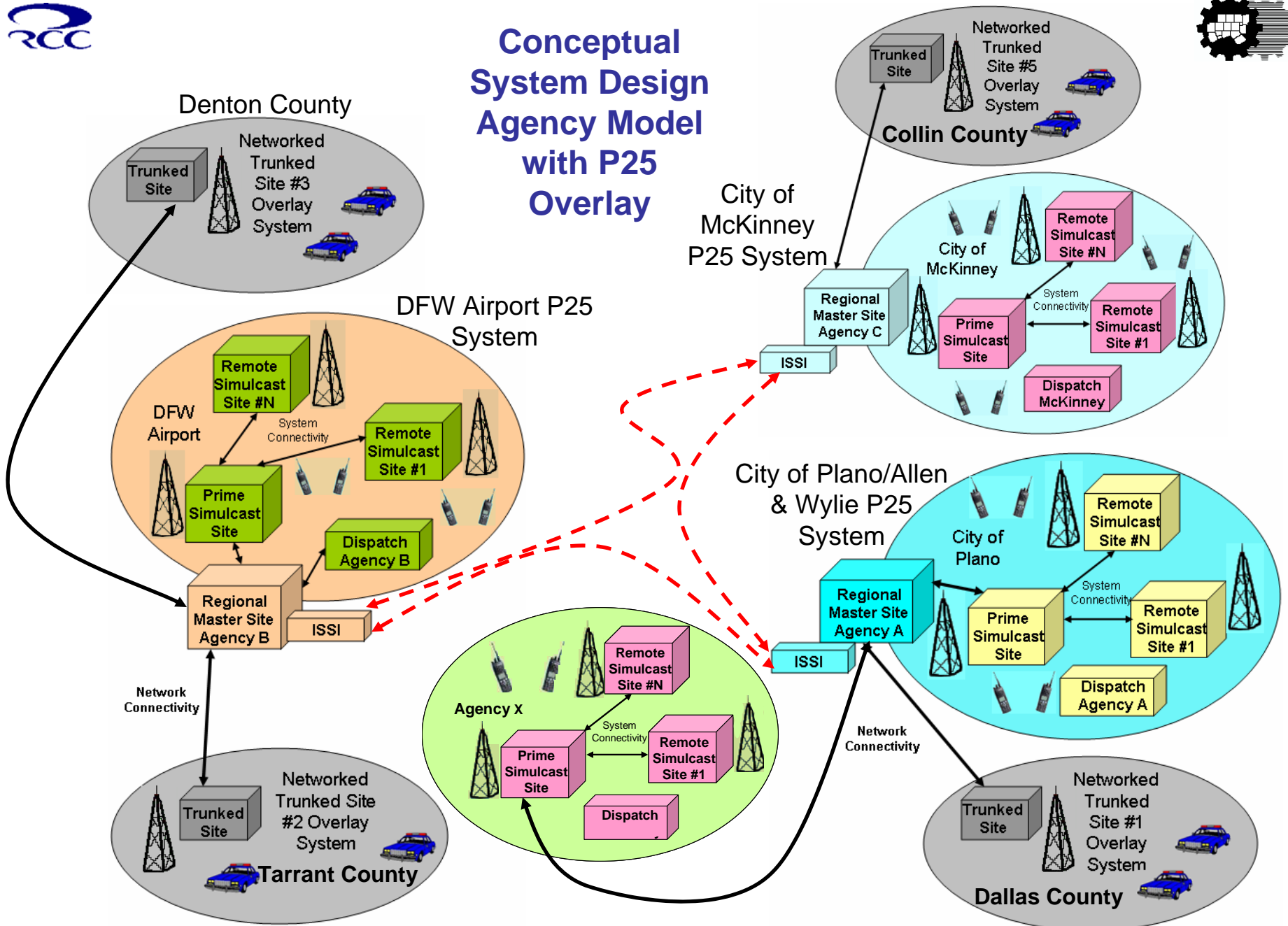


Conceptual System Design Agency Model with P25 Overlay





Conceptual System Design Agency Model with P25 Overlay



P25 Agency Model With Overlay- Attributes

Attribute	Agency Model with Overlay
Mobile Coverage	Yes
Portable Coverage	Yes ^{N1}
Master Site Ownership	Agency
Trunked Sites	Agency
System Connectiivty	Agency Determined
Equipment Procurement	Agency
System Licensee	Agency
System Manager	Agency ^{N2}
Initial Funding	Agency ^{N3}
On-Going Support	Agency ^{N4}
Implementation Timeline	Agency

Note 1: Via interoperability talkgroups of agency system

Note 2: System management oversight by Communications Authority

Note 3: Only interoperability items funded by grants

Note 4: Some level of support through funding by the Communications Authority - **Not Determined**

Note 5: Master Site on-line with Overlay Site(S) before agency system fully implemented-**To Be Determined**

Note 6: Communications Authority to be formed and duties to be defined



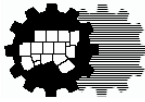
Pros & Cons - P25 Agency Model with Overlay System

➤ Positives

- **Provides a High Level of Portable Radio Coverage – Given that the Systems Are Designed to This Requirement**
- **Overall Management Simplified – Provided By Host Agency**
- **Future Grant Funds Keyed to the Regional Concept**
- **Provides Day-to-Day Communications as Well as Interoperable Communications**
- **Overlay System Provides Mobile Interoperable Communications for Areas without Agency P25 Systems**
- **Accommodates Orderly Growth & Addition of Systems**

➤ Negatives

- **Requires a “Host” Agency to Sponsor the Master Site**
- **Sponsor Must Take on Responsibility of Managing & Maintaining the Other Systems That Connect to the Regional Master Site**
- **Implementation Must Take Place in a Timely Manner – June 2010 PSIC Grant Deadline**
 - **State of Texas, SAA, Must Approve New Direction of Project**
 - **Governing Body Approval– City Council/Commissioners Count Must Approve the Project**



Comparisons of Concepts

Attribute	Overlay System	Agency Model with Overlay
Mobile Coverage	Yes	Yes
Portable Coverage	Limited	Yes ^{N1}
Master Site Ownership	Comm Authority	Agency
Trunked Sites	Leased ^{N7}	Agency
System Connectiivty	Leased ^{N8}	Agency Determined
Equipment Procurement	Comm Authority	Agency
System Licensee	Comm Authority	Agency
System Manager	Comm Authority	Agency ^{N2}
Initial Funding	Comm Authority	Agency ^{N3}
On-Going Support	Comm Authority	Agency ^{N4}
Implementation Timeline	Comm Authority	Agency ^{N5}

Note 1: Via interoperability talkgroups of agency system

Note 2: System management oversight by Communications Authority

Note 3: Only interoperability items funded by grants

Note 4: Some level of support through funding by the Communications Authority - **To Be Determined**

Note 5: Master Site on-line with Overlay Site(S) before agency system fully implemented-**To Be Determined**

Note 6: Communications Authority to be formed and duties to be defined

Note 7: Use of Agency sites versus leased sites to be determined

Note 8: Use of existing fiber optic networks possible

THE “AGENCY” MODEL with OVERLAY
MAY EVOLVE INTO AN “AGENCY”
MODEL

AGENCY HOSTED MASTER SITE
SERVING OTHER AGENCY SYSTEMS

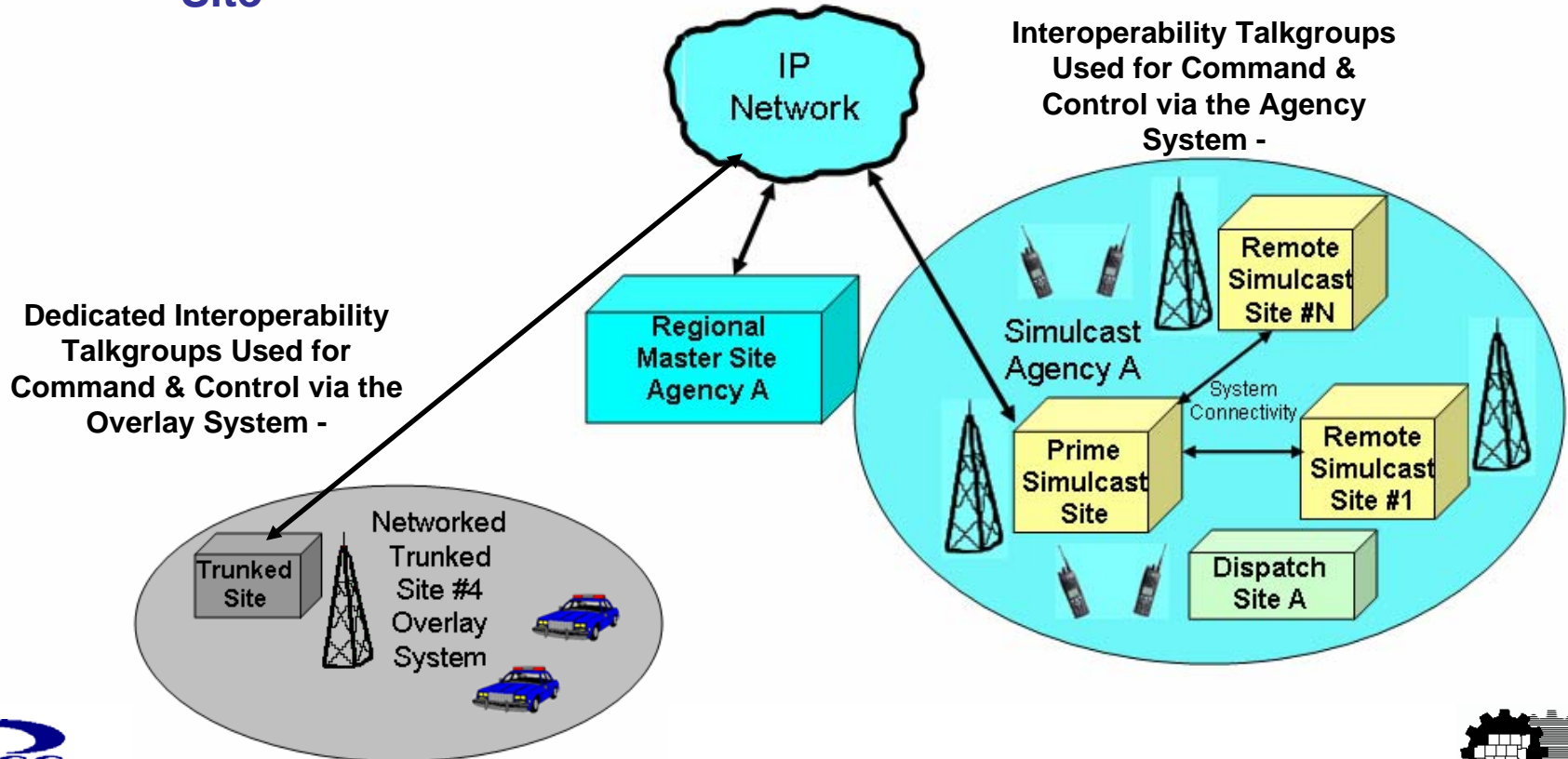
OVERLAY SITES ABSORBED or USAGE
ONLY in COUNTIES WITHOUT P25
SYSTEMS



Revised Conceptual System Design – Agency Model with Overlay

What If : Agency A Operates a Regional Master Site & Implements a P25 System for Its Use & Hosts the P25 Overlay Site

Typical P25 System
Simulcast With Master Site



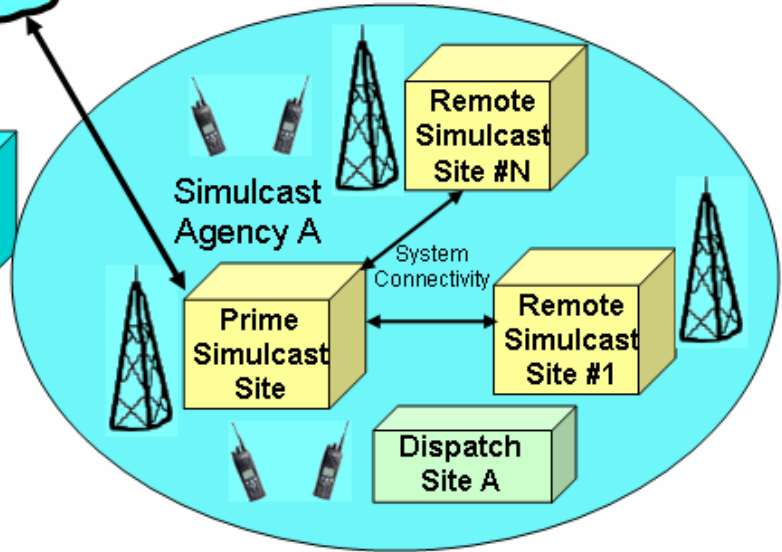
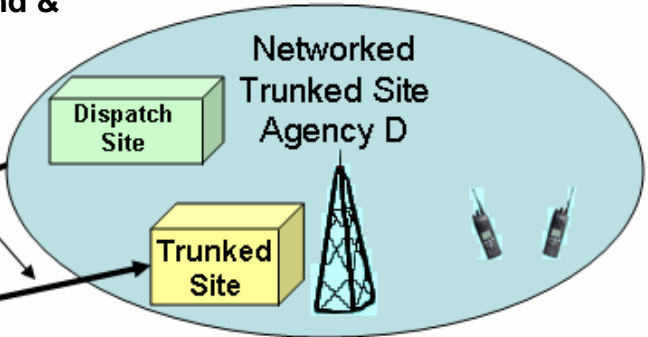
Revised Conceptual System Design – Agency Model

Agency D Joins the Regional System & Uses The Regional Master Site & Overlay Site Remains in Use in a Non-P25 Area.

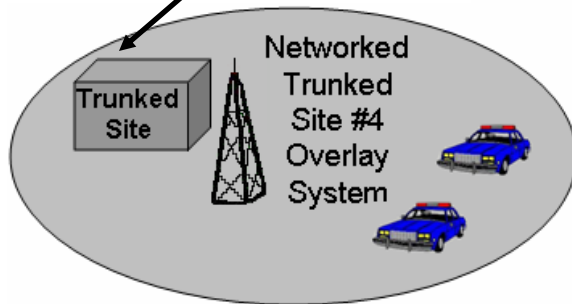
Typical Regional System
Simulcast & Networked
Trunked Sites – Common
Master Site

Interoperability Talkgroups
Used for Command &
Control

Network
Connectivity



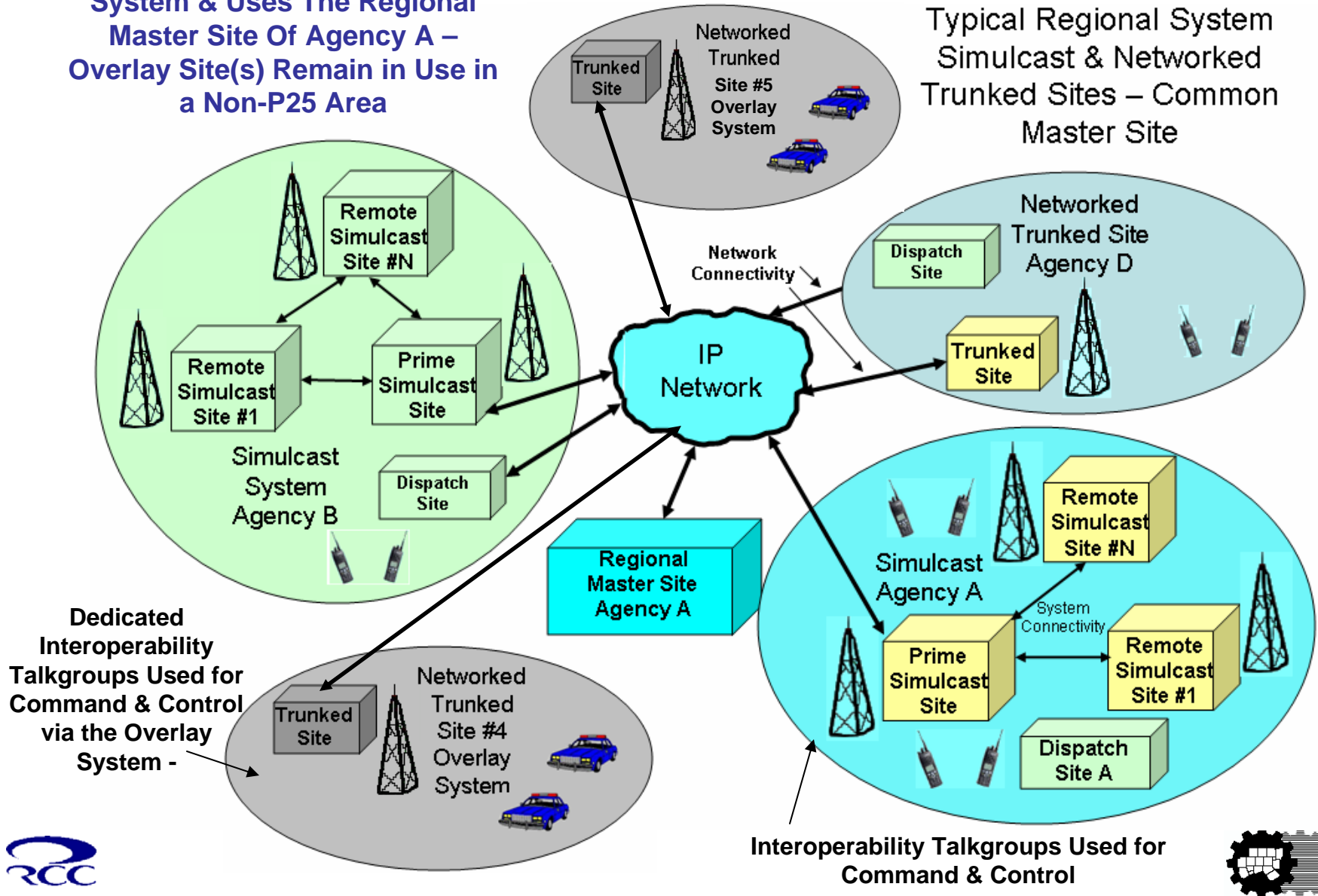
Dedicated Interoperability
Talkgroups Used for
Command & Control via the
Overlay System -



Revised Conceptual System Design – Agency Model

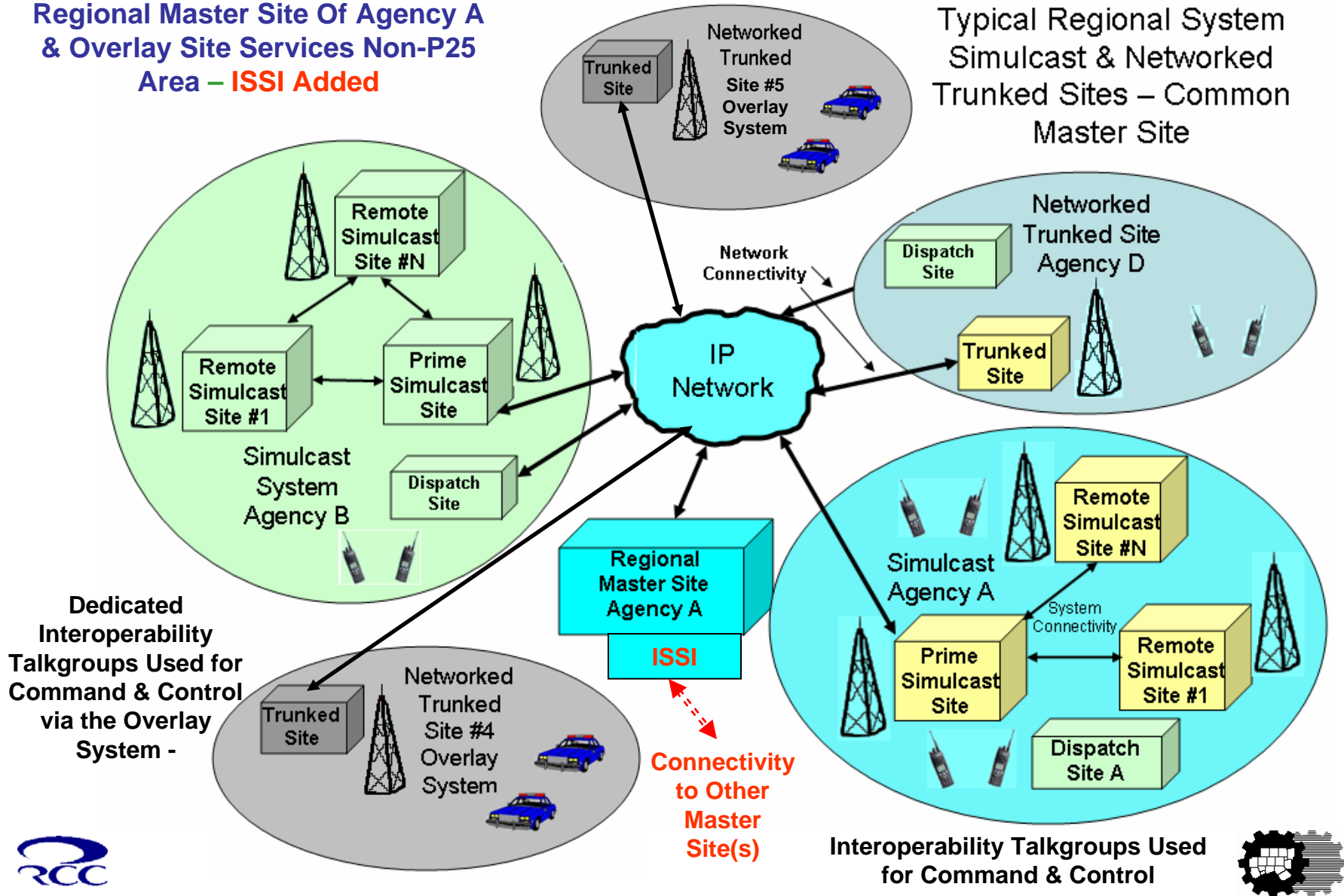
Agency B Joins the Regional System & Uses The Regional Master Site Of Agency A – Overlay Site(s) Remain in Use in a Non-P25 Area

Typical Regional System Simulcast & Networked Trunked Sites – Common Master Site



Revised Conceptual System Design – Agency Model

Agencies A, B & D Uses The
Regional Master Site Of Agency A
& Overlay Site Services Non-P25
Area – **ISSI Added**



Typical Regional System
Simulcast & Networked
Trunked Sites – Common
Master Site

Dedicated
Interoperability
Talkgroups Used for
Command & Control
via the Overlay
System -

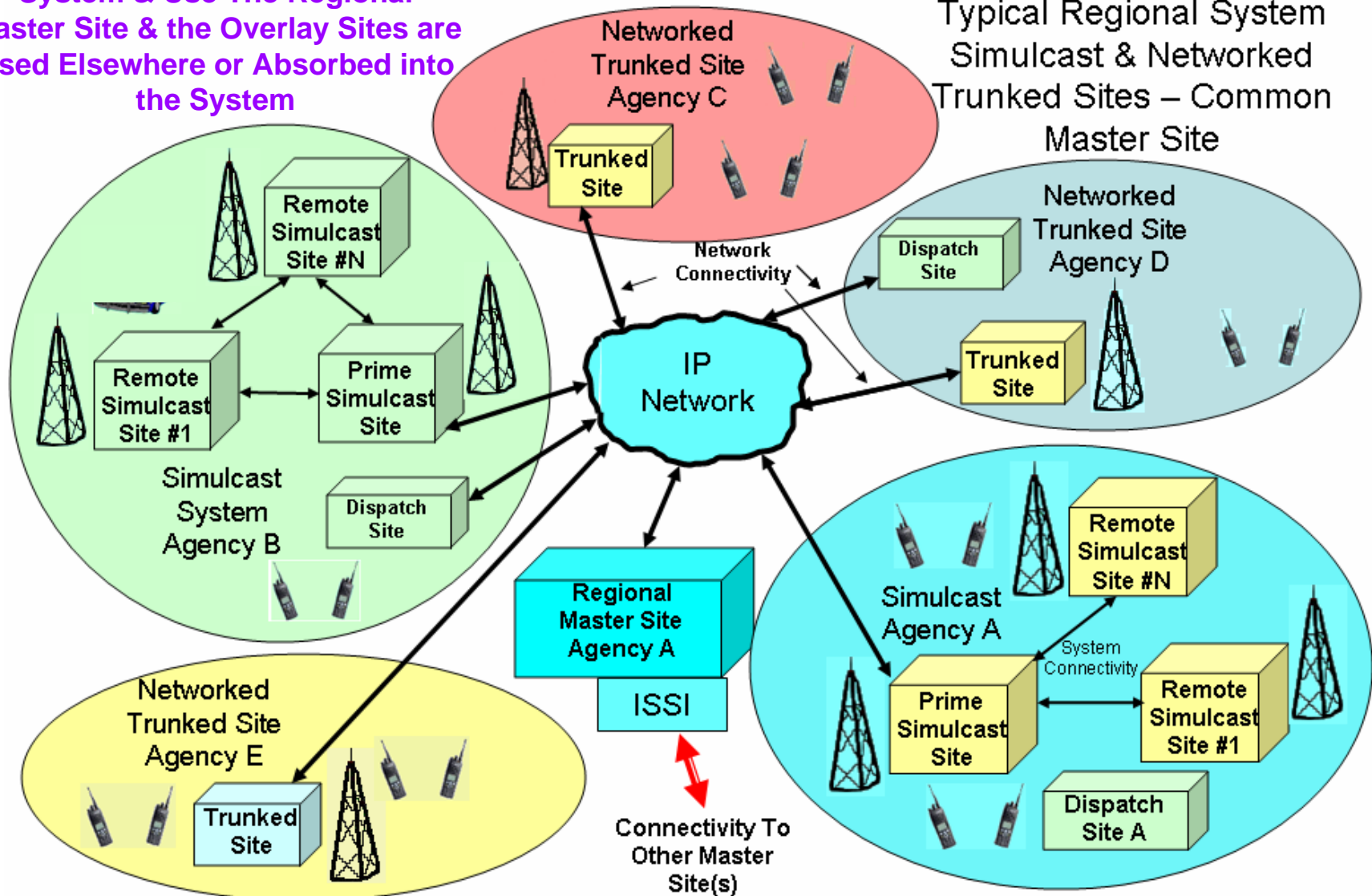
Connectivity
to Other
Master
Site(s)

Interoperability Talkgroups Used
for Command & Control



Revised Conceptual System Design – Agency Model

Agency C & E Join the Regional System & Use The Regional Master Site & the Overlay Sites are Used Elsewhere or Absorbed into the System

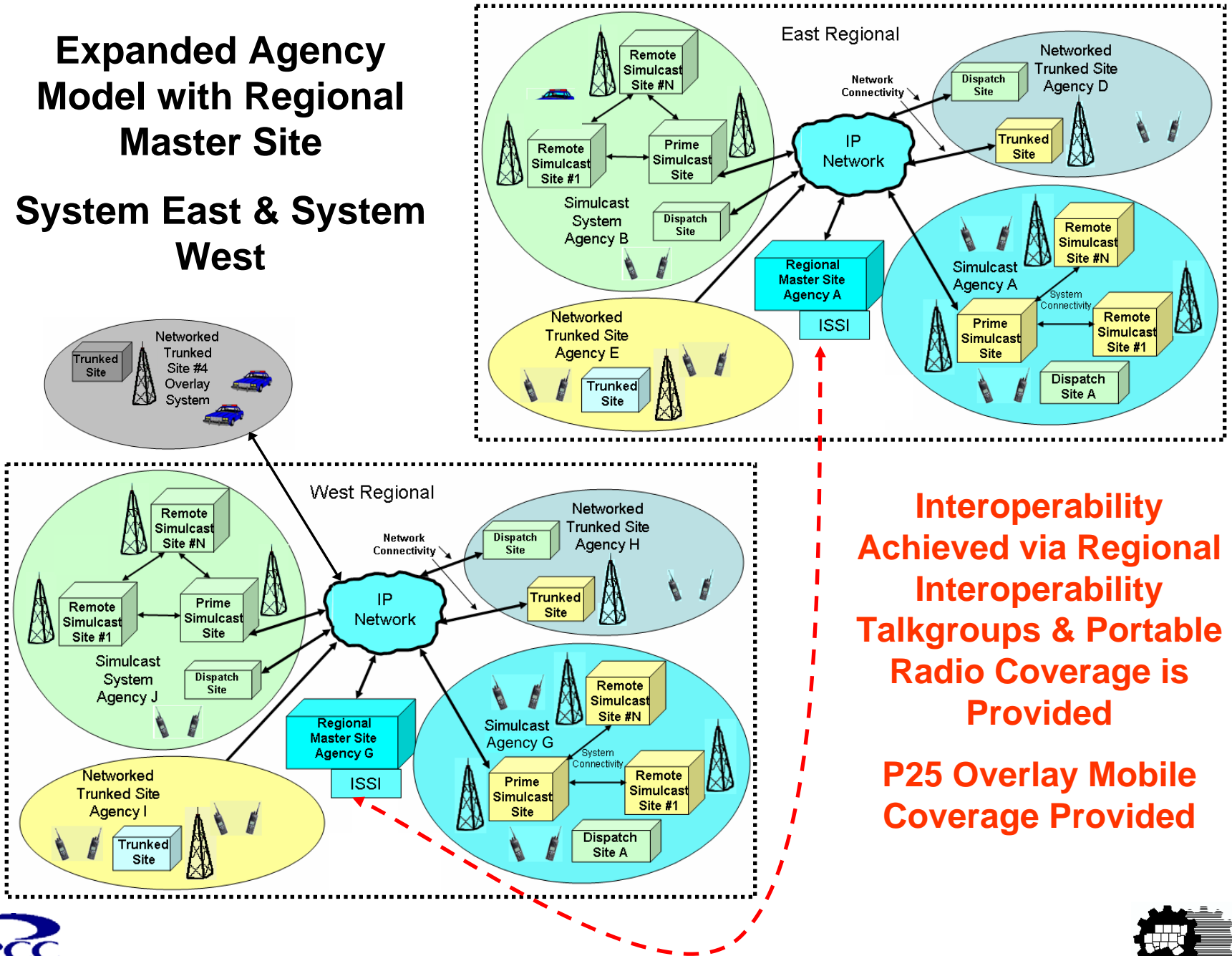


Interoperability Talkgroups Used for Command & Control



Expanded Agency Model with Regional Master Site

System East & System West



**Interoperability
Achieved via Regional
Interoperability
Talkgroups & Portable
Radio Coverage is
Provided**

**P25 Overlay Mobile
Coverage Provided**



QUESTIONS – COMMENTS DISCUSSION

