What is a Health Information Exchange?

The Health Information Exchange (HIE) is a technology platform that enables instant sharing of health information among doctors' offices, hospitals, labs, radiology centers, community-based organizations and other healthcare entities in a safe and secure way. Data is exchanged across providers, payers, and public agencies for treatment, care coordination, research, and public health use cases.

What are the Benefits of HIE?

Saves Time and Reduces Cost

- **Streamlined Communication:** Less time spent by staff and patients faxing, manually transmitting, searching, and calling to get and share information.
- **EHR Integration:** Seamless connection with electronic health records (EHRs) used by individual health organizations, physicians, and other medical professionals.
- **Immediate Access:** Verified providers gain immediate access to patients' histories and past discharge summaries.
- **Reduced Errors:** Fewer mistakes from translating hard-to-read notes and scripts.

Improve Care

- **Increased Patient Interaction:** Doctors can spend more time with patients and less time searching for paper records or waiting for information from other providers.
- **Enhanced Communication:** Improved communication between departments and care providers, resulting in fewer errors.
- **Comprehensive Patient View:** Providing healthcare professionals with a more complete view of their patients, enabling more effective care options and accurate diagnoses.
- **Patient Involvement:** Furthering patient education by involving them more in their own care.
- **Population Health Insights:** Enhanced understanding of patient populations through data analysis and better reporting.
- **Public Health Support:** Boosting public health reporting, aiding in situations that require monitoring and contact tracing.
- **Reduced Treatment Delays:** Fewer delays in treatment, ensuring timely care for patients.

Enhances Patient Privacy and Preservation of Records

- **Improved Disaster Recovery:** Less reliance on paper records that can be easily and anonymously viewed or destroyed in natural disasters or by other means.
- **Comprehensive Activity Tracking:** All activities in the Health Information Exchange (HIE) is tracked by user, time-stamped and includes the ability to audit the tracker for enhanced security and accountability.

Lower Cost

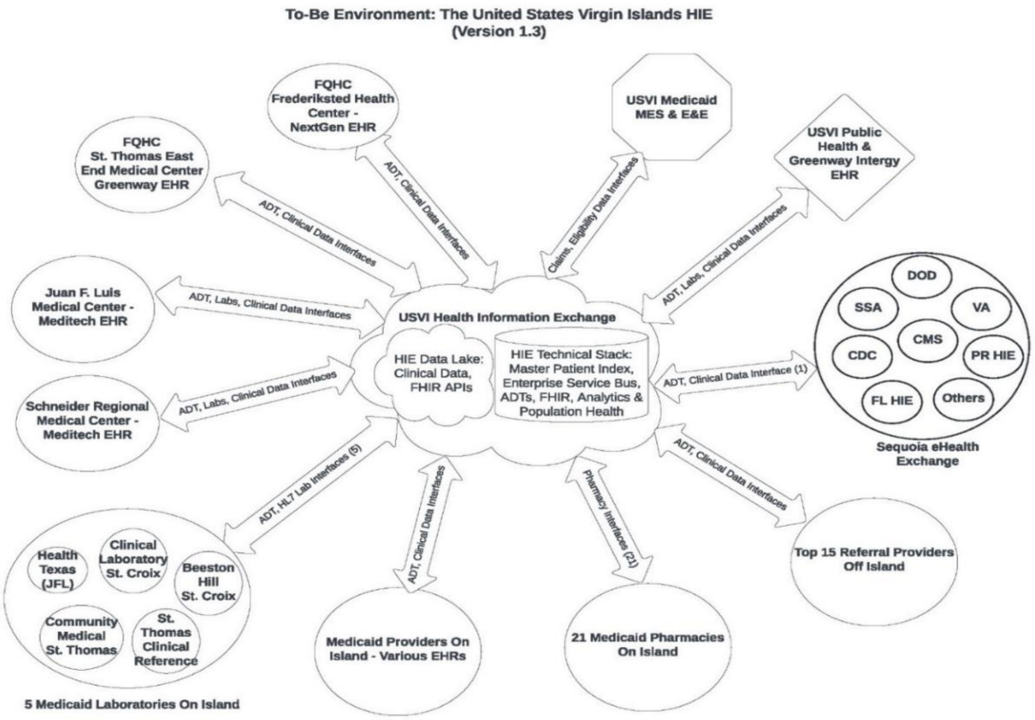
- **Elimination of Unnecessary Testing:** Reducing or eliminating unnecessary testing.

- **Minimized Data Duplication:** Reduced duplication of data and processes.
- **Resource Efficiency:** Reduced resource demands for collecting and analyzing data manually.
- **Decreased ER Readmissions:** Enhanced coordination of care, leading to a reduction in ER readmissions within 30 days.
- **Streamlined Communication:** Reducing unnecessary paperwork, manual data entry, and speeding up lines of communication.

Why the Health Information Exchange Matters in the USVI?

- **Enhances care coordination across islands and care settings –** With patients frequently receiving care on St. Thomas, St. Croix, St. John, or the mainland, the HIE ensures clinicians have real-time access to accurate, comprehensive medical histories wherever patients seek treatment.
- **Strengthens emergency preparedness and continuity of care –** In a territory vulnerable to hurricanes and infrastructure disruptions, securely shared health records help maintain uninterrupted care even when local systems fail or residents must relocate.
- **Advances compliance, funding access, and health system modernization –** A robust HIE aligns the USVI with national health IT standards, improving data quality, supporting federal reporting requirements, and positioning the territory for sustainable funding and value-based care initiatives.

What is the vision for the USVI HIE Technology Ecosystem?



What is a Health Data Utility?

The Health Data Utility (HDU) is a non-profit organization made up of key stakeholders from the USVI healthcare community. The HDU model follows best practices in the US and is favored by federal health regulatory agencies. The USVI HDU entity is being established as a public-private partnership to create transparency through multi-stakeholder governance to guide how health data in the USVI is shared, exchanged, used, and for what purposes. It also provides guidance on health IT solutions and shared technology service platforms) like the Health Information Exchange that benefits the entire healthcare ecosystem in the USVI.

What is the Difference Between the HIE and the HDU?

- **HIE:** The **Health Information Exchange** is the technology platform or “vehicle” for transporting health (and SDOH) data.
- **HDU:** The **Health Data Utility** entity provides “navigation,” guidance and direction for when and how health data is exchanged.

Which stakeholders are included within the Health Data Utility Governance Board?

The interim HDU Governance Board consists of a mix of public and private healthcare organizations from the USVI community. Each organization brings a unique and valuable perspective that allows for a collaborative and transparent approach to data governance. The board will consist of director designees from the following governmental organizations:

The Office of Health Information Technology, the Department of Human Services, and the Department of Health. They will be joined by the leading medical institutions from the territory including Schneider Regional Medical Center, Gov. Juan F. Luis Hospital, Myrah Keating Community Health Center, St. Thomas East End Medical Center, and Frederiksted Health Center. Additionally, organizations representing the island’s provider community including VI Equicare and VI Board of Medical Examiners will also have board membership. Lastly, the patient community will have a voice on the board through two appointed patient advocates. One patient advocate from St. Thomas and St. Croix will be selected via nomination from the board organizations, and the Governor will officially nominate the other. Both advocates will be vetted by the legislature before being officially added to the board.

How does voting work on the HDU Governance Board?

12 Members. 12 Votes. Voting will be a simple majority based on the quorum ensuring that each member organization has equal voting power within the governance board. The goal is for most decisions to be unanimous with the board fully discussing topics until all feel comfortable with the direction.

What are Subcommittees and their purpose?

Subcommittees will help to drive the board's direction and create policy. Each subcommittee will be chaired by a member of the board. These highly specialized, task-oriented groups delve into projects or issues in detail, such as technical implementations or data quality improvements. The subcommittees will consist of subject matter experts brought in by the board organizations based on their specialized expertise. Initially, the following subcommittees will be established: Clinical, Finance, Payors, and Reporting and Compliance.

How is the Implementation phase funded?

During the Implementation Phase, the Centers for Medicare & Medicaid Services (CMS) will cover 50% of HIE cost as it is related to Medicaid use (originally the USVI was awarded 90% coverage). *This means that CMS will now fund 50% of the costs for aspects of the project that impact and benefit the Medicaid program*. ****This requires that the Government of the US Virgin Islands locally contributes 50% of the federal contribution for the Medicaid program and 100% of the cost for non-Medicaid.*** Additionally, the remaining costs associated with the implementation will not be covered by Medicaid and therefore need to be funded through other sources. The remaining non-Medicaid-related costs, that we will refer to as the “Other” Category, will need to be funded from alternative sources, such as federal grants, participant contributions, or other local funding.

** This is a newer funding decision from CMS that has caused a funding gap not previously anticipated as the initial award was at 90/10.*

For the fiscal years 2024 and 2025, the Office of Health Information Technology and the DHS Medicaid program secured funding to ensure the successful launch of the HIE. The federal portion of the funding was secured through an approved Implementation Advance Planning Document (IAPD) from CMS, which covered 90% of the implementation costs. For those years, $150,000 came from the Office of Health Information Technology (OHIT) to cover the local match funds required. The remaining or “Community” funds required to cover non-Medicaid-related costs need be sourced in a variety of ways.

Participants also may incur charges from their electronic health records vendor, or equivalent HIT services provider for implementation and maintenance of participant-side interfaces. Participants should plan/budget to maintain these interfaces independently.

What is cost allocation?

Cost allocation is the rationale and methodology for cost-sharing across public and private sector agencies to financially support the Health Information Exchange. The goal is to create a methodology in which participants pay a fair share for the value the HIE provides for providers, patients, and beneficiaries.

As described above, an initial cost allocation was developed to use CMS funding only for the Medicaid-related use of the HIE, as prescribed by CMS. This methodology uses the percentage of Medicaid-enrolled providers in the territory to account for the percentage of the implementation CMS will fund. This allocation creates two additional categories of funding that the USVI will need to secure including the local match (10% of federal contribution) and the “Community” category which are the remaining funds that can come from other federal grants, programs, etc.

How can the HIE remain financially sustainable in the long term?

In the Maintenance & Operations phase, these same funding allocations will be available, but the CMS funding split changes to 75/25. However, individual elements can be split out across Implementation and M&O depending on whether it's new or existing functionality. This rationale and methodology must be explainable in the relevant Advanced Planning Documents (APDs) cost allocation plan required for Medicaid funding, and as outlined in the annually updated USVI Health Data Utility Financial Sustainability Plan.

What are some of the Core HIE Infrastructure Components?

- **Master Patient Index:** All data flows through the Master Patient Index (MPI) to link identities accurately and consistently across multiple sources. The MPI is core to all the services and functions in support of HIE participants, enables patient searches, matches patient data across disparate datasets, provides longitudinal views of patient data, facilitates bi-directional exchange of data for the right patient, supports integration of data into EHRs, and assists with reporting & analytic use cases.
- **CRISP Encounter Notification Service (CEND)** This infrastructure supports proactive notifications by leveraging ADT and other data (such as labs and continuity of care documents [CCDs]) from connected participants (such as emergency departments, hospital inpatient, ambulatory, long-term care). Using HL7 messages/ADTs, participants of the HIE will receive automated push notifications providing important health-related information specific to a providers' patient roster.
- **Provider Portal:** This Web-based user access to the clinical portal houses all patient healthcare data and is accessible through panel-based relationship documentation with registered patient consent. This is the other way the end user/HIE participant is able to access the provider portal/patient data. It includes state-specific portal branding, relationship management, a user matrix tool, and user audit logging, and it is in alignment with service levels consistent across industry standards.

What health data are participants able to exchange within the HIE?

- Admit, Discharge, Transfer Event Notifications (ADT)
- Clinical Summary Documentation (CCD)
- Lab Results (ORU)
- Immunization History (VXU)

How does consent work?

For the USVI Health Information Exchange, consent is based on the opt-out model. This means that unless a patient otherwise requests that their data NOT be shared, health data can securely flow across the HIE to authorized users for permitted purposes. During hospital or clinic check-ins, patients will receive patient information that outlines the HIE participation. This document will explain how information is shared by default, but the patient has the right to refuse.

What is a Use Case?

A Use Case outlines a permitted way to share data to solve specified problems. Use cases are often developed to illustrate the practical applications and benefits of technology in solving complex challenges or improving processes within healthcare delivery, such as improving care coordination, enhancing patient outcomes, or optimizing resource utilization. A use case has many elements - the template provided helps to address those specific elements and considerations (opt-out applicability, access controls, etc.).

What is a "Permitted Use" and how does that relate to Use Cases?

Permitted Use is a federally allowable grouping of use cases. Each use case should be attributable to an umbrella Permitted Use category. An example would be a use case for Encounter Notifications (ADTs) to be sent to a primary care provider. The Permitted Use category would be for "Treatment Purposes" and/or "Care Coordination." The full list of Permitted Uses can be found here.

What are some Sample Services or Uses Cases made possible through the HIE?

1. **Point of Care: Clinical Query Portal & In-context Information**
    - Functionality includes:
        - Search for your patients' prior hospital records (e.g. labs, radiology reports, etc.)
        - Monitor the prescribing and dispensing of PDMP drugs
        - Determine other members of your patient's care team
        - Be alerted to important conditions or treatment information
2. **Transition of Care/Care Coordination: Encounter Notification Service (ENS):**
    - Be notified when your patient is hospitalized in any regional hospital
    - Receive special notification about ED visits that are potential readmissions
    - Know when your MCO member is in the ED
    - Send referrals, share clinical summaries, progress notes and transition of care documents
    - Share medical records between healthcare organizations with different EHR systems so they can integrate this information into a client diagnosis
    - Send behavioral health information to a primary care physician
3. **Closed Loop Referrals**
    - Send and receive referrals and discharge summaries
    - Share Clinical Summaries, Progress Notes, and Transition of Care documents with ease
    - Seamless communication between organizations that use different EHR systems
    - Improved care coordination, better-quality patient outcomes, and faster referrals
4. **Lab Exchange:**
    - Exchange of lab orders and lab results amongst relevant provider agencies and Public Health Lab
    - Seamless exchange lab orders and results
        - Facilitate timely access to accurate test results for patient care
        - Improved efficiency of testing and results
    - Superior patient safety and data security
    - Reduced costs associated with results management
5. **Public Health Reporting**
    - Send and receive referrals and discharge summaries

  - Share Clinical Summaries, Progress Notes, and Transition of Care documents with ease
  - Seamless communication between organizations that use different EHR systems
  - Improved care coordination, better-quality patient outcomes, and faster referrals

6. **Off-Island Care Notification**
   - Improve communication between healthcare providers and DHS regarding Medicaid Encounters
     - Create aggregate data reports on Medicaid Patient encounters
   - Outcomes
     - Reduce costs associated with Off-Island specialty care for Medicaid members
     - Improved continuity and care coordination, better-quality patient outcomes
     - Notification of Local Providers regarding Off-Island Care
7. **Social Determinants of Health**
   - Improve social determinants such as housing instability, food insecurity, and lack of access to transportation significantly influence individuals' health outcomes and healthcare utilization
     - Share data on patients' social needs and face challenges in connecting patients with appropriate community resources to address these needs
   - Outcomes
     - Seamless communication of Social Determinants of Health (SDOH) data between organizations.

Supporting the Virgin Islands Health Information Exchange (VIHIE): Core Components of the Crisp Shared Services Platform

Key Operational & Governance Teams- Executive Management & Governance

- Oversees organizational strategy, goals, and resource allocation.
- Ensures continuity planning and alignment with mission and stakeholder needs.
- Governance supported by 75+ advisory members across committees:
  - Clinical
  - Finance
  - Reporting & Analytics
  - Audit Committee
  - Privacy & Security `

a. Legal & Privacy Team

- Ensures compliance with Federal & state laws, data protection requirements, and contractual obligations.
- Develops privacy policies, data governance guardrails, and supports incident response.

b. People Operations (People Ops)

- Manages talent acquisition, onboarding, employee relations, performance management, compensation, and retention.
- Led by Sr. Director partnering with staffing vendors; manages People Ops policies.

c. **Security & Compliance Team**
- Protects data under COMAR, HIPAA, HITECH, and HITRUST cybersecurity frameworks.
- Ensures organizational security posture and controls are followed.

d. **Infrastructure Team**
- Manages infrastructure ecosystem, backups, hardware/software maintenance, and failover environment.

e. **Integration Team**
- Maintains production systems, SLAs, security, and contingency processes.
- Handles new provider/hospital connections.

f. **Applications Team**
- Manages deployment and support for in-house applications.

g. **Engineering Team**
- Designs, develops, tests, and deploys new software tools within CSS infrastructure.

h. **DevOps Team**
- Oversees production support, release deployment, process automation, pipelines, documentation, and development tooling.

i. **Data Insights Team**
- Delivers actionable analytics for public health, patient care, quality measures, payer interventions, and research.
- Processes large-scale datasets using modern ingestion, linkage, and standardization methods.

j. **HIE Projects Team**
- Manages implementation of new stakeholder-driven use cases from planning through deployment.

k. **CRS Team**
- Provides analytics supporting state programs and population health initiatives.

l. **Technical User Support Team (TUST)**
- Delivers Tier 1 support using call center and CRM tools.
- Handles access issues, portal navigation, onboarding, general inquiries, and escalations to Tier 2/3.

m. **Finance Team**
- Manages cash, AR/AP, procurement, and annual audits (financial statements and uniform guidance).

Access, Authentication & Authorization
- Encrypted VPN required for remote access.

- Multi-factor authentication (MFA) enforced for cloud platforms and in-scope applications.
- Role-based access control (RBAC) using predefined security groups.
- Administrator access limited to authorized engineering personnel.
- Firewalls block unauthorized connections by default.

Access Requests & Revocation

- All access requests require management approval.
- Terminated users lose access within 24 hours.
- Quarterly reviews ensure appropriate access; discrepancies investigated.

Change Management

- Governed by documented policies reviewed annually.
- Ticketing system tracks all changes.
- Version control requires pull requests, testing, and code-owner reviews.
- Strict separation of production, development, and test environments.
- Customer data never used for development/testing.
- Weekly Change Control Board (CCB) meetings review and approve changes.
- Only authorized engineering personnel may deploy changes to production.

Data Backup & Disaster Recovery

- Automated daily backups with alerts for failures.
- Quarterly backup restoration tests.
- Annual disaster recovery & business continuity reviews and exercises.

Incident Response

- Annual review and testing of incident response plan.
- Handled by the Incident Response Team (IRT).
- Process includes:
    1. Identification & triage
    2. Analysis
    3. Containment & eradication
    4. Recovery
    5. Post-incident review
- PII-related incidents follow legal/regulatory reporting requirements.
- Quarterly Privacy & Security Committee reviews incident summaries and corrective actions.

System Monitoring & Vulnerability Management

- Centralized logging and monitoring for unusual events.
- Semi-annual firewall ruleset reviews.
- Intrusion Detection & Prevention System (IDPS) monitors and alerts.
- Weekly internal/external vulnerability scans.
- Weekly vulnerability management meetings.
- Antivirus and file integrity monitoring active on servers and workstations.
- Cloud platform monitors system performance and capacity thresholds.

Data Processing & Delivery

- Data Ingestion Methods:
- TCP/VPN
- Secure FTP (SFTP)
- HTTPS
- APIs

Entry Mechanisms:

- Mirth Connect – data transformation and routing
- Azure API Gateway – API orchestration and packet transformation
- SFTP server – secure file intake and sweep

Data Delivery Options:

- Interface feed (e.g., raw HL7 messages)
- User portals for viewing or exporting processed data
- InContext (SMART on FHIR) embedded app displaying alerts registry data
- CSS API delivering JSON/XML formats

Glossary and Common Acronyms of Health IT

The following terms and definitions are from the Office of the National Coordinator for Health IT (ONC) / Office of the Assistant Secretary for Technology Policy (ASTP)

(Glossary | HealthIT.gov).

CMS – *The Centers for Medicare & Medicaid Services* - The Centers for Medicare & Medicaid Services, CMS, is part of the Department of Health and Human Services (HHS). CMS provides health coverage to more than 100 million people through Medicare, Medicaid, the Children's Health Insurance Program, and the Health Insurance Marketplace. The CMS seeks to strengthen and modernize the Nation's health care system, to provide access to high quality care and improved health at lower costs.

CMS funds most state Medicaid information technology (IT) development at a ninety percent federal match, to the tune of over $4 billion per year. The Centers for Medicare & Medicaid Services (CMS) is responsible for implementing laws passed by Congress related to Medicaid, the Children's Health Insurance Program (CHIP), and the Basic Health Program. To implement these programs, CMS issues various forms of guidance to explain how laws will be implemented and what states and others need to do to comply. In addition to regulations, CMS issues sub-regulatory guidance to address policy issues as well as operational updates and technical clarifications of existing guidance.

The majority of the Health Information Exchange (HIE) funding for the Territory is coming from CMS. Mandates, guidelines and certification processes are part of the funding process.

Electronic Health Record - An electronic health record (EHR) is a digital version of a patient's paper chart. EHRs are real-time, patient-centered records that make information available instantly and securely to authorized users. While an EHR does contain the medical and treatment histories of patients, an EHR system is built to go beyond standard clinical data collected in a provider's office and can be inclusive of a broader view of a patient's care.

EHRs are a vital part of health IT and can:

- Contain a patient's medical history, diagnoses, medications, treatment plans, immunization dates, allergies, radiology images, and laboratory and test results
- Allow access to evidence-based tools that providers can use to make decisions about a patient's care o
- Automate and streamline provider workflow
- Fast Healthcare Interoperability Resources (FHIR®) Standard – An interface specification that specifies the content of the data exchanged between healthcare applications, and how the exchange is implemented and managed. The data exchanged includes clinical data as well as healthcare-related administrative, public health, and research data.

Electronic Medical Records - Electronic medical records (EMRs) are *digital versions of the paper charts* in clinician offices, clinics, and hospitals. EMRs contain notes and information collected by and for the clinicians in that office, clinic, or hospital and are mostly used by providers for diagnosis and treatment. EMRs are more valuable than paper records because they enable providers to track data over time, identify patients for preventive visits and screenings, monitor patients, and improve health care quality.

Fast Healthcare Interoperability Resource (FHIR) — FHIR is a specification for exchanging clinical and administrative healthcare data exchange published by HL7®. The standard is based on REST and OAuth. **The healthcare community is adopting this next generation exchange framework to advance interoperability**.

Electronic health records (EHRs) represent patient data in different ways (e.g., medications, encounters) and FHIR provides a means for representing and sharing information among clinicians and organizations in a standard way regardless of the ways local EHRs represent or store the data. FHIR combines the best features of previous standards into a common specification, while being flexible enough to meet needs of a wide variety of use cases within the healthcare ecosystem. FHIR focuses on implementation and uses the latest web technologies to aid rapid adoption.

Health Information Exchange (HIE) – Both the act of moving health data electronically between organizations and an organization that facilitates information exchange. HIEs may be statewide, regional, metropolitan, or organization-specific and may be privately owned or publicly funded.

Health Information Technology (HIT) – The application of information processing involving both computer hardware and software that deals with the storage, retrieval, sharing, and use of health care information, data, and knowledge for communication and decision making.

Health Level 7 (HL7) v2 messaging — a commonly used data interchange standard. This standard includes messaging specifications for patient administration, orders, results, scheduling, claims management, document management, and many others.

Telehealth – The use of electronic information and telecommunications technologies to support long-distance clinical healthcare, patient and professional health-related education, public health, and health administration. Technologies include: videoconferencing, the internet, store-and forward imaging, streaming media, and terrestrial and wireless communications.

Telehealth is different from telemedicine because it refers to a broader scope of remote healthcare services than telemedicine. While **telemedicine** refers specifically to remote clinical services, telehealth can refer to remote non-clinical services, such as provider training, administrative meetings, and continuing medical education, in addition to clinical services.

Trusted Exchange Framework (TEF) – A set of principles and minimum required terms and conditions for trusted exchange as required by the Cures Act.

Trusted Exchange Framework and Common Agreement (TEFCA) - TEFCA's goal is to provide a single HIE "on-ramp" that will allow clinicians, hospitals, and other healthcare stakeholders to join any health information network (HIN) and then immediately link and participate in nationwide health information exchange. It will advance the following opportunities:

- Providers' ability to get the data they need to provide the best care possible for patients.
- People will have easier access to their complete health history in one place.
- Health plans and providers will face fewer burdens when sharing information to support care coordination, case management, and health plan operations.
- Public health departments will have more nimble access to the information they need, while providers that currently expend tremendous resources connecting to numerous single-purpose public health reporting channels or report through non-digital means

Qualified Health Information Networks (QHINs) - are networks that agree to the common terms and conditions of exchange with each other (as specified in the Common Agreement) and to the functional and technical requirements for exchange (as specified in the QHIN Technical Framework or QTF). TEFCA creates "Qualified Health Information Networks" (QHINs) to help support a defined technique for HIE inter-connectivity, as well as a new administrative body called the Recognized Coordinating Entity (RCE).