



A Global Vision

Solution Overview

Alabama First Responders Wireless Commission

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What is Mutualink?

- A cross-agency collaboration/interoperability system.
- Allows sharing of *any* media between *any* agencies over *any* networks.
- Multi-media capability:
 - Voice: Radios, phones, users, PAs, intercoms, etc.
 - Video: Cameras, video management systems, smartphones, webcams, etc.
 - Text messaging, chat rooms.
 - File sharing
 - Location & GIS data sharing
- Secure: Full encryption & authentication, FIPS 140-2 compliant, JITC certified.

The Interoperability Problem: Silos!



- Silos prevent seamless communication between agencies.
- BUT silos are necessary to maintain agency control & sovereignty.

Silos = Security Domains = Good



How to Create Interoperability: Build a Bigger Silo?

- All silos have boundaries. Bigger silos may reduce the number of boundaries, but they do not eliminate the fundamental problem.
- Silos are not all-encompassing. Even within a silo footprint, only certain agencies are included.
- Once a silo transcends agency boundaries, agencies give up control of resources to the silo owner.
- Silos are expensive to build!

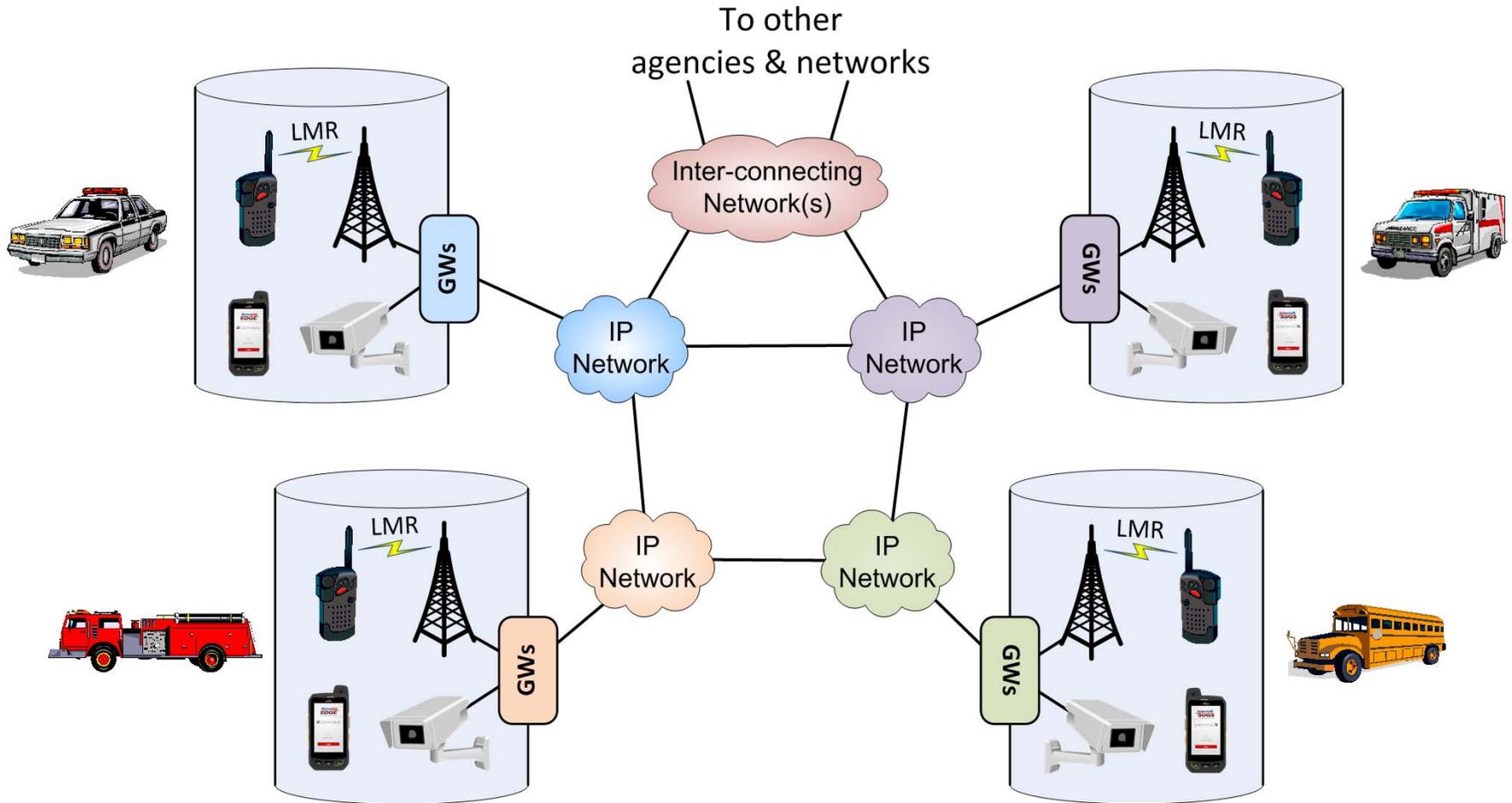


Goals For Ideal Solution

- Recognize that silos will always exist, so don't fight against them – work with them.
- Silos are not only LMR or voice - video, GIS, and data systems have the same problem, so need a media-agnostic solution.
- Enable “selective” information flow between silos.
- Ensure security with access control and encryption.
- Maintain sovereignty of owning agencies.
- Enable ad-hoc sharing under control of on-scene agency personnel.



A Distributed Approach to Bridging Silos





Centralized Security Model

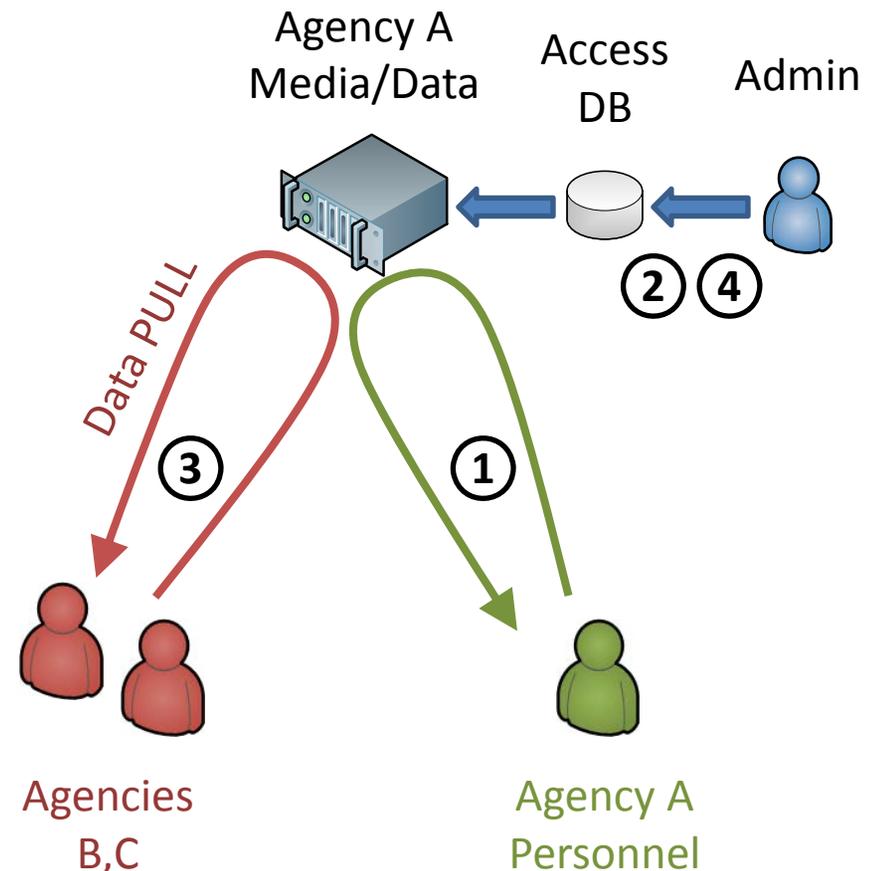
- FirstNet has specified a centralized enterprise architecture security model including federated ICAM (Identity, Credential, & Access Management).
- Appropriate for resources meant to be perpetually shared between many agencies.
- Cross-agency sharing in the FirstNet model requires agencies to connect shareable resources to the FirstNet centralized security infrastructure.
- Not appropriate for private PSEN data or communication systems that need to be dynamically shared while maintaining sovereignty.



Cross-Agency Sharing

Method 1: Centralized PULL Model

- 1) Agency A is accessing private media/data. They wish to share this with on-scene agencies B,C.
- 2) The agency admin adds the desired agency B,C members to the access control DB for the desired data.
- 3) The agency B,C members may then access (PULL) the data. This assumes a secured connection to the data is available and they have the appropriate application(s) installed.
- 4) When the sharing is no longer required, the admin must remove the members from the database.

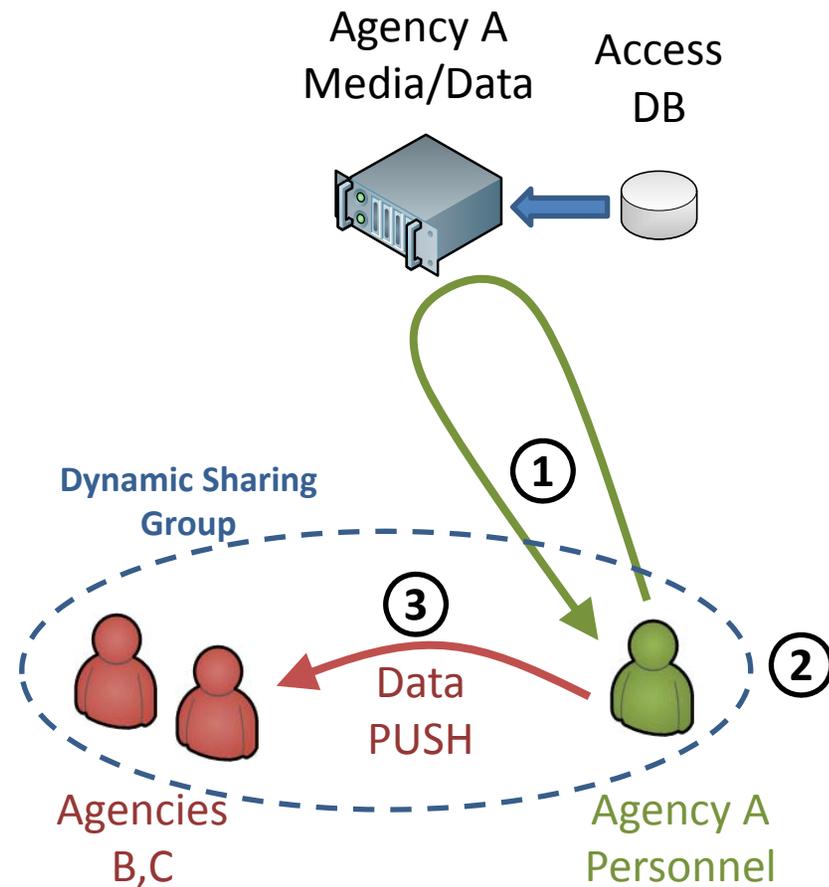




Cross-Agency Sharing

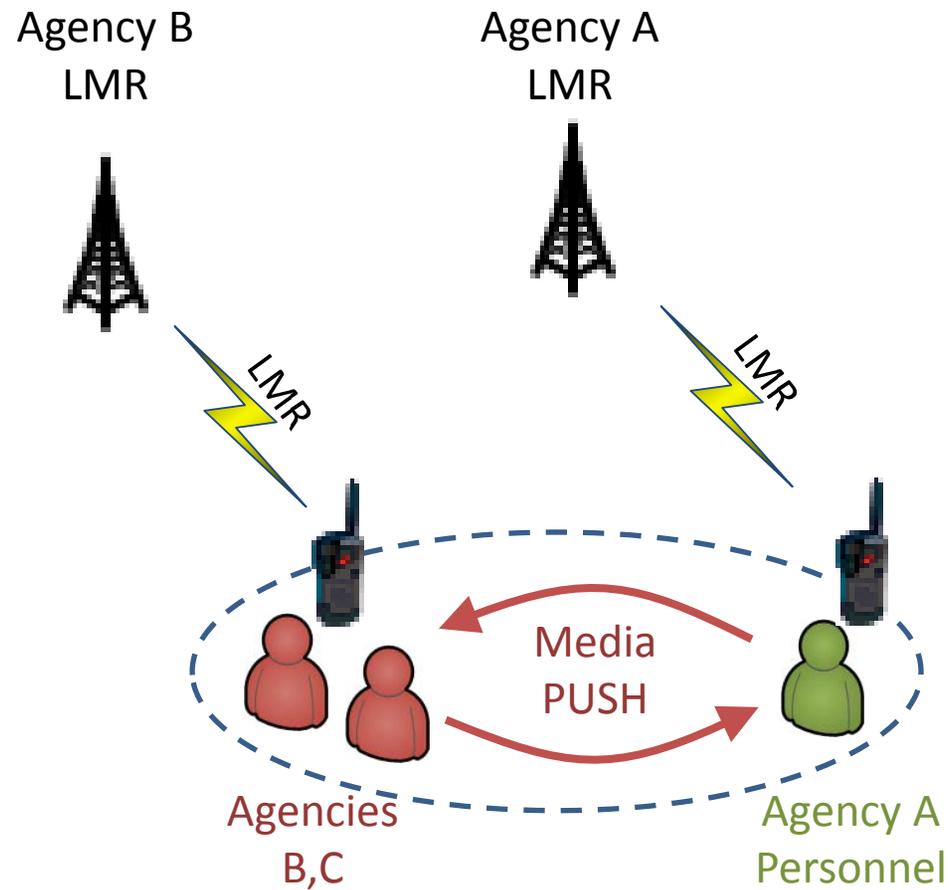
Method 2: Dynamic PUSH Model

- 1) Agency A is accessing private media/data. They wish to share this with other on-scene agencies B,C.
 - 2) Agency A creates a Dynamic Sharing Group with the desired agencies B,C.
 - 3) Agency A then shares (PUSHes) the desired media/data to agencies B,C.
- Agencies B,C never have direct access to the data source, therefore Agency A remains in complete control of their data at all times.



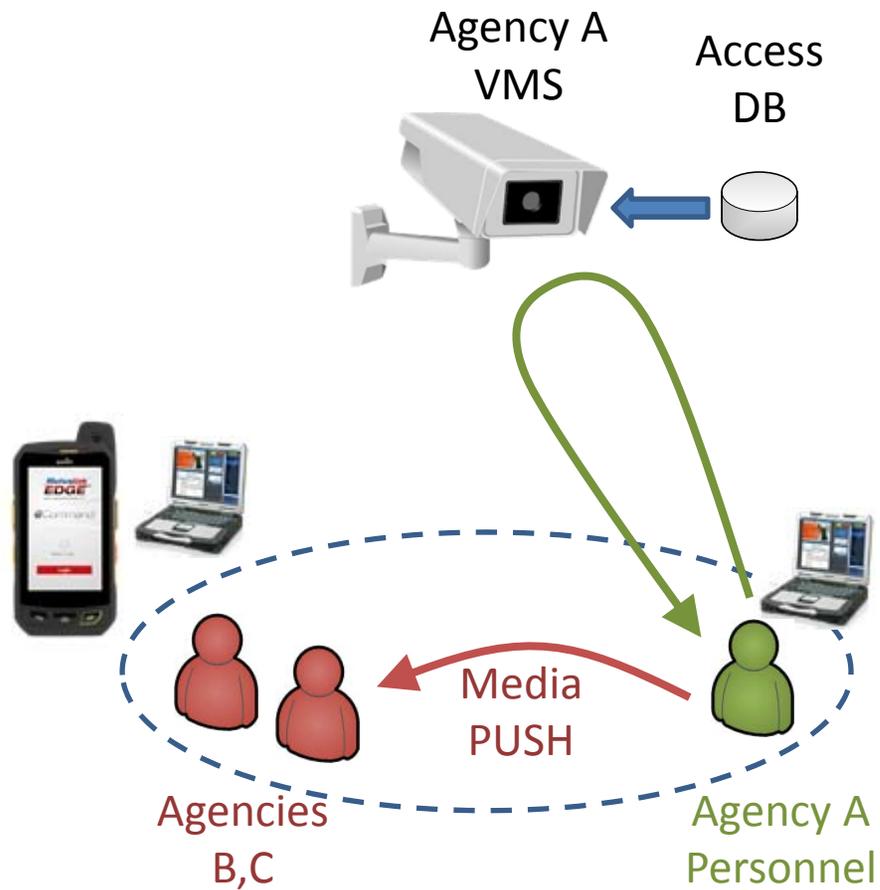


Example Use Case: LMR





Example Use Case: Video





Dynamic Sharing Groups

- Anyone can create a group and invite others into the group; others then accept or reject that invitation. No central administrative actions are required.
- Groups can span multiple local and remote networks.
- Groups can be ad-hoc (created on-demand) or long-term (exist until all members leave).
- Each member can push any form of media/data to the group, each member then decides which media/data they wish to consume.
- All media/data is highly encrypted.



Group Members

- Users:



- Available platforms:

- Secure Appliance IWS (Interoperability Workstation)
 - Windows Edge Client
 - Smartphone & Tablet Edge Clients

- Gateways:



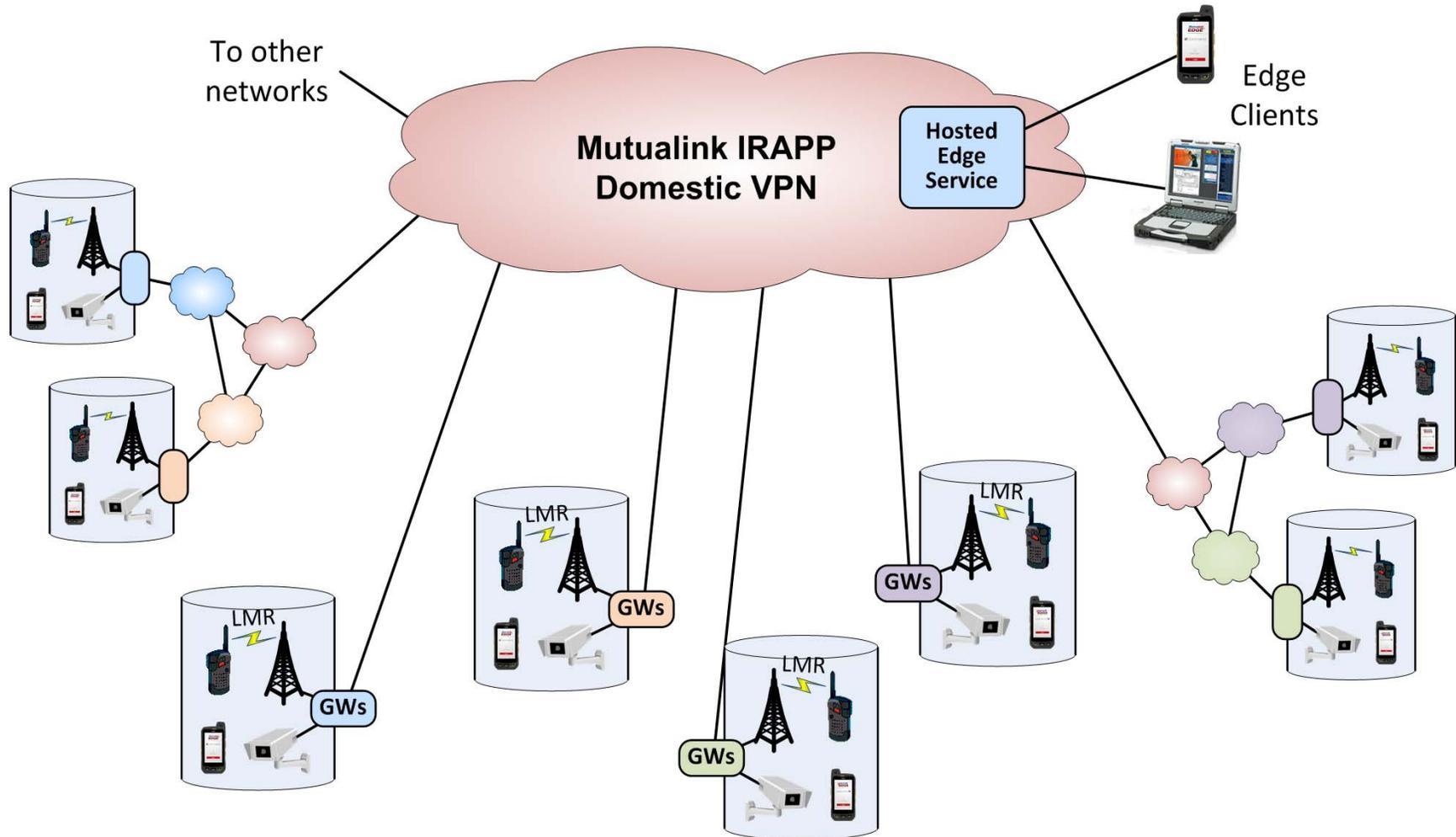
- Interfaces any external media or data systems to a Mutualink system.

- Radio GW: Analog or digital LMR systems, intercoms, PAs
 - Video GW: Analog or digital video feeds/cameras/systems
 - Telephony GW: Analog or digital telephony systems
 - Data GW: Application-specific or opaque data connections



Mutualink IRAPP Network

Interoperable Response and Preparedness Platform



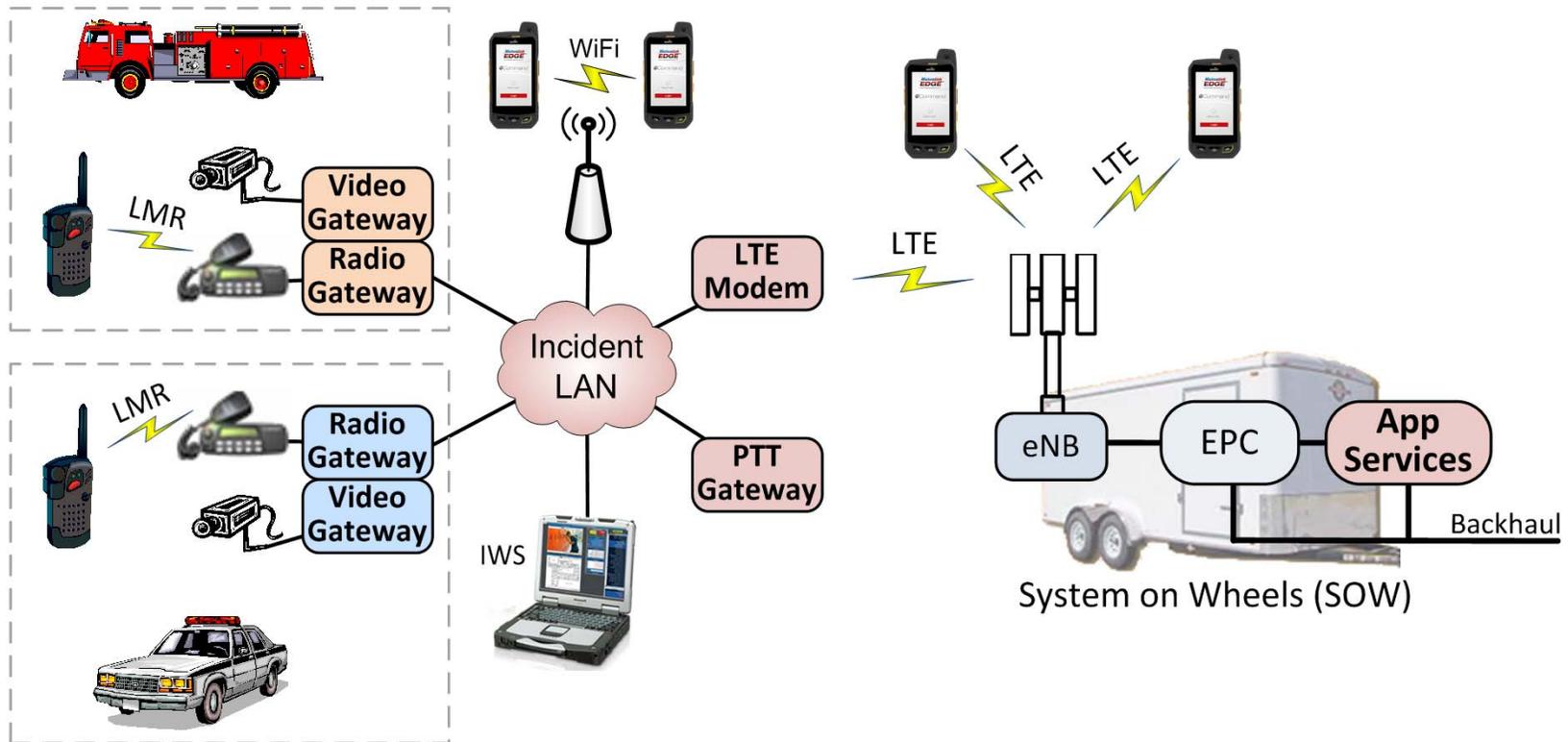


Always-available Interoperability

- Interoperability is needed on-scene even if wide-area infrastructure (e.g. FirstNet data centers) are not available.
- LTE deployables and MCUs should include basic interoperability functions on a best-effort basis.
- As infrastructure becomes available, interop capability expands to take advantage of additional connectivity.

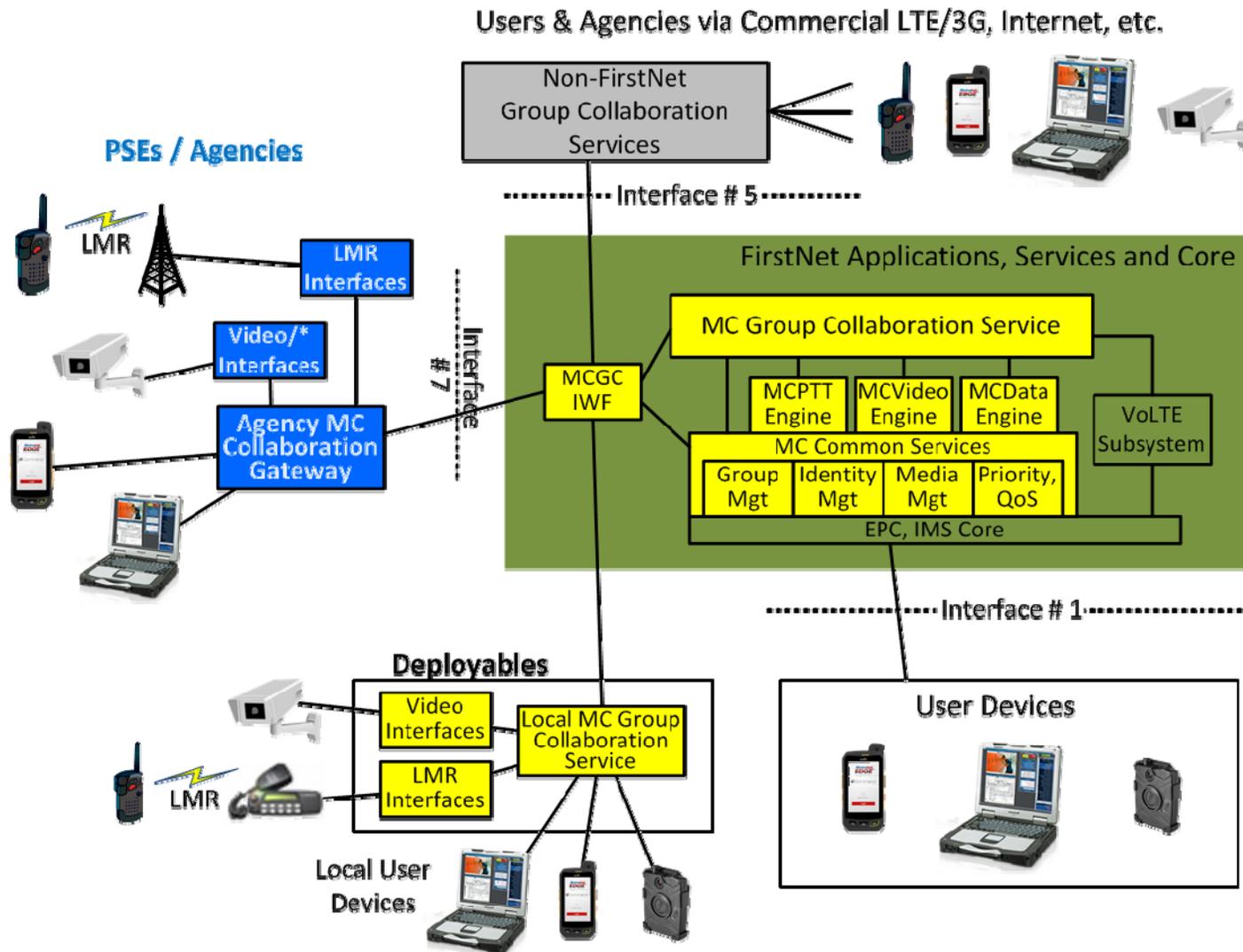


On-Scene Collaboration





Mission Critical Group Collaboration





Example: Hurricane Sandy

Mutualink / RollCall-5 Interoperability Workstation

New Incident

All IWSSs Custom SmartLists

- RollCall-5
- Support
- ChrisA_Field
- NJ-AtlanticCity-ACCRCasino
- NJ-AtlanticCity-AtlanticareMCC
- NJ-AtlanticCity-BallysCasino
- NJ-AtlanticCity-CaesarsCasino
- NJ-AtlanticCity-GoldenNugget
- NJ-AtlanticCity-RevelResort
- NJ-AtlanticCity-TheBorgata
- NJ-AtlanticCity-TropicanaCasino
- NJ-AtlanticCity-TrumpPlaza
- NJ-AtlanticCityPD
- NJ-AtlanticCntyEOC
- NJ-BayonneHosp
- NJ-Belleville-ClaraMaassMed
- NJ-BergenCoPros_Off
- NJ-BergenPSOC
- Ops
- NJ-Camden-CooperUnivM
- NJ-CumberlandCoEOC
- PSAP
- NJ-CumberlandCoSheriff
- NJ-DenvilleSCHS
- NJ-DoverSCHS
- NJ-E.Orange-GeneralHosp
- NJ-E.OrangeVA_Hosp
- NJ-E_Rutherford-MetLife
- NJ-EastRutherford_EMCV
- NJ-EastRutherfordEOC

Add Resource

- Mutualink
- ChrisA_Video
- DSTAR
- NJPA_Scanner
- PR-Video

storm status

TX Intercom

Select Select

- Members -

- Mutualink: RollCall-5
- Mutualink: ProjectMgr
- ACCRCasino: Security
- RevelResort: Security
- RevelResort: Video
- TheBorgata: Surveillance
- TrumpPlaza: Surveillance
- NJ-Newark-FD_MCV: Ops
- NJ-Newark-NJIT: Lab
- NJ-NewarkEOC: OPS1
- NJ-NewarkEOC: OPS2

SANDY STATUS

TX Intercom

Select Select

- Members -

- Mutualink: RollCall-5
- NJ-Newark-FD_MCV: Ops
- Newark-FD_MCV: Video1
- NJ-NewarkEOC: OPS1
- NJ-NewarkEOC: OPS2

- Activity Log -

- Messages -

- Shared Files -

Hudson County Hosp

TX Intercom

Select Select

- Members -

- Mutualink: RollCall-5
- HobokenUnivMedCtr: EOC
- HobokenUnivMedCtr: Security
- NJ-HudsonCoOEM: EOC
- ChristHosp: EOC1
- ChristHosp: EOC2
- NJ-JerseyCityMed: EOC1
- PalisadesMedCtr: HRCComm
- PalisadesMedCtr: Security
- PalisadesMedCtr: Video
- NJ-NewarkEOC: OPS1

- Activity Log -

- Messages -

- Shared Files -

Chris

TX Intercom

Select Select

- Members -

- Mutualink: RollCall-5
- MeridenSchools: Camera

- Activity Log -

- Messages -

I did
15:07:14 [Mutualink: ChrisA_Field]:
very strange that the MeridenSchools video
is in our incident but I no longer see it in my
available resources?
17:16:27 [Mutualink: ChrisA_Field]:
Just lost our power :(.
Send

storm_status

SANDY STATUS

Hudson County Hosp

Applications Places System Mutualink / RollCall-5 I... Mutualink Audio Mana... "storm_status" "SANDY_STATUS" "Hudson County_H..." Application: localhost 29-Oct-2012 06:05 PM License Info Mon Oct 29, 6:04 PM



Example: Superbowl 48

Mutualink / ProjectMGR Interoperability Workstation

New Incident

All IWSS Custom SmartLists

- NJ-StatePolice-PSC
 - NJSP-Edge1
 - Operations
- NJ-StatePolice-ROIC
 - SEOC
 - WatchCommand
- NJ-StatePolice-TroopB
 - Operations
- NJ-SummitOverlookHosp
 - Comm
- NJ-SussexCo_OEM
 - Ops
- NJ-SussexSCHS
 - Security
- NJ-Teaneck-HolyNameHosp
 - MCC

Add Resource

- Mutualink
 - NJ-StatePolice-PSC
 - NJSP-Edge1-Video
 - NJSP-Edge2-Video
 - Radio
 - Video

Media Day

Media Day

TX Intercom

Select Select

- Members -

- Mutualink: ProjectMGR
- Mutualink: RollCall3
- ArmyNationalGuard: Operations
- NJ-Newark-FD_MCV: Ops
- UMDNJ_REMCS: Dispatch
- NJ-Newark_FBI: IWS
- NewarkArena: Security
- NewarkArena: Video
- NJ-NewarkEOC: FireEOC
- NewarkEOC: OEM_EOC
- NewarkEOC: PoliceEOC
- PSC: NJSP-Edge1
- PSC: Operations
- ROIC: WatchCommand
- Albany_State_Watch_Center: Ops

- Activity Log -

- Messages -

- Shared Files -

SB48 Info Forum

TX Intercom

Select Select

- Members -

- Mutualink: ProjectMGR
- Mutualink: RollCall3
- ArmyNationalGuard: Operations
- NJ-Newark-FD_MCV: Ops
- FD_MCV: Video2
- PrudentialFinancial: GlobalSecurity
- UMDNJ_MCC: Dispatch
- UMDNJ_REMCS: Dispatch
- NJ-Newark_FBI: IWS
- Newark_PSEG: Command_Ctr
- NewarkArena: Security
- NJ-NewarkEOC: FireEOC
- NewarkEOC: OEM_EOC
- NewarkEOC: PoliceEOC
- PSC: NJSP-Edge1
- PSC: Operations
- StatePolice-ROIC: SEOC
- NY-NYC_OEM: OEM

- Activity Log -

Application: localhost 28-Jan-2014 10:57 AM License Info

Menu [ProjectMGR Mutu... "Media_Day" "test"

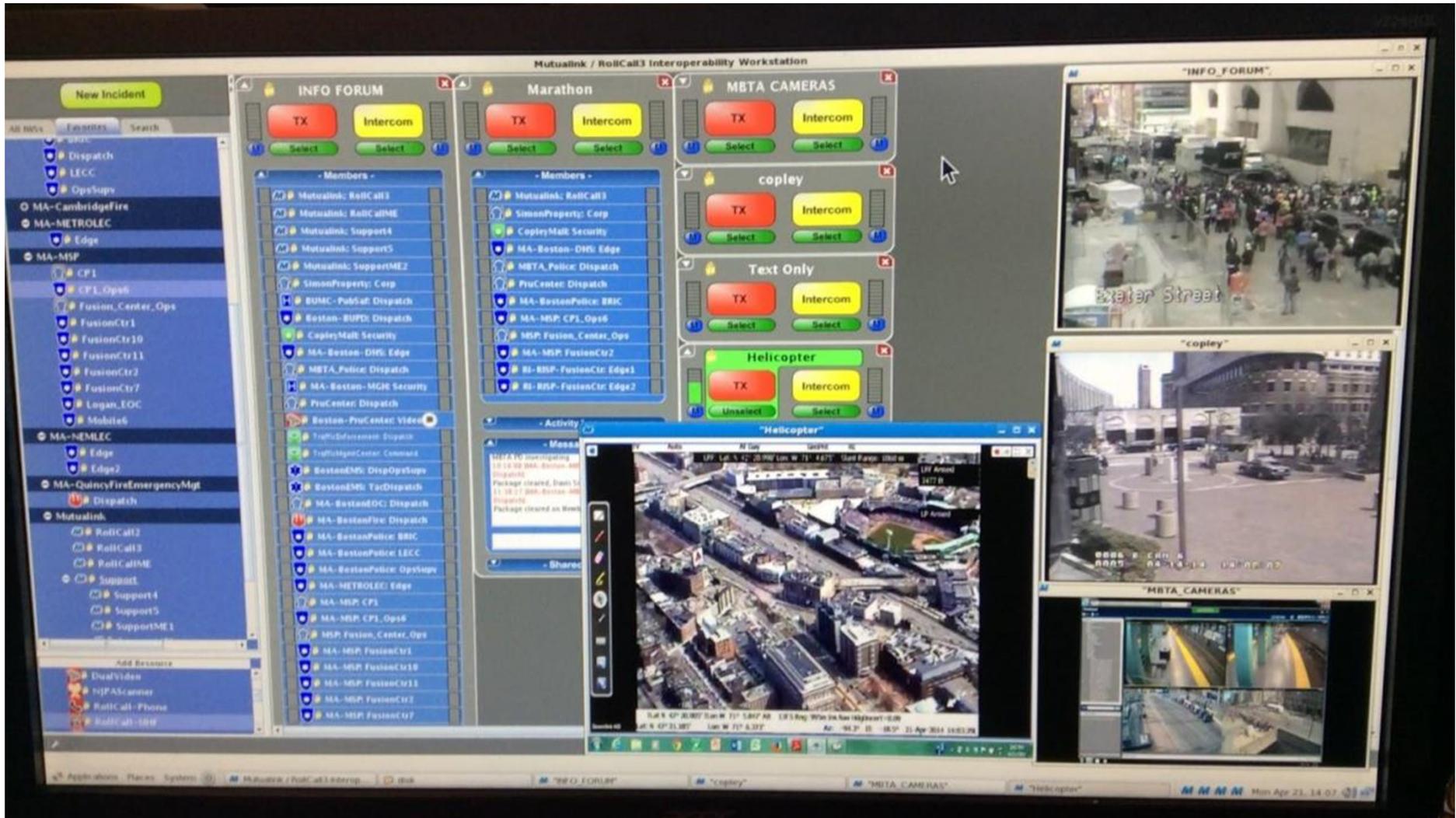
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NEW JERSEY STATE POLICE

PUBLIC SAFETY COMPOUND



Example: Boston Marathon





Summary

- The public and First Responders expect and need cross-agency interoperability to be a fundamental capability of FirstNet.
- Bridge existing silos, don't build a bigger one.
- Maintain sovereignty of participating agencies.
- Enable interop to non-FirstNet agencies as well.
- Allow for on-scene and local interop capability if wide-area infrastructure is not available.
- This is not just theoretical:
 - Operational worldwide in hundreds of public safety, critical infrastructure, federal, and military agencies.
 - Deployed throughout New Jersey and Harris County BTOPs.
 - NATO Special Forces global interoperability solution.



Questions and Demo