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Perceptive Reach

Integrated Reach Database System

(IRDS)

Interface Design Specification



Department of Veterans Affairs

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Version 1.1

Revision History

|  |  |  |  |
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# About this document

This document is a “work in progress.” The interfaces will be designed through a series of sprint cycles in collaboration with VA stakeholders and users. The document will be populated with content as the design evolves with each sprint, including all potential data options, configurability rules and options. The early versions of the document will focus on the conceptual design, key business requirements, and the primary end-user features related to the design. Future versions will add additional detail as it becomes available.

# Introduction

VA is seeking to expand suicide prevention to include upstream approaches, designed to reduce initiation or escalation of a risk factor. Upstream suicide interventions target individuals or groups who exhibit biological, psychological, or social risk factors that are more prominent among high-risk groups than among the larger population. Understanding the unique needs of our nation’s Veterans and the military culture as it relates to stigma and mental health is important for early intervention. The goal of the Integrated Reach Database System (IRDS) innovation is to promote the general health of the Veteran population and effectively intervene in issues before they escalate in crisis.

The IRDS solution innovates the current process of risk data collection, analysis, and use in effective intervention strategy. The solution will harness the power of large and diverse data stores to aggregate, analyze and identify risk onset as well as reveal previously unidentified at-risk individuals and populations as a holistic and integrated approach.

The IRDS innovation will serve to bolster the three major components of VHA’s Strategic Plan for Suicide Prevention: surveillance, risk and protective factors, and prevention interventions. The IRDS innovation will target antecedent events specific to Veteran populations prior to the onset of risk to mitigate the development of risk.

## Scope

The IRDS Interface Design Specification document describes the relationship between IRDS and each of the external systems connected to it in terms of data items, protocols, and timing of events.

This Interface Design Specification will describe what data will be transferred between the IRDS and its input sources and output destinations such as:

* Input: Suicide Data Repository (SDR)
* Input: Veterans Benefits Administration Data
* Input: Corporate Data Warehouse (CDW)
* Input: VistA Data
* Output: VA Suicide Prevention Coordinators
* Output: Other VA and non-VA Outreach and Intervention Coordinators & Clinicians
* Output VA Suicide Prevention stakeholders

This document should be read in conjunction with the IRDS System Design Document (SDD).

## Assumptions

The assumptions for the Interface Design Specification have not been determined. The document will be updated as soon as the information becomes available.

## References

The following IRDS documents may be referenced in tandem with the information recorded here:

* Project Management Plan (PMP)
* System Design Document (SDD)

## Acronyms

Table 1: Acronyms

| Acronym | Term |
| --- | --- |
| Army STARRS | Army Study to Assess Risk and Resilience in Service members |
| BIRLS | Beneficiary Identification Records Locator System |
| CD | Compact Disk |
| CDC | Center for Disease Control |
| DoD | Department of Defense |
| ETL | Extract, Transform, Load |
| GB | Gigabyte |
| ICD | International Classification of Diseases |
| IM/IT | Information Management/Information Technology |
| IRDS | Integrated Reach Database System |
| IT | Information and Technology |
| NDI | National Death Index |
| ODBC | Open Database Connectivity |
| OIT | Office of Information and Technology |
| OMHS | Office of Mental Health Services |
| PII | Personally Identifiable Information |
| PHI | Protected Health Information |
| PMP | Project Management Plan |
| REST | Representational State Transfer |
| RPC | Remote Procedure Call |
| RSD | Requirements Specification Document |
| RTM | Requirements Traceability Matrix |
| SAS | Statistical Analysis System |
| SDCD | State Death Certificate Data |
| SDR | Suicide Data Repository |
| SFTP | Secure File Transfer Protocol |
| SMITREC | Serious Mental Illness Treatment Resource and Evaluation Center |
| SPAN | Suicide Prevention Applications Network |
| SQL | Structured Query Language |
| SSIS | SQL Server Integration Services |
| SSN | Social Security Number |
| TB | Terabyte |
| UI | User Interface |
| VA | Department of Veterans Affairs |
| VBA | Veterans Benefits Administration |
| VCL | Veterans Crisis Line |
| VHA | Veterans Health Administration |
| VLER | Virtual Lifetime Electronic Record |
| VSSC | VHA Support Service Center |

## System Identification

The system identification for the IRDS have not been determined. The document will be updated as soon as the information becomes available.

# Interface Definition & Requirements

## System Overview

The Perceptive Reach development and field pilot proposes to combine technology, outreach and clinical support to realize a clinically based data-driven early intervention and treatment solution aimed at suicide prevention. IRDS is a solution for analyzing multiple and integrated data sets with cutting-edge data analytic techniques and visualizations to identify at-risk individuals and populations and provide proactive and secure notifications of these results to Veteran support services. The Perceptive Reach project proposes to expand the capabilities of the Suicide Data Repository to include new interfaces to clinical data sources, integrated data analytics capabilities, a surveillance dashboard, and secure messaging.



Figure 1: IRDS System Overview

## Interface Overview

The primary ingress interfaces will use SQL Server Integration Services (SSIS) to retrieve data from the designated data sources such as the SDR. The SSIS package will be configured to pull data from the designated data source at a specified interval (daily/weekly/monthly/annually).

The primary egress interface will be the Direct Messaging interface used to notify VA Suicide Prevention Coordinators (SPC) and other VA or non-VA Outreach and Intervention coordinators and clinicians. The IRDS will leverage the VLER Direct messaging service utilizing a RESTful interface to transmit message content. Another interface utilized by VA Staff and SPCs will be the IRDS Surveillance Dashboard which will provide browser based visualizations of critical data to identify Veterans at high risk for suicide.

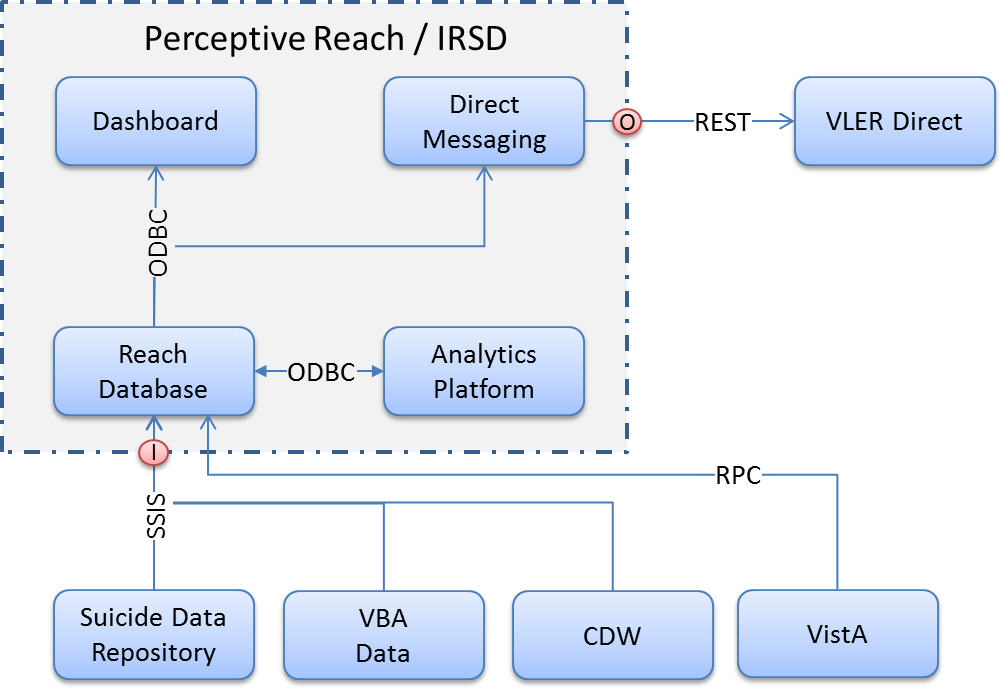


Figure 2: IRDS Interface Overview

### External Data Sources

The external data sources to be imported into Reach database of the IRDS have been identified as:

1. VA Suicide Data Repository (SDR) - The SDR contains VA and DoD suicide and mortality data. The data store is Microsoft SQL Server. Periodically data is imported into the system from

* Mortality search results from the National Death Index (NDI)
* State Death Certificate Data (SDCD)
* Veterans Crisis Line (VCL)
* Suicide Prevention Applications Network (SPAN)
* VA Beneficiary Identification Records Locator Subsystem (BIRLS) Death File

1. Corporate Data Warehouse (CDW) - CDW warehouses VHA and VBA data is SQL Server format. It is assumed that VHA and VBA data will be imported into the IRDS Reach database. The plan is to connect to the CDW servers via a SQL connection and directly pull the data into the IRDS system.
2. Veterans Health Information Systems and Technology Architecture (VistA) - It is assumed that some VHA data will be retrieved directly from the VA Vista system. VistA uses an M data platform. VistA data will be imported into the IRDS Reach data base using custom and/or currently existing RPC calls.
3. Non VA data sources - The VA has expressed an interest in importing and analyzing data that is external to VA data sources. Some of the sources being considered are LexisNexis and PACER. The PwC requirements team is currently reviewing possibilities with the VA.

### External Interfaces

The external interfaces for the IRDS solution include the following:

1. IRDS Surveillance Dashboard – The dashboard will provide a browser based user interface featuring representations of the analyzed consolidated data sources. These are processed and organized into visualizations which will assist SPCs and other VA personnel in their duties.
   * This dashboard will reflect data updated on a daily basis and may include charts, tables, maps, animations, other graphics and visual technology.
   * The dashboard will have configurable features based on user roles as defined by the stakeholders. This will provide for distinct views to meet each role’s business needs.



1. VLER Direct Messaging - The Direct Messaging component will integrate into the existing VLER Direct Messaging architecture. The Direct Messaging will create unique messages based on new and existing data annotated in the IRDS.
2. SDR SSIS Interface - SSIS will be the primary tool for importing data from SDR into the IRDS Reach database.
3. CDW SSIS Interface – The CDW Interface will be added upon further clarification of requirements.
4. VistA RPC Interface (tentative) - The VA uses the Veterans Health Information Systems and Technology Architecture (Vista) system, for managing Veterans health data. Data may be imported into the IRDS system directly from VistA using RPC calls when immediate access to recently updated clinical records is retired. As VistA is modernized additional interface protocols may be used in place of RPCs. This is to be determined.

## Data Transfer

### SQL Server Integration Services (SSIS)

SSIS will be the primary tool for importing external data sources into the IRDS Reach database

For a specific data import, an SSIS package will be developed to

1. Make a connection to the source (SQL table, text file, other)
2. Import the data into a staging area
3. Make the appropriate data transformations (cleaning, standardization)
4. Load the transformed data into the appropriate Reach data store tables

The execution of SSIS packages (.dtsx files) can be automated by scheduling them as a Windows process via SQl Server Agent.

### Remote Procedure Calls (RPC)

Data may be imported into the IRDS system directly from the Vista using RPC calls. VistA data is stored against a MUMPS back end, which uses text based files for data storage. For each source of VistA data imported from into IRDS:

1. Either a custom RPC will be written (in M) or a currently existing one will be leveraged
2. An automated java process will execute the RPC and return the query results in text format
3. Those results will be stored in a flat file on the IRDS server to be imported into the reach database via a SSIS package (using the steps listed in the section above)



Figure 3: IRDS Data Import Process Flow

## Communications Methods

### IRDS Surveillance Dashboard

The REST APIs provide programmatic access to read only IRDS data that is customized to provide data for visualization components and widgets. Web service APIs that adhere to the REST architectural constraints are called RESTful. HTTP based RESTful APIs are defined with these aspects:

* base URI, such as <http://example.com/resources/>
* an Internet media type for the data. This is often JSON but can be any other valid Internet media type (e.g. XML, Atom, microformats, images, etc.)
* standard HTTP methods (e.g., GET, PUT, POST, or DELETE)
* hypertext links to reference state

This allows the dashboard to have real-time data responses available in JSON, a lightweight data-interchange format. The dashboard architectural approach implements all data requests in an asynchronous and non-blocking way which allows for multiple data connections. To address safety and security the REST API will be managed through a session token or API key which will provide for privileged based access and will prevent unauthorized use.

## Performance Requirements

Table 2: Performance Requirements

| Requirement | Specification |
| --- | --- |
| Availability |  |
| Capacity |  |
| Backup Capacity |  |
| Number of Users |  |
| Maximum Number of Simultaneous Users |  |
| Maximum Downtime |  |
| Network Interface(s) |  |
| Database Interface(s) | Data imports will be run during non-business hours and be completed before the next business day. (i.e. SDR imports will run 1st of month at 11PM EST and be completed before 6AM the next day). |
| Help Desk Support |  |

## Security

The IRDS solution uses Personally Identifiable Information (PII) and Protected Health Information (PHI). This data will be secured and protect per the following regulations and directives:

* Health Insurance Portability and Accountability Act (HIPAA) of 1996
* U.S.C. § 3541, “Federal Information Security Management Act (FISMA) of 2002”
* U.S.C. § 552a, as amended, “The Privacy Act of 1974”
* VA Directive 6500, “Managing Information Security Risk: VA Information Security Program,” September 20, , 2012
* VA Handbook 6500, “Risk Management Framework for VA Information Systems – Tier 3: VA Information Security Program,” September 20, 2012
* VA Handbook 6500.1, “Electronic Media Sanitization,” March 22, 2010
* VA Handbook 6500.2, “Management of Data Breaches Involving Sensitive Personal Information (SPI)”, January 6, 2012
* VA Handbook 6500.3, “Assessment, Authorization, And Continuous Monitoring Of VA Information Systems,” February 3, 2014
* VA Handbook, 6500.5, “Incorporating Security and Privacy in System Development Lifecycle” March 22, 2010
* VA Handbook 6500.6, “Contract Security,” March 12, 2010
* VA Directive 6508, VA Privacy Impact Assessment, October 3, 2008
* VA Directive 6300, Records and Information Management, February 26, 2009
* VA Handbook, 6300.1, Records Management Procedures, March 24, 2010
* OMB Memorandum M-07-16, Safeguarding Against and Responding to the Breach of Personally Identifiable Information, May 22, 2007
* NIST SP 800-63-2, Electronic Authentication Guideline, August 2013

The system security will be maintained accord to VA policy and will include obtaining an Authority to Operate (ATO). This will include the creation of security artificats:

* Security Management Plan,
* System Security Plan,
* Privacy Impact Assessment,
* Configuration Management Plan,
* Disaster Recovery Plan,
* Risk Assessment and Security Certification Checklist.

The Governance, Risk and Compliance (GRC) tool (RiskVision) shall act as the management tool for the Assessment and Authorization (A&A) process, and systems shall be assessed in RiskVision by an Office of Cyber Security (OCS) representative for an accreditation recommendation to be submitted to the OIS Chief Information Security Officer (CISO) and VA Chief Information Officer (CIO) for final review and determination.

# Interface Verification

TBD

## Data Source Imports

### Batch Imports

Batch imports will be run periodically using SQL Server integration services (SSIS). One output of an SSIS package run will be a completion report that contains information on the run including:

1. No of records imported(inserts, updates)
2. Any errors that occurred during the run
3. Any data integrity issues identified per specific records( i.e. a field that should be numeric contained the letter ‘a’)

These completion reports should be reviewed and verified after an import is run.