Hampton Roads Interoperability System

Hampton Roads Chief Administrative Officers Meeting

August 3, 2022

Introductions

- John Sadler
  - HRPDC, Regional Emergency Management Administrator
- Terry Hall
  - York-Poquoson-Williamsburg, 9-1-1 Director
- Rae Fleming
  - York County, Management Analyst
- Cheryl Giggetts,
  - CTA, Principal Consultant
- Patty Holtschneider
  - Motorola Solutions Inc., Strategic Vice-President
- Matt Telep
  - Motorola Solutions Inc., Systems Engineering Manager

RPAC-I and AHAC

➢Regional Preparedness Advisory Committee-Interoperability (RPAC-I)

➢All Hazards Advisory Committee (AHAC)

Grants

➢ Initial Grant
  ➢ $90,000 – Business Architecture Services for Interoperable Communications Technologies. *Completed May 2019*

➢ Grant #1
  ➢ $173,250 – Hampton Roads Interoperability Planning
    ➢ *Completed December 2021*

➢ Grant #2
  ➢ $210,000 – Hampton Roads Interoperability Technical Analysis
    ➢ *Completed December 2021*

➢ Grant #3
  ➢ $250,000 – Hampton Roads Interoperability Communications Upgrade
    ➢ *Available funds $250,000 – expended by December 30, 2022*

➢ Grant #4
  ➢ $500,000 - Hampton Roads Interoperability Communications Upgrade Equipment
    ➢ *Available funds $500,000 – expended by June 30, 2023*

Underway

➢ On July 6, 2022 the Hampton Roads Chief Administrative Officers were provided a briefing on ORION / HR-IRIS

  ➢ Some localities endorsed the transition to HR-IRIS, while others indicated the current ORION system meets their needs and support the continued use of ORION

  ➢ The CAO Committee provided to direction to the AHAC to utilize the available grant money to:

    ➢ Evaluate the allocation of newly obtained frequencies

    ➢ Provide a snapshot of the current ORION system

    ➢ Provide and estimate to refresh the current ORION system (ORION 2.0)

    ➢ Determine if a hybrid solution of the two systems would meet the regions needs
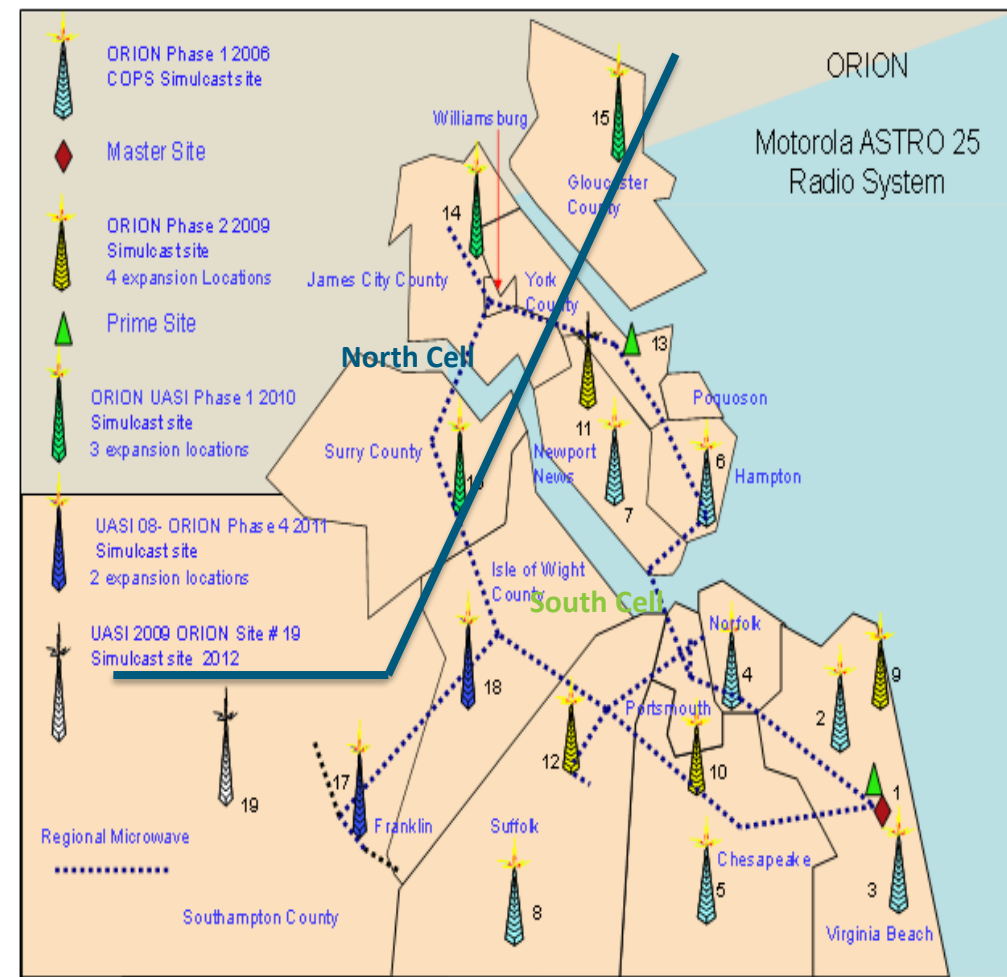
Cheryl Giggetts

Interoperability in Hampton Roads

Interoperability is a communication lifeline that connects users in an emergency.

➢ In 2005, Hampton Roads was on the forefront of addressing this critical need of first responders when they envisioned the Overlay Regional InterOperability Network (ORION).

➢ The buildout was funded by Homeland Security Urban Area Security Initiative (UASI) grants.

➢ Originally designed for the 7 cities of Chesapeake, Hampton, Newport News, Norfolk, Portsmouth, Suffolk, and Virginia Beach.
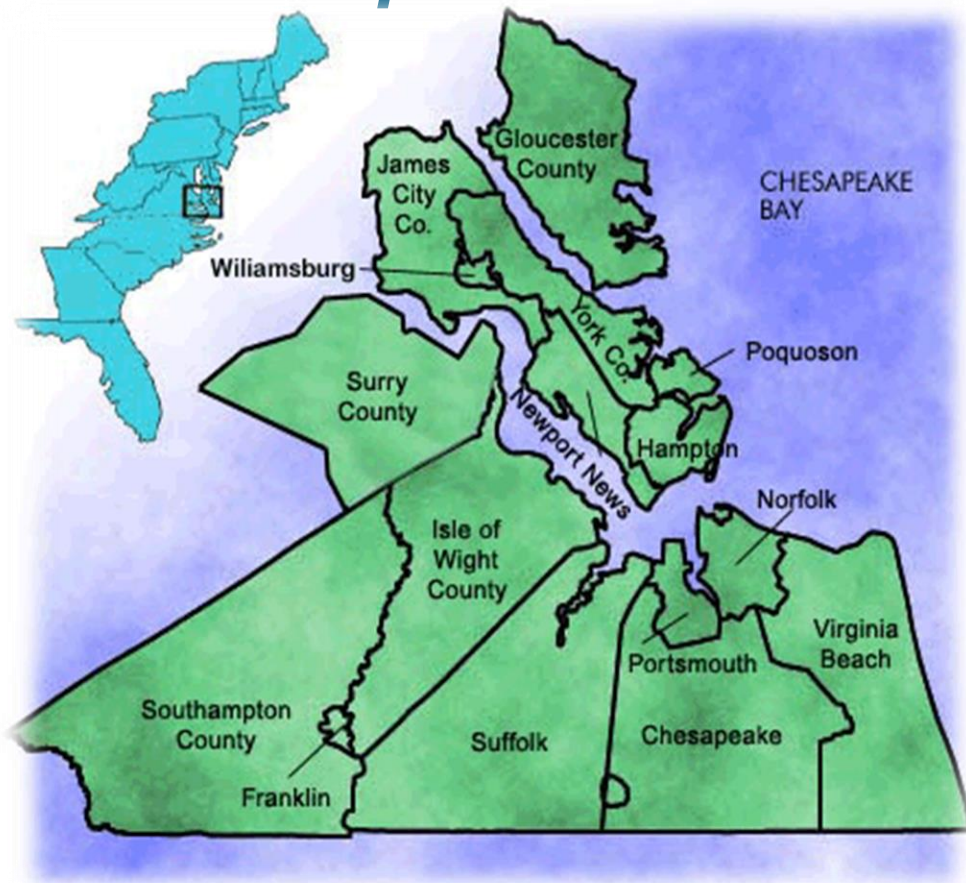
Current ORION Configuration

700 MHz Motorola Astro 25 – P25 Phase 1 Simulcast Trunked System

- 5 Channels (4 Talkpaths, 1 Control Channel)
- Designed for Mobile Radio Coverage
- 19 Total Sites
- 17 Tower Sites (Providing Coverage throughout the HRPDC Region)
- 2 Prime Sites
- $19.5 million spent to date on ORION / HRTacRAN

Interoperability Assessment 2019

Hampton Roads

Population – approximately 1.6 million
Land Mass – approximately 3,000 sq miles

- ➢ Chesapeake
- ➢ Franklin
- ➢ Gloucester County
- ➢ Hampton
- ➢ Isle of Wight County
- ➢ James City County
- ➢ Southampton County
- ➢ Newport News
- ➢ Norfolk
- ➢ Poquoson
- ➢ Portsmouth
- ➢ Suffolk
- ➢ Surry
- ➢ Virginia Beach
- ➢ Williamsburg
- ➢ York County

Hampton Roads Interviews 2019

- **Chesapeake** - Bernie Reaser, Regina Holcolmbe, Richard Huttenbrauck

- **Franklin** - Bruce Edwards, Brent

- **Gloucester** – Mark Hawkins

- **Hampton** - Sgt Benjamin, Randy Price, Eric Brockwell, Linda Boring

- **Isle of Wight** - Jeff Terwilliger

- **James City County** - Ryan Ashe

- **Mathews County** - Christian Foster

- **Newport News** - Patrick Biron, Jayson Hobbs, Robert Megia, Jim Gower, Linda Boring

- **Norfolk** - Scott Mahone, Harry Worley, Chris Leonard, Garry Windley, Mark McCloy, Jerry Burkhart, Tim Beaudon, Alex McConnaghy, Captain Miles

- **Poquoson** - Chief Clifford Bowen

- **Portsmouth** - Matt Birmingham

- **Smithfield** - Deputy Chief Matt Rogers

- **Southampton** - Shanon Rollins

- **Suffolk** - Ken Beam, Charles Glenn, Richard Yates, A. Jackson, C.J. Smith

- **Surry County** - Tammy Arthur

- **Town of Windsor** - Chief Rodney D. Riddle

- **VA Beach** - Brian Sullivan, Rob Delauney, Jada Lee

- **Williamsburg** - Fire Chief Pat Dent

- **York** - Terry Hall, Brien Lee

ORION Operational Usage

- MIRT uses ORION for maritime events
- Search and Rescue events
- Local law enforcement agencies use ORION to interoperate with FBI, DEA, and Coast Guard
- ORION is used during large planned events, such as Harborfest, College Beach Week, and Bay Day.

- Virginia Port Authority uses ORION for daily operations
- ORION is used to hail VDOT for issues on the highways
- During the Vice Presidents visit ORION was used

ORION User Concerns

➢ Lack of **structured governance**
➢ Limited capacity,
  ➢ *Currently there are **over 34,000 users** who have access to a system designed for approximately **500 users***
  ➢ Commonwealth State Agencies are responsible for a large part of the current capacity
  ➢ with only 4 talk paths on the system, ***a major event will overwhelm ORION***
➢ **Coverage issues**
  ➢ Williamsburg
  ➢ Isle of Wight
  ➢ Franklin
  ➢ Southampton
➢ Lack of **portable coverage**
➢ Lack of **sustainable maintenance plan**
➢ Lack of **sustainable funding plan**
➢ Lack of **ongoing** user training

Hampton Roads Follow-up Interviews 2020

- **Newport News** – Pat Biron

- **Norfolk** - Jerry Burkhalter

- **Suffolk** - William Kessinger

- **Virginia Beach** - Brian Sullivan

- **York** – Terry Hall

- **HRPDC** – John Sadler

- **Federal Bureau of Investigation** - Dan Guild, Arthur White

- **Port Authority** - Bill Burket, Bill DeCoste

User Feedback 2020

- ➢ **Need additional channels**
- ➢ **Need to expand coverage geographically**
- ➢ Need Incident command level use
- ➢ Need easy communications with all jurisdictions
- ➢ **Need to use only for interoperability**
- ➢ Need multi-jurisdictional governance
- ➢ Need clear operating procedures
- ➢ Need more education and training
- ➢ Need access to federal partners

ORION concept is valid!

ORION operations are flawed.

ORION reliability is diminishing . . .

Interoperability Strategic Plan 2021

➢ Hampton Roads Interoperability Planning

- Develop a clearly articulated vision and mission for Interoperability
- Develop the goals necessary to prioritize that vision and mission
- Develop technology implementation plan
- Develop governance implementation plan

➢ Hampton Roads Interoperability Technical Analysis

- Coverage Analysis
- Capacity Analysis
- Frequency Analysis
- Interoperability Analysis
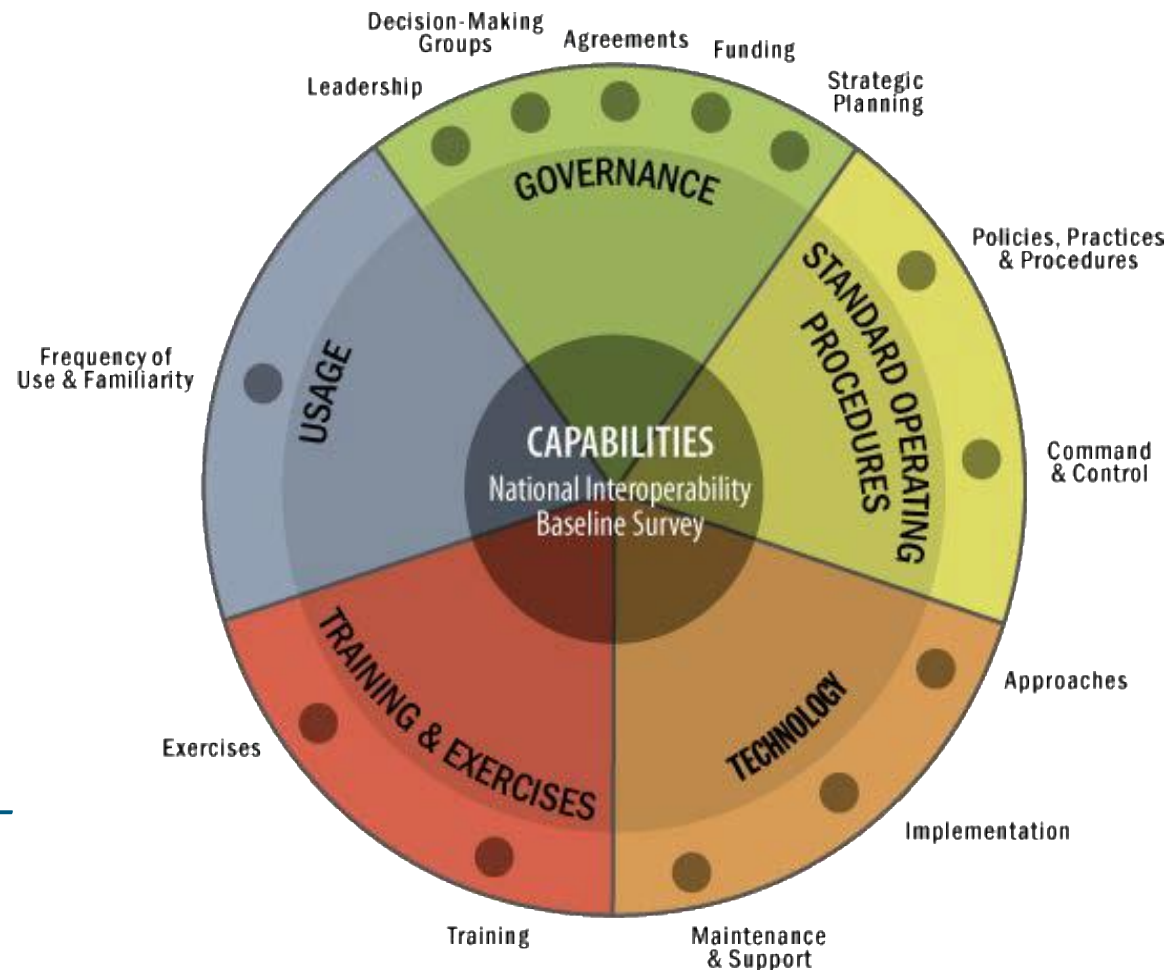- Maintenance Analysis
- Sustainability Analysis

Interoperability Planning

Vision Statement

Achieve real-time interoperability between jurisdictions responding to multi-jurisdictional incidents.

Mission Statement

Provide an achievable and sustainable technology solution that provides command-and-control public safety mobile coverage throughout the Hampton Roads region.

13 Interoperability Goals

Interoperability Technical Analysis

- ➢ Coverage
  - ✓ Maintain existing coverage
  - ✓ 95% Mobile Coverage

- ➢ Capacity
  - ✓ Current 24,000 users unrealistic
  - ✓ Future 5,000+ active users realistic
  - ✓ Future 10,000+ active users possible

    (If we use both 800 MHz & 700 MHz)

    (*A capacity study needs to be performed)

- ➢ Frequencies
  - ✓ 10 pairs 800 MHz
    - ▪ Licensed to Region
  - ✓ 10 pairs 700 MHz
    - ▪ Negotiated MOU with VSP

- ➢ Maintainability / Serviceability

  - ✓ Reliable & Consistent

- ➢ Sustainability

  - ✓ Long term useful life

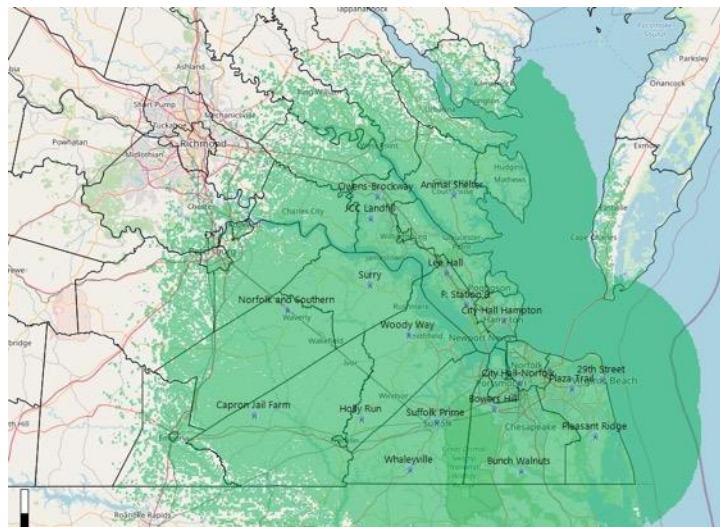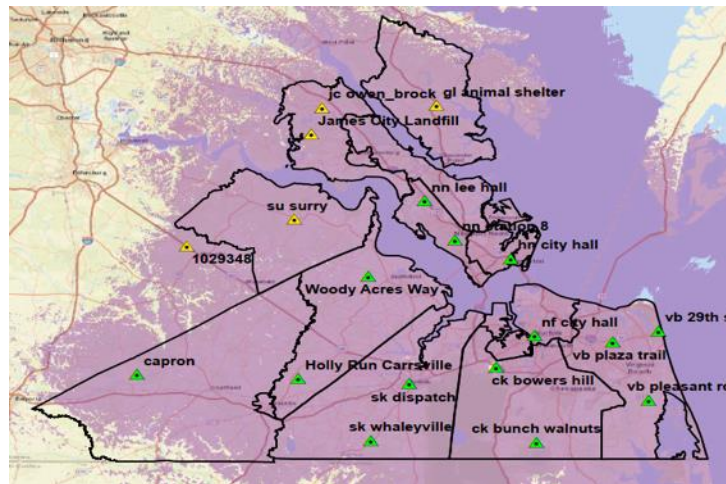- ➢ **Solution that Benefits all Hampton Roads Jurisdictions**

Interoperability Technical **Alternatives**

➢ ORION Upgrade: utilize existing 17 RF sites, add 2 sites improve coverage & increase capacity

➢ ORION Replacement: replace all existing infrastructure, add 2 sites improve coverage & increase capacity

➢ *Hampton Roads Integrated Regional Interoperable Systems (HR-IRIS)* Basic: will link Hampton Roads jurisdictions together as an **interoperable system of systems** via ISSI gateways

➢ *Hampton Roads: Integrated Regional Interoperable Systems (HR-IRIS)* **Enhanced** - will link Hampton Roads jurisdictions together as an **interoperable system of systems** via ISSI gateways **AND** increase capacity

➢ *HRTacRAN:* utilize portions of the connectivity network to support future interoperability. Move EOC connectivity and video conferencing to alternate platform.

Interoperability Technical **Alternatives**

➢ ORION Upgrade

✓ Existing 17 sites + 2 new sites

✓ North Cell - 4 new 800 MHz frequencies

✓ South Cell - 5 new 800 MHz frequencies

✓ Capacity for 3,024 subscribers

✓ Coverage – 95% mobile

✓ Replace antennas, lines, tower top amplifiers and combiners

✓ Utilize existing radio equipment

✓ Add 2 sites to improve coverage

✓ HRTacRAN used for connectivity
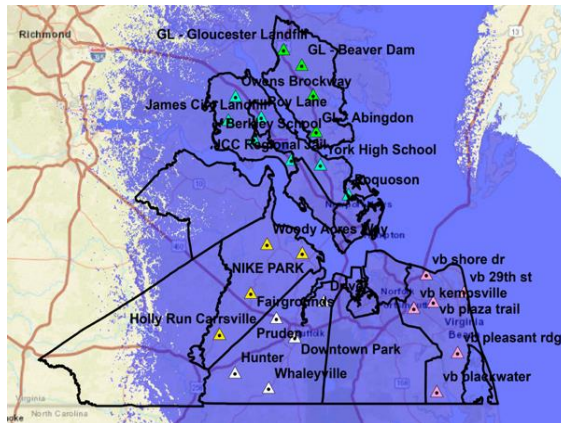

➢ ORION Replacement

✓ Existing 17 sites + 2 new sites

✓ North Cell - 4 new 800 MHz frequencies

✓ South Cell - 5 new 800 MHz frequencies

✓ Capacity for 3,024 subscribers

✓ Coverage – 95% mobile

✓ Replace antennas, lines, tower top amplifiers and combiners

✓ *Replace all radio equipment*

✓ Add 2 sites to improve coverage

✓ HRTacRAN used for connectivity

Interoperability Technical Alternatives

HR-IRIS Basic

➤ ISSI Interfaces between multiple systems

➤ Systems chosen for maximum coverage
  - ➤ Isle of Wight - 95% Public Safety Coverage
  - ➤ Suffolk - 95% Public Safety Coverage
  - ➤ Virginia Beach - 95% Public Safety Coverage
  - ➤ YJCG - 95% Public Safety Coverage

➤ 800 MHz Frequencies Based on Need & Evacuation Routes
  - ➤ Isle of Wight – 5 existing / 4 added
  - ➤ Suffolk - 10 existing / 2 added
  - ➤ Virginia Beach – 20 existing / converting 4 channels to TDMA
  - ➤ York - 20 existing / 0 added
  - ➤ Gloucester - 6 existing / 4 added

➤ System Owner talkgroups will be prioritized

➤ Capacity for 5,000+ subscribers

➤ ISSI will use existing systems and HRTacRAN Backhaul Networks

HR-IRIS Enhanced

➤ ISSI Interfaces between multiple systems

➤ Systems chosen for maximum coverage
  - ➤ Isle of Wight - 95% Public Safety Coverage
  - ➤ Suffolk - 95% Public Safety Coverage
  - ➤ Virginia Beach - 95% Public Safety Coverage
  - ➤ YJCG - 95% Public Safety Coverage
  - ➤ Norfolk – 95% Public Safety coverage

➤ 800 MHz &700 MHz Frequencies Based on Need & Evacuation Routes
  - ➤ Isle of Wight – 5 existing / 5 added
  - ➤ Suffolk - 10 existing / 5 added
  - ➤ Virginia Beach – 20 existing / converting 5 channels to TDMA
  - ➤ York - 20 existing / 0 added
  - ➤ Gloucester - 6 existing / 5 added
  - ➤ Norfolk – 15 existing / 5 added

➤ System Owner talkgroups will be prioritized

➤ Capacity for 10,000+ subscribers

➤ ISSI will use existing systems and HRTacRAN Backhaul Networks

Interoperability Funding Alternatives

Funding Methodology

- ✓ Establish equitable jurisdiction cost model
  - ▪ Per Capita
  - ▪ Per Unit
  - ▪ **Blended (60% / 40%)**
- ✓ Modified based on participation
- ✓ Offset by grant funding

Cost Breakdown

- ✓ Initial Implementation
- ✓ 10 Year Maintenance

JURISDICTION / AGENCY	ORION UPGRADE		ORION REPLACEMENT	
	Implementation Value	Maintenance Value (1 Year)	Implementation Value	Maintenance Value (1 Year)
	$8,600,000	*$210,000*	*$20,100,000*	*$670,000*
Chesapeake	$ 1,109,008	$ 27,080	$ 2,591,983.42	$ 86,399
Franklin	$ 29,208	$ 713	$ 68,265.30	$ 2,276
Gloucester County	$ 145,426	$ 3,551	$ 339,890.81	$ 11,330
Hampton	$ 1,028,392	$ 25,112	$ 2,403,567.08	$ 80,119
Isle of Wight County	$ 95,132	$ 2,323	$ 222,343.26	$ 7,411
James City County	$ 300,588	$ 7,340	$ 702,537.67	$ 23,418
Newport News	$ 1,128,497	$ 27,556	$ 2,637,533.59	$ 87,918
Norfolk	$ 1,073,846	$ 26,222	$ 2,509,801.93	$ 83,660
Poquoson	$ 59,692	$ 1,458	$ 139,512.82	$ 4,650
Portsmouth	$ 429,805	$ 10,495	$ 1,004,543.87	$ 33,485
Smithfield	$ 26,412	$ 645	$ 61,729.70	$ 2,058
Southampton County	$ 56,616	$ 1,382	$ 132,323.72	$ 4,411
Suffolk	$ 363,301	$ 8,871	$ 849,111.64	$ 28,304
Surry County	$ 21,833	$ 533	$ 51,028.37	$ 1,701
Virginia Beach	$ 2,049,355	$ 50,042	$ 4,789,772.10	$ 159,659
Williamsburg	$ 69,693	$ 1,702	$ 162,886.90	$ 5,430
Windsor	$ 9,370	$ 229	$ 21,898.87	$ 730
York County	$ 552,636	$ 13,495	$ 1,291,626.09	$ 43,054
Eastern Shore	$ 3,413	$ 83	$ 7,976	$ 266
FBI	$ 4,550	$ 111	$ 10,635	$ 354
Fort Eustis/Langley	$ 15,926	$ 389	$ 37,222	$ 1,241
Matthews County	$ 1,138	$ 28	$ 2,659	$ 89
Norfolk Airport	$ 12,513	$ 306	$ 29,246	$ 975
Nightingale	$ 1,138	$ 28	$ 2,659	$ 89
Regent	$ 5,688	$ 139	$ 13,294	$ 443
Riverside Health	$ 1,138	$ 28	$ 2,659	$ 89
USCG	$ 5,688	$ 139	$ 13,294	$ 443
TOTALS	**$ 8,600,000**	**$ 210,000**	**$ 20,100,000**	**$ 670,000**

Interoperability succeeds when the whole community contributes!

Interoperability Funding Alternatives

- ➤ Funding Methodology
  - ✓ Establish equitable jurisdiction cost model
    - ▪ Per Capita
    - ▪ Per Unit
    - ▪ **Blended (60% / 40%)**
  - ✓ Modified based on participation
  - ✓ Offset by grant funding

- ➤ Cost Breakdown
  - ✓ Initial Implementation
  - ✓ 10 Year Maintenance

JURISDICTION / AGENCY	HR-IRIS Basic		HR-IRIS Enhanced	
	Implementation Value	Maintenance Value (1 Year)	Implementation Value	Maintenance Value (1 Year)
	$8,500,000	$150,000	$13,300,000	$290,000
Chesapeake	$ 1,096,112	$ 19,343	$ 1,715,094	$ 37,397
Franklin	$ 28,868	$ 509	$ 45,171	$ 985
Gloucester County	$ 143,735	$ 2,536	$ 224,903	$ 4,904
Hampton	$ 1,016,434	$ 17,937	$ 1,590,420	$ 34,678
Isle of Wight County	$ 94,026	$ 1,659	$ 147,123	$ 3,208
James City County	$ 297,093	$ 5,243	$ 464,863	$ 10,136
Newport News	$ 1,115,375	$ 19,683	$ 1,745,234	$ 38,054
Norfolk	$ 1,061,359	$ 18,730	$ 1,660,715	$ 36,211
Poquoson	$ 58,998	$ 1,041	$ 92,314	$ 2,013
Portsmouth	$ 424,807	$ 7,497	$ 664,698	$ 14,493
Smithfield	$ 26,105	$ 461	$ 40,846	$ 891
Southampton County	$ 55,958	$ 987	$ 87,557	$ 1,909
Suffolk	$ 359,077	$ 6,337	$ 561,850	$ 12,251
Surry County	$ 21,579	$ 381	$ 33,765	$ 736
Virginia Beach	$ 2,025,526	$ 35,745	$ 3,169,352	$ 69,106
Williamsburg	$ 68,883	$ 1,216	$ 107,781	$ 2,350
Windsor	$ 9,261	$ 163	$ 14,490	$ 316
York County	$ 546,210	$ 9,639	$ 854,658	$ 18,635
Eastern Shore	$ 3,373	$ 60	$ 5,278	$ 115
FBI	$ 4,497	$ 79	$ 7,037	$ 153
Fort Eustis/Langley	$ 15,741	$ 278	$ 24,630	$ 537
Matthews County	$ 1,124	$ 20	$ 1,759	$ 38
Norfolk Airport	$ 12,368	$ 218	$ 19,352	$ 422
Nightingale	$ 1,124	$ 20	$ 1,759	$ 38
Regent	$ 5,622	$ 99	$ 8,796	$ 192
Riverside Health	$ 1,124	$ 20	$ 1,759	$ 38
USCG	$ 5,622	$ 99	$ 8,796	$ 192
TOTALS	**$ 8,500,000**	**$ 150,000**	**$ 13,300,000**	**$ 290,000**

Interoperability succeeds when the whole community contributes!

Interoperability Planning Alternatives

	ORION Upgrade	ORION Replacement	HR-IRIS Basic	HR-IRIS Enhanced
Capacity			✓	✓ +
Coverage	✓	✓	✓ +	✓ ++
Frequencies	✓	✓	✓	✓ +
Serviceability / Maintainability		✓	✓ +	✓ +
Sustainability			✓	✓
Initial Cost	$8,600,000	$20,100,000	$8,500,000	$13,300,000
Maintenance Costs per/year	$210,000	$670,000	$150,000	$290,000

HR-IRIS Basic provides users the capacity, reliability, and sustainability required to keep a Regional System operational:

- ✓ Highest capacity
- ✓ Least amount of equipment
- ✓ Lowest initial costs
- ✓ Least effort to maintain

HR-IRIS Enhanced provides increased capacity and interoperability with:

- ✓ Enhanced *(portable)* coverage for core cities
- ✓ Virginia Port Authority
- ✓ State & Federal Agencies

Interoperability Planning Best Fit

Hampton Roads - Integrated Regional Interoperable Systems HR-IRIS Enhanced

Leverages existing jurisdictions infrastructure to connect all jurisdictions in Hampton Roads and enable seamless interoperability.

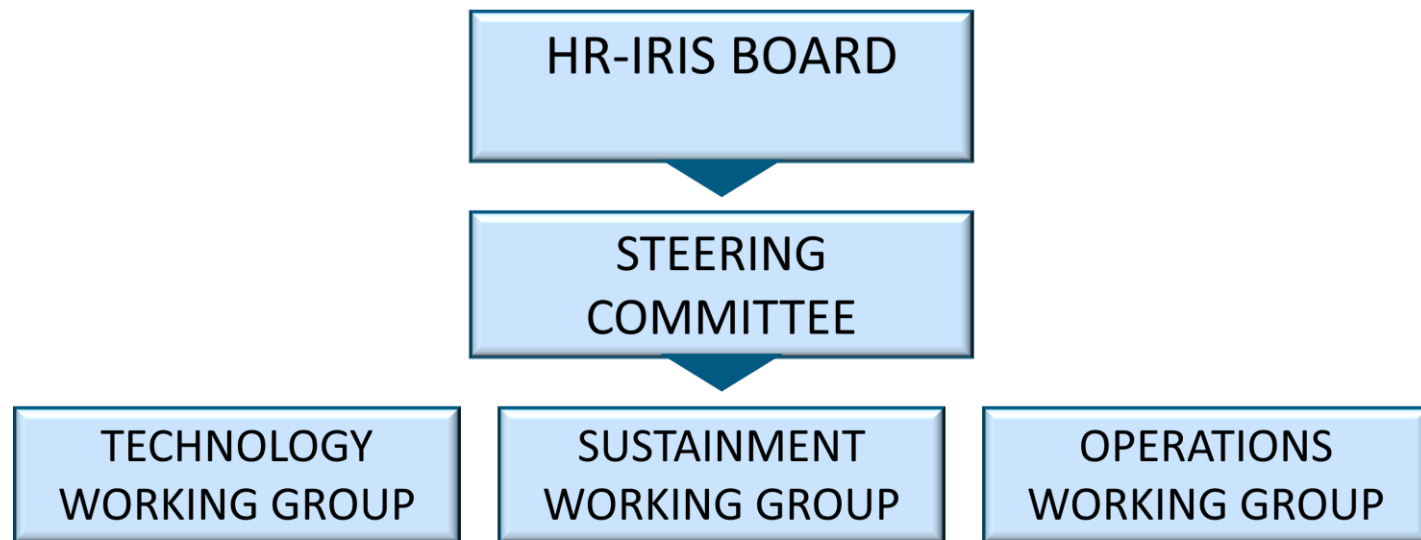Best use of regional financial resources.

HR-IRIS is the best fit alternative to provide a sustainable interoperability solution that benefits all Hampton Roads jurisdictions.

Governance Implementation

<u>Governance Strategy</u>

➢ Encourage partnership and joint effort while fostering local-level autonomy

➢ Facilitate joint decision making that employs agreed upon criteria

➢ Avoid delays and inefficiencies through use of an anticipatory planning process

Governance Implementation

__Governance Maintenance__

➤ Review Yearly by Working Groups

➤ Adoption by Steering Committee

➤ Approval by HR-IRIS Board

Criterion	Definition
Operational	Recommendation improves the safety or ergonomics of system
Technical	Recommendation improves the integration, capacity or capabilities of the system
Cost	Recommendation is cost neutral, included in a budget or is a reasonable budgetary request
Alternatives	Alternatives have been considered that 1) do not meet the same standard as the recommendation but are more feasible and/or more cost effective or 2) increase operational or technical effectiveness more that the recommendation

Governance Implementation

Formalization of the governance process will:

➢ Document the authorities and roles and responsibilities for HR-IRIS

➢ Ensure adherence to the strategic plan

➢ Plan for and support funding initiatives and operational budget requests

➢ Guide all technical elements of the HR-IRIS

➢ Guide all sustaining elements of the HR-IRIS

➢ Provide a mechanism for quick-turnaround coordination in critical scenarios

Interoperability in Hampton Roads

Without additional *coverage* Interoperability in the Hampton Roads Region will not be ***available*** where needed.

Without additional *capacity* Interoperability in the Hampton Roads Region will not be **reliable** when needed.

Without proper *preventative maintenance* & *repairs*, Interoperability in the Hampton Roads Region will not be operationally ***sustainable***.

Thank You

Questions