Autoverification: VistA Auto Release Patch

VistA Laboratory Enhancements Project

**System Design Document**

**LR\*5.2\*458 & LA\*5.2\*88**

**Patches**



**Department of Veterans Affairs**

**July 2015**

**Version .05**

**Revision History**

|  |  |  |  |
| --- | --- | --- | --- |
| **Date** | **Version** | **Description** | **Author** |
| 7/14/2015 | .05 | Updated section 1.3 and 3.1 |  |
| 6/11/2015 | .04 | Added content from VA Team: specific references to HL7 version 2.5.1 upgrade |  |
| 5/18/2015 | .03 | Reviewed online and added content from VA Team (J.McCormack; D.Ihlenfeld; D. Englert) |  |
| 5/13/2015 | .02 | Added content from VA Team  (J.McCormack; D.Ihlenfeld; C.Anzadoula) |  |
| 4/30/2015 | .01 | Draft initiated w/content from VA Team  (J.McCormack; D.Ihlenfeld; C.Anzadoula) |  |

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**1. Introduction**

Autoverification is the…

• Use of algorithms, or set of rules, to make decisions about safety and reliability of results coming off an instrument and posting them to the patient’s chart without human intervention.

• Algorithms are based on decision trees a technologist would normally use to assess a result and make a decision to post the result into the patient’s chart. The algorithm is executed by computer software and the need for human intervention decreases.

• Algorithms can incorporate instrument Quality Control (QC), moving averages, critical values, specimen characteristics (hemolysis, lipemia, icteric), reference ranges and patient history into its decision making process.

• Since the software puts every result through the same rigorous decision making process the results are evidence based, consistent and reliable.

Currently, results are all manually verified by a technologist using the VistA Legacy Laboratory system. However, more and more facilities are using class III software to implement Autoverification systems. This System Design Document (SDD) focuses on the modifications to the VistA Legacy Laboratory system in order to support a class I software solution to support the receiving, processing, and storing of results verified prior to coming to the VistA system.

While a COTS solution is required to perform the autoverification, the VistA software changes will be developed using standard Health Level 7 (HL7) messaging constructs to support autoverification from the primary COTS vendor, Data Innovations (DI), but conceivable support other solutions adhering to the same standards.

This initiative originated at the Kansas City VA Medical Center, where the laboratory team won an Innovations grant to develop and pilot an Autoverification solution. Due to their local success, the VA is moving forward with the effort to incorporate the required integration code into VistA and release as a ‘Class 1’ software build.

**1.1. Purpose of the SDD**

The purpose of this document is to describe in sufficient detail how the proposed VistA Laboratory system will be enhanced. The SDD translates the requirement specifications into a document from which the developers can create the actual system. It identifies the top-level system architecture, and identifies hardware, software, communication, and interface components.

**1.2. Identification**

The system and software which apply to this SDD, includes:

 VistA Patches *LR\*5.2\*458 and LA\*5.2\*88*

 HL7 version 2.5.1 (To be confirmed with HL7 Engineer)

 Data Innovations, Instrument Manager 8.3

**1.3. Scope**

This subsection provides a high level description of the deliverable.

**Includes**

**Table 1: Scope Inclusions**

Includes the basic operational premise from the Kansas City Innovations project for Autoverification by using rules in the existing Data Innovations COTS system and enhancing VistA to accept, file, and release those specific laboratory results without human intervention

Modifications to the HL7 messages are required and will be coordinated and approved by the

HL7 Message Administrator. Some of these changes include:

 In conformance with HL7 specifications, incorporate changes to HL7 message constructs to include provider contact information with all orders sent to the COTS middleware

 In conformance to the agreed HL7 specification changes, the new DI Driver’s HL7 version will be upgraded from the existing HL7 version 2.2 to HL7 version 2.5.1, keeping the driver in line with the national development, sustainment, and maintenance of the VA’s VistA system

 Changes to HL7 routines in VistA and message constructs to include verified result information with results sent from the COTS middleware

 Changes to VistA Legacy Laboratory to allow for the receiving and automatic release of results verified on the external COTS middleware.

**Excludes**

**Table 2: Scope Exclusion**

Detailed design of the Data Innovations middleware and software used to perform autoverification

**1.4. Constraining Policies, Directives and Procedures**

1. Local Policies for the use and implementation of Autoverification.

2. Local ISO approval of Data Innovations, Instrument Manager COTS package as per

TRM approval with constraints.

**1.5. User Characteristics**

The intended users of this solution include VA Medical Technologists and Laboratory Information System Managers (LIM). The users are proficient in clinical laboratory medicine procedures, best practices, quality control, instrument interfaces, analyzers, CPRS, as well as legacy VistA Laboratory.

The user group staffs the majority of the VA’s 300 labs 24hours a day, 7 days a week.

**1.6. Relationship to Other Documents and Plans**

This SDD provides the design documentation to support the Autoverification – VistA Auto Release capability as defined in the RSD for the Autoverification – VistA Auto Release document.

Portions of the document refer to the COTS solution that will be used to perform the

Autoverification capabilities on the vendor’s, Data Innovations (DI), middleware.

**1.7. Definitions, Acronyms, and Abbreviations**

|  |  |
| --- | --- |
| Abbreviation | Term |
| BN | Business Need |
| BRD | Business Requirements Document |
| CAP | College of American Pathologists |
| COTS | Commercial Off-the-shelf Software |
| CPRS | Computerized Patient Record System |
| DI | Data Innovations – Middleware Vendor |
| EHR | Electronic Health Record |
| FTE | Full-Time Equivalent |
| HCSR | Health Care Security Requirements |
| HIG | Health Information Governance |
| HIPAA | Health Insurance Portability and Accountability Act |
| HL7 | Health Level 7 |
| ISO | International Organization for Standardization |
| LIM | Laboratory Information Manager |
| NSR | New Service Request |
| OBR | Observation Request |
| OI&T | Office of Information and Technology |
| OIA | Office of Informatics and Analytics |
| PHI | Protected Health Information |
| PII | Personally Identifiable Information |
| QA | Quality Assurance |
| QC | Quality Control |
| RCA | Root Cause Analysis |
| RDM | Requirements Development and Management |
| RSD | Requirements Specification Document |
| RTM | Requirements Traceability Matrix |
| SLR | Service Level Requirement |
| SME | Subject Matter Expert |
| UCD | User Centered Design |
| UI | User Interface |
| VA | Department of Veterans Affairs |

**1.8. References**

 VA Handbook 6500 – Information Security Program

 Laboratory Autoverification New Service Request

 VE Lab Autoverification Business Requirements Document

 VE Lab Autoverification Requirements Specification Document

 VLE Autoverification – VistA Auto Release Requirements Specification Document

 Forsman, R.W. (2000) Clin. Leadersh. Manag. Rev., 14, 292

 VA-wide Cost Analysis performed by Data Innovations and based on data collected from various

VA sites

 VA “green” initiative as per Executive Order #13101 Greening the Government

 VistA Laboratory Universal Interface

 VistA Laboratory Universal Interface – Data Innovations Implementation Guide

 VistA Laboratory Security Guide

**2. Background**

**2.1. Overview of the System**

The VistA Legacy Laboratory system will be enhanced to allow for the addition of new data (provider contact information) in the order messages to the instrument middleware, Data Innovations (DI), so that it can be used to contact providers if needed during the results verification process. In addition, verified results received from the middleware will now be received and automatically released to the clinicians without additional intervention by a technologist on the VistA Legacy Laboratory system.

This development is required in order to adopt the industry’s best practice of implementing Autoverification. Autoverification allows a consistent, evidence based, algorithm to ensure laboratory results meet the standards necessary for it to be released for clinical use. In addition, it frees up resources while at the same time reducing the possibility for human error.

By enhancing VistA Laboratory through a patch, labs would have the option to use auto- verification (Class III to Class I). In addition, 80% of VHA laboratories already own and use Instrument Manager as their middleware. 20% of VHA laboratories use Dawning middleware also owned by Data Innovations. These labs have the option of moving to Instrument Manager and all licenses are purchased and owned by VHA with minimal support fees into the future.

All databases are held within the VHA environments and Data Innovations access is only granted with VHA approval. Instruments connections are purchased and owned by VHA and instruments can be swapped on and off these connections.

Medical Laboratory Technologists responsible for operating laboratory instrumentation and autoverification system will be the primary users of this solution. With respect to autoverification, most of their work will be done on the middleware, they are responsible for ensuring the data successfully transmits to the VistA Legacy Lab system and CPRS.

Laboratory Information Managers will be responsible for implementation, operations, and maintenance of the software configurations and health of the interfaces to and from VistA and the middleware.

**2.2. Overview of the Business Process**

The new business process is to allow the result review process to occur using the COTS Data Innovations (DI) Instrument Manager Middleware, prior to sending back to the VistA Legacy Laboratory system.

The DI system is Windows based and more intuitive to technologist. The workspace is configurable allowing for:

• Single or multiple instruments can be populated on a workspace which allows for variability in staffing patterns

• Results can be displayed according to local preference- released and/or held

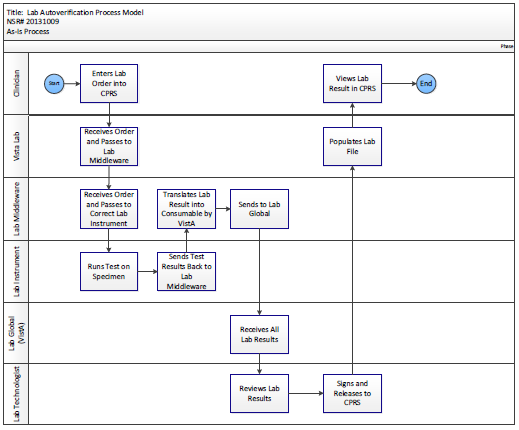
• Right click release instead of keystroking through VistA menus and selecting single accessions for review

• Workspaces auto-update

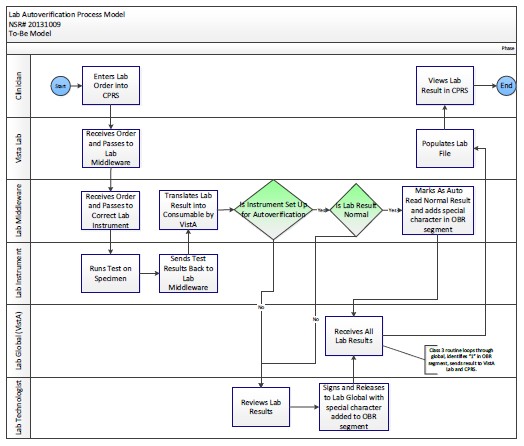
• Color coding is available

Users security can be configured singly or as groups by LIM. The entire system can be configured by the LIM or consultants can be hired.

Once verified, the results will be electronically transmitted to the VistA Legacy Laboratory system where new software enhancements will identify that the results received are verified and automatically release to the patient’s record so that they may be viewed by the appropriate clinicians using CPRS and receiving all appropriate alerts thru existing capabilities.



**Figure 1: As Is Business Processes Diagram**



**Figure 2: To Be Business Processes Diagram**

**Table 3: Business Process**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Business Process ID** | **Business Process Name** | **Type** | **Owner** | **Description** |
| 1 | Enter Lab  Order | Existing | P&LMS | Clinicians enter lab order via CPRS –  basic course  Lab users can enter lab order via Legacy  Lab – alternate course |
| 2 | Send Lab  Order to  Middleware | Modernized | P&LMS | Add provider contact information to  existing interface |
| 3 | Send Lab  Order to  Instrument | Existing | P&LMS | Lab order electronically transmitted to  instrument |
| 4 | Run Test | Existing | P&LMS | Instrument performs test on specimen |
| 5 | Send Lab  Results to  Middleware | Existing | P&LMS | Instrument electronically sends Lab Result  back to Middleware |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Business Process ID** | **Business Process Name** | **Type** | **Owner** | **Description** |
| 6 | Translate  Lab Results for VistA Consumption | Existing | P&LMS | Ensure results are encoded to standard  HL7 message format for transmission to  VistA. |
| 7 | Review Lab  Result | Modernized | P&LMS | Determine if Lab Result should be  autoverified, if not have tech verify result before it is released to the clinicians caring for the patient. |
| 8 | Autoverify  Lab Result | Modernized | P&LMS | If Lab Result is approved for  Autoverification, perform auto verify rules. |
| 9 | Tech reviews  & signs Lab  Result | Modernized | P&LMS | Techs will review any result that is not set  up for autoverification or if a result fails autoverification constraints. |
| 10 | Receive all  Lab Results | Modernized | P&LMS | The middle ware (Data Innovations or DI)  will send the result back to VistA Legacy  Laboratory module for processing. |
| 11 | Store all Lab  Results | Modernized | P&LMS | The VistA Legacy Laboratory will accept the result transmissions and ensure that  any indication of autoverification or person who verified the result is captured and stored as per requirements. |
| 12 | View Lab  Results in  CPRS | Existing | VHA  Clinicians | Lab Results that have been verified, either  by a technologist or the autoverification rules in the middleware, are now viewable on CPRS for clinicians to use to treat patients. |

**2.3. Business Benefits**

Please refer to the VE Lab Autoverification Business Requirements Document at

**2.4. Assumptions and Constraints**

This section describes the assumptions, and constraints that impacted the design of the system.

**2.4.1. Design Assumptions**

1. Approval for application proxies. Vista Lab Enhancement Request (VLER) is requesting two new application proxies to record the auto release/ auto verify processes.

a. LRLAB,AUTO RELEASE - used to reflect results released within VistA Lab that were verified by an auto verification process (LRLAB,AUTO VERIFY) or released/approved by a human on an external system (DI or other COTS/external lab).

b. LRLAB, AUTO VERIFY – used to indicate that the results were “approved” by

an automated process using rules based system.

c. These are to be released in patch LR\*5.2\*458 Autoverification. d. Requested approval on 5/5/2015:

**2.4.2. Design Constraints**

1. Must comply with existing VistA coding standards.

2. Must be integrated with VistA Legacy Laboratory constructs.

3. Must comply with Technical Reference Model (TRM).

4. Must comply with 508 Standards.

**2.4.3. Design Trade-offs**

 Interoperability – must support HL7 standards for interface transactions

 Performance – must meet or exceed current performance

 Reliability and robustness – must support current reliability and robustness

 Usability (including 508 compliance) – must be 508 compliant

**2.5. Overview of the Significant Requirements**

The requirements specific to this design document pertain to the enhancements required for the

VistA legacy Laboratory system.

**2.5.1. Overview of Significant Functional Requirements**

The major functions to be performed and the few major requirements that drive the design are described in the sections below.

**Table 4: Functional Requirements**

|  |  |
| --- | --- |
| **ID** | **Requirement** |
| 443954\_1 | The VistA Laboratory system shall receive an indicator, with the result from the  autoverification system, when a test has been successfully autoverified. |
| 443954\_2 | The VistA Laboratory system shall process test results received from the  autoverification system, with an indicator of successful autoverified, to Auto Release, making results available to appropriate clinicians and providers with privileges to view the results in both CPRS and VistA Laboratory systems. |
| 443954\_3 | The VistA Laboratory system shall receive an indicator and a unique user  identifier, with the results from the autoverification system, when a test has been successfully verified by an authorized technologist. |
| 443954\_4 | The VistA Laboratory system shall process test results received from the  autoverification system, with an indicator of successful verification by an authorized technologist, to Auto Release, making results available to appropriate clinicians and providers with privileges to view the results in both CPRS and VistA Laboratory systems. |

|  |  |
| --- | --- |
| **ID** | **Requirement** |
| 443954\_5 | The VistA Laboratory system shall send ordering provider contact information  (including phone number and/or pager number) to the autoverification system, for the purpose of making it accessible to authorized technologists who are responsible for verifying test results, during the verification process. |
| 443954\_6 | The VistA Laboratory system shall notify users when there is a failure of the Lab  result to post to VistA. |
| 443956\_1 | The VistA Laboratory system shall save and store autoverified results with an  indicator, available to the laboratory user, denoting it was autoverified. |
| 443969\_1 | The VistA Laboratory system shall be capable of testing the new Auto Release  capabilities in a test system environment, with local autoverification test systems, prior to implementing in a production environment. |

**2.5.2. Overview of Functional Workload / Performance**

**Requirements**

See section 8 of the Business Requirements Document

**2.5.3. Overview of Operational Requirements – No Change**

No new operational requirements anticipated at this time.

**2.5.4. Overview of the Technical Requirements**

The technical requirements for this capability are listed below.

|  |  |
| --- | --- |
| **ID** | **Requirement** |
| 1 | The VistA Laboratory system shall include a parameter for local sites to enable  when they are using the Autoverification system with the VistA Auto Release  Capability. |
| 2 | The new DI Driver’s HL7 version will be upgraded from the existing HL7 2.2  version to HL7 2.5.1 |

**2.5.5. Overview of the Security or Privacy Requirements – No**

**Change**

The system will adhere to all security controls currently leveraged by Legacy VistA Laboratory module. A new A&A will not be required.

**2.5.6. Overview of System Criticality and High Availability**

**Requirements**

The mission criticality of the system and the degree to which continuous operation is approximately 99.9% availability. Clinical Laboratories operate 24 hours a day, 7 days a week supporting acute care, emergency care, and outpatient care for VA Medical Centers and remote clinics across the enterprise. This enhancement will require high availability similar to the requirements existing for VistA Legacy Laboratory today. Geographically laboratory instruments are distributed across the facilities local area network and connect to VistA databases either locally or regionally housed. High availability designs are required.

The approach that will be taken to provide the required level of availability and disaster recovery will leverage the current VistA system model. Redundant backups and the ability to turn off autoverification will be employed.

**2.5.7. Single Sign-on Requirement – No changes**

Not Applicable, use of VistA sign-on will continue to be used.

**2.5.8. Requirement for Use of Enterprise Portals – Not Applicable**

Not Applicable

**2.5.9. Special Device Requirements**

Local facilities must purchase instrument analyzers and implement the Data Innovations middleware plus software, “Instrument Manager”, capability in order to implement Autoverification. The VistA code is only enhanced to receive the verified results and not perform any autoverification business rules.

**2.6. Legacy System Retirement – Not Applicable**

Not Applicable

**3. Conceptual Design**

The VistA Auto Release Capability works to support the local VA Medical Center’s implementation of the Data Innovations Autoverification system using Instrument Manager. The diagram below gives a high level representation of the system. Note the Instrument Manager is middleware that is currently used to interface laboratory instrumentation (i.e. analyzers) to the VistA Legacy Laboratory module, using the VistA Laboratory Universal Interface. The enhancements to VistA are required in order to process results from this middleware that have been verified either automatically thru the use of standardized rules or by a technologist using

the Instrument Manager. Without these enhancements, duplicate, resource intensive actions will need to be taken by a laboratory user on the legacy VistA Laboratory system prior to releasing patient results to clinicians.

**Analyzer**

**Data Innovations (DI) Middleware**

**VistA Lab**

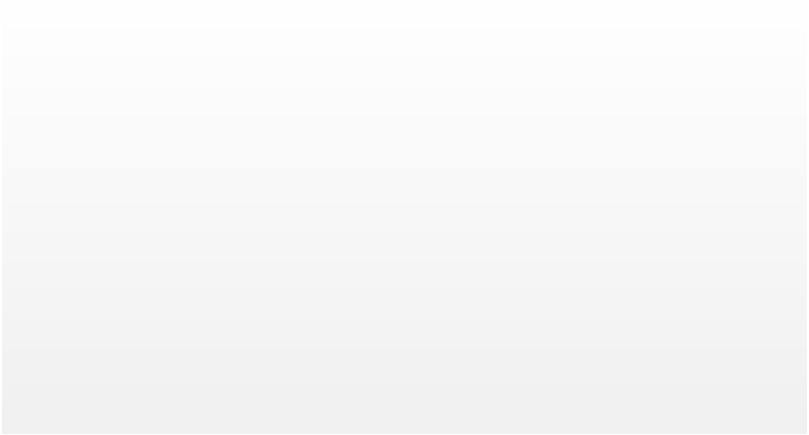
**Instrument Manager**

**VAMC Local Area**

**Network**

**VA Network**

**3.1. Conceptual Application Design**















**3.1.1. Innovation Class III Solution**

This section describes the high level changes that are planned to change the ‘Class

III’ solution to a ‘Class I’ solution..

1. Move code to LR/LA namespace

2. Refactor Processing of inbound messages (ORU)

 In current Innovations (class III) solution, a Taskman job is scheduled to run every 5min, to look for autoverified results. Because of timing anomalies when filing, some tests are missed requiring manual intervention to insure all laboratory tests are performed

 Proposed solution: Taskman job as messages are received, (class I solution) – proven reliability and performance with the point of care interface

3. Basic off switch

4. Consider Impacts to Huntington VA Medical Center Lab, do no harm

5. Add more granularity to ‘basic off’ switches to disable upon inbound processing.

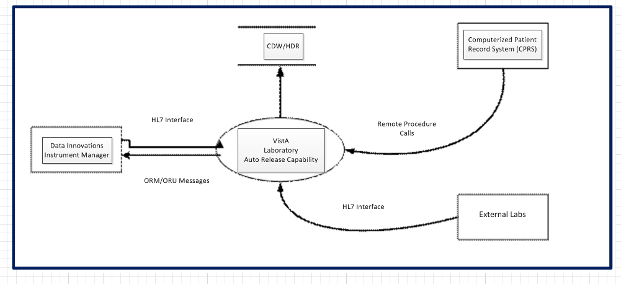
Figure out additional granularity of switches; allow LIM to set parameters

6. Changes required for processing of approved HL7 messages

**3.1.2. Application Context**

The VistA Auto Release Capability is an enhancement to the VistA Legacy Laboratory module. The diagram below shows the context of the VistA Legacy Laboratory Auto Release Capability

to the COTS Autoverification System using Instrument Manager, by Data Innovations.



**Figure 2: VistA Auto Release Enhancement to the VistA Lab Application - Context Diagram**

Table 5, below, describes the information in the Application Context Diagram.

**Table 5: Application Context Description**

**Object**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **ID** | **Name** | **Description** | **Interface**  **Name** | **Interface**  **System** |

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **ID** | **Name** | **Description** | **Interface**  **Name** | **Interface**  **System** |
| 1 | VistA  Laboratory System – Auto Release Enhancements | Shows how VistA Legacy Laboratory  system is enhanced to include the ability to Auto Release verified results. | ORM Order  Message ORU Result Message Remote Procedure Calls (many)- existing | Data  Innovations CPRS External VA &  Commercial  Labs  Health Data Repository (HDR)  Clinical Data Warehouse (CDW) and 32+ downstream systems |

**Interfaces External to OIT**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **ID** | **Name** | **Related Object** | **Input Messages** | **Output**  **Messages** | **External**  **Party** |
| 2 | External  Laboratory  Systems | External Lab | Lab Orders | Lab Results | Varies: VistA,  LabCorp, Quest, etc. |

**Interfaces Internal to OIT**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **ID** | **Name** | **Related Object** | **Input Messages** | **Output**  **Messages** | **External**  **Party** |
| 3 | CPRS | Remote Procedure  Calls | Lab Orders | Lab Results | N/A |

**Externally Shared Data Stores**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **ID** | **Name** | **Data Stored** | **Owner** | **Access** |
| 4 | HDR &  CDW | Laboratory Results | OIT | HL7 Interface |

**3.1.3. High-Level Application Design**

This section describes the high level design for the VistA Auto Release Capability.

Objects within red/dotted eclipse represents the system detailed within this SDD

CDW/HDR

CPRS

VistA Legacy Lab

Data Innovations

Instrument Manager

VistA Universal

Interface

Auto Release Lab

Results

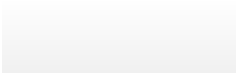
Other Laboratory Information

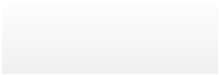
Systems

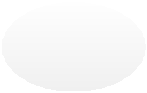
**Figure 3: High-Level Application Diagram**

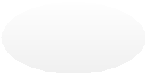


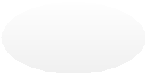












**Table 6: Objects in the High Level Application Diagram**

**Objects / Components to be Built or Modified**

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **I D** | **Name** | **Description** | **Servic e or Legac y**  **Code** | **Externa l Interfac e Name** | **Externa l**  **Interfac**  **e ID** | **Internal Interfac e Name** | **Internal Interfac e ID** | **SDP Section s 1&2** |
| 1 | VistA  Legacy  Lab | Manages Laboratory  Order Requests & Result Reports | VistA |  |  |  |  |  |
| 2 | VistA  Univers al Interfac e | Manages interfaces  between VistA Lab and Instruments/Middlew are | VistA |  |  |  |  |  |
| 3 | Auto  Release | New Routines added  to automatically release externally  verified results | VistA |  |  |  |  |  |

**Internal Data Stores**

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **ID** | **Name** | **Data Stored** | **Steward** | **Access** |
| No  Changes | VistA | Lab order requests and Lab  results | No Changes | No Changes |

**3.1.4. Application Locations – No Changes**

No changes identified at this time.

**3.2. Conceptual Data Design – No Changes**

No changes, enhancement to VistA Laboratory system.

**3.2.1. Project Conceptual Data Model – No Changes**

**3.2.2. Database Information – No Changes**

All the databases that will be interfaced with, and whose interface structures will be modified as part of this effort are listed below.

**Table 7: Database Inventory**

|  |  |  |  |
| --- | --- | --- | --- |
| **Database Name** | **Description** | **Type** | **Steward** |
| VistA Laboratory | Legacy Laboratory  Module used for performing and reporting laboratory tests/results. | HL7 ORM Order  Message modified to include provider phone number and/or pager  HL7 ORU Result Message modified to include identifier when results are verified. | Pathology and  Laboratory Medicine  Services |
| Data Innovations  Instrument Manager | Middleware used to perform  laboratory results verification and for interfacing to  laboratory instrumentation | Same as above. | Same as above, local VA Medical Center Staff. |

**3.2.3. User Interface Data Mapping**

Minor changes to the Lab Universal Set Up Option. (*Print mock ups to be added*)

**3.2.3.1. Application Screen Interface**

Minor changes to the Lab Universal Set Up Option. (*Print mock ups to be added*)

**3.2.3.2. Application Report Interface – Not Applicable**

There are no planned changes or additions to existing reports at this time.

**3.2.3.3. Unmapped Data Element – Not Applicable**

**3.3. Conceptual Infrastructure Design**

There are no new infrastructure components, the current system will be enhanced to include the automatic release of verified laboratory results.

**3.3.1. Special Technology – Not Applicable**

**3.3.2. Technology Locations – Not Applicable**

**3.3.3. Conceptual Infrastructure Diagram**

**3.3.3.1. Location of Environments and External Interfaces**

The following diagram shows the Data Innovations middleware, Instrument Manager and the laboratory instruments on the local area network, while the VistA systems may be locally or regionally located and on the VA’s wide area network.

**Analyzer**

**Data Innovations (DI) Middleware**

**VistA Lab**

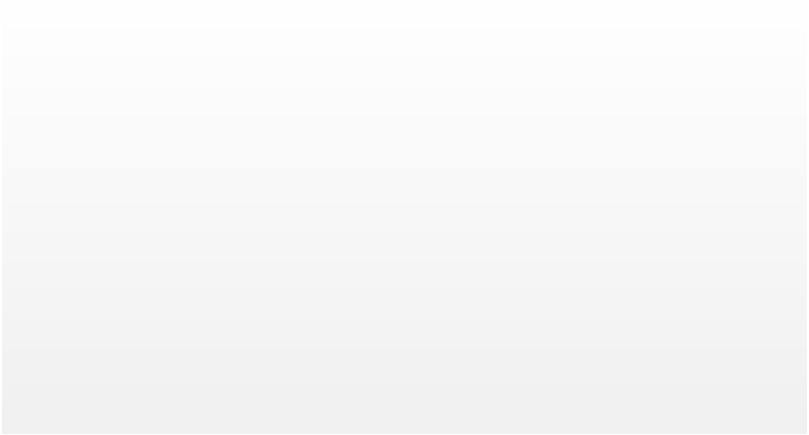
**Instrument Manager**

**VAMC Local Area**

**Network**

**VA Network**

**Figure 4: Conceptual Networks and Environments**















**3.3.3.2. Conceptual Production String Diagram – Not Applicable**

**4. System Architecture**

This section describes the system and/or subsystem(s) architecture for the project.

**4.1. Hardware Architecture – No Changes**

No changes to VistA Hardware requirements will be required for the VistA Auto Release capability.

**4.2. Software Architecture**

VistA Legacy Laboratory is a module within the VistA system. It also includes a universal interface that will connect to laboratory instrumentation and/or middleware for the purpose of sending orders to the instruments and receiving results from the instruments.

The VistA Auto Release Capability enhancement patches will add the ability to determine externally verified laboratory results and then automatically release to the VistA database, CPRS, and therefore clinical providers.

**4.3. Network Architecture**

No changes to the existing VistA network architecture.

**4.4. Service Oriented Architecture / ESS**

This project provides processing changes to the existing VistA Laboratory system. No new services or changes to services are planned. The VistA Laboratory still provides clinical laboratory results to the VA enterprise and consumes requests for laboratory tests (i.e. lab orders).

Laboratory results have been and will continue to require verification prior to release to a clinician for treatment. The changes in this proposed design only provide another method of how verified results are identified and released.

**4.5. Enterprise Architecture**

Describe the Enterprise Architecture of the system.

The VistA Auto Release capability is an enhancement to the VistA Legacy system and the Autoverification System is an approved tool on the VA Technical Reference Model (TRM)/ Standards Profile (SP).

The current TRM/SP is located VA Enterprise Architecture (EA) v2.1 a[t http://trm.oit.va.gov/.](http://trm.oit.domain/)

**5. Data Design**

The VistA Auto Release Capability will add field for configuration to the Universal Interface Set

Up Option, in VistA Laboratory module. (Add new data fields once designed)

**5.1. Detailed Design**

This section describes the proposed VistA Auto Release Capability enhancements design in detail. Where appropriate, reference to the COTS solution are provided.

**5.2. Hardware Detailed Design**

No additional hardware to support the VistA Auto Release Capability is anticipated. The enhancements will be released as two VistA Patches where no increase in data storage is anticipated.

The Autoverification COTS system will run on the existing Data Innovations hardware, using the

Instrument Manager. All hardware to support the COTS will be purchased and maintained locally by the VA Medical Centers. This middleware is already implemented at many VA Medical Centers across the VA enterprise acting primarily as an interface middleware solution between VistA and laboratory analyzers.

**5.3. Software Detailed Design**

This section provides conceptual and final detailed information associated with the design of the software being delivered.

**5.3.1. Conceptual Design**

This section introduces the conceptual information that establishes the basis for how the software will be built.

**5.3.1.1. Product Perspective**

See section 3.

**5.3.1.1.1. User Interfaces**

Minor changes to the VistA Laboratory Universal Interface Load Set Up option are planned.

**5.3.1.1.2. Hardware Interfaces – No Changes**

See diagrams in section 3.

**5.3.1.1.3. Software Interfaces**

The VistA Auto Release Capability enhancements include changes to the Universal Interface. Specifically the ORM Order Messages will be modified to include the ordering providers phone and/or pager number and the ORU Result Messages will include an indicator that the results coming into VistA are verified and HL7 version upgraded to 5.2.1

**5.3.1.1.4. Communications Interfaces**

See section 3 and 7.

**5.3.1.1.5. Memory Constraints – No Changes**

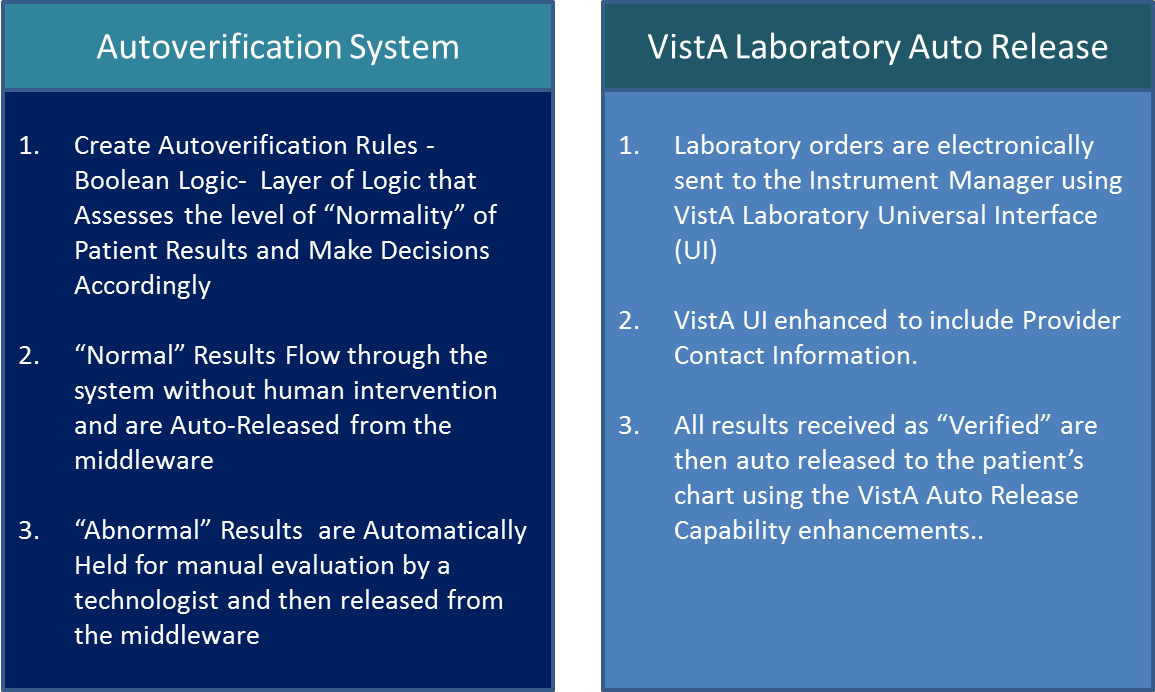
Not Applicable, no changes to VistA Laboratory.

**5.3.1.1.6. Special Operations – Not Applicable**

Not Applicable

**5.3.1.2. Product Features**

This section outlines the features of the VistA Auto Release Capability enhancements as well as the COTS Autoverification System.



**5.3.1.3. User Characteristics**

The intended users for the COTS Autoverification system include Laboratory Medical

Technologists and Laboratory Information Managers (LIM).

The intended user for the VistA Auto Release capability include LIMs. The users of the information automatically released include physicians, nurses, laboratory staff, and Veterans. However, it is important to note that for the VistA Patches, providing the new Auto Release Capabilities, it will be transparent to the end users of the information. Only LIMs may have a need to review processing queues.

**5.3.1.4. Dependencies and Constraints**

 Comply with 508 regulations and standards

 Comply with HL7 standards

 Use of VistA Legacy Laboratory Module

 Use of VistA Legacy Laboratory Universal Interface

**5.3.2. Specific Requirements**

**5.3.2.1. Database Repository**

The VistA Auto Release Capability leverages the current VistA Laboratory Modules database. New fields will be added for configuration purposes of the Universal Interface. (Add more detail once field defined).

**5.3.2.2. System Features**

System features for the VistA Auto Release Capability are described below in this section.

**5.3.2.3. Design Element Tables**

**5.3.2.3.1. Modify LA7UIO1**

This routine build the ORM Order message for the Laboratory Universal Interface. It will be modified to include ordering provider contact information.

**Table 8: LA7UIO1**

|  |  |
| --- | --- |
| **Routines** | **Instructions** |
| **Routine Name** | Routine LA7UIO1 |
| **Enhancement**  **Category** | Modify |
| **RTM** |  443954\_5 – The VistA Laboratory system shall send ordering provider contact information (including phone number and/or pager number) to the autoverification system, for the purpose of making it accessible to authorized technologists who are responsible for verifying test results, during the verification process. |
| **Related**  **Options** | LA7 ADL SEND Download to Universal Interface  LA DOWN Download a load list to an Instrument |
| **Related**  **Routines** | LA7UIO |
| **Data Dictionary (DD) References** | None |
| **Related**  **Protocols** | None |
| **Related Integration Control Registrations (ICRs)** | None |
| **Data Passing** | Invoked by LA7UIO when building a load list |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Routines** | | | | | **Instructions** |
| **Input Attribute Name and Definition** | | | | | LRLL= IEN in 68.2 Load Worklist file, from field in 62.4  LRINST= IEN IN 62.4 Auto Inst file  LRAUTO= zero node of 62.4 entry  LA76248= IEN in 62.48 Message Parameter file |
| **Output Attribute Name and Definition** | | | | | *None* |
| **Current Logic** | | | | | See below. |
|  | | | | | ORC ; Build ORC segment  N LA7DATA,ORC  S ORC(0)="ORC"  S ORC(1)="NW"  ;  ; Placer/filler order number - sample ID  S ORC(2)=$$ORC2^LA7VORC(LA7SID,LA7FS,LA7ECH)  S ORC(3)=$$ORC3^LA7VORC(LA7SID,LA7FS,LA7ECH)  ;  ; Order/draw time - if no order date/time then try draw time  I $P(LA76802(0),"^",4) S ORC(9)=$$ORC9^LA7VORC($P(LA76802(0),"^",4))  I '$P(LA76802(0),"^",4),$P(LA76802(3),"^") S ORC(9)=$$ORC9^LA7VORC($P(LA76802(3),"^"))  ;  ; Provider  S LA7X=$$FNDOLOC^LA7VHLU2(LA7UID) S  ORC(12)=$$ORC12^LA7VORC($P(LA76802(0),"^",8),$P(LA7X,"^",3),LA7FS,LA7ECH,2)  ; Provider Callback Number  S ORC(14)=$$ORC14^LA7VORC($P(LA76802(0),"^",8),DT,LA7FS,LA7ECH)  D BUILDSEG^LA7VHLU(.ORC,.LA7DATA,LA7FS) D FILESEG^LA7VHLU(GBL,.LA7DATA)  D FILE6249^LA7VHLU(LA76249,.LA7DATA) Q  OBR ; Build OBR segment  …  ; Lab Arrival Time  S OBR(14)=$$OBR14^LA7VOBR($P(LA76802(3),"^",3))  ; HL7 code from Topography  S LA7X=$S(LRDPF=62.3:"^^^CONTROL",1:"")  S OBR(15)=$$OBR15^LA7VOBR(LA761,"",LA7X,LA7FS,LA7ECH)  ; Ordering provider  S LA7X=$$FNDOLOC^LA7VHLU2(LA7UID)  S OBR(16)=$$ORC12^LA7VORC($P(LA76802(0),"^",8),$P(LA7X,"^",3),LA7FS,LA7ECH,2)  ; Provider Callback Number  S OBR(17)=$$ORC14^LA7VORC($P(LA76802(0),"^",8),DT,LA7FS,LA7ECH)  ; Placer's field #1 - instrument name^card address  K LA7X  S LA7X(1)=$P(LRAUTO,"^")  S LA7CADR=$P($G(^LAB(62.4,LRINST,9)),U,9) I LA7CADR'="" S LA7X(2)=LA7CADR  S OBR(18)=$$OBR18^LA7VOBR(.LA7X,LA7FS,LA7ECH)  ; Placer's field #2 - tray^cup^lraa^lrad^lran^lracc^lruid  K LA7X  ; No tray/cup if don't send tray/cup flag.  I $G(LRFORCE) S:LA76821 LA7X(1)=LA76821 S:LA76822 LA7X(2)=LA76822  S  LA7X(3)=LA768,LA7X(4)=LA76801,LA7X(5)=LA76802,LA7X(6)=LA7ACC,LA7X(7)=LA7UID S OBR(19)=$$OBR19^LA7VOBR(.LA7X,LA7FS,LA7ECH) |
|  | **Modified Logic** | | |  |
| **(Changes are** | |  |
| **in bold)** |  | |
|  | | |
|  | | | | |

**5.3.2.3.2. Modify LA7VORC**

This routine builds the ORC segment of the ORM Order message. It is modified to kick off additional routine to include new fields with the ordering provider contact information.

**Table 9: LA7VORC**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Routines** | | | | | **Instructions** |
| **Routine Name** | | | | | Routine LA7VORC |
| **Enhancement**  **Category** | | | | | Modify |
| **RTM** | | | | |  443954\_5 – The VistA Laboratory system shall send ordering provider contact information (including phone number and/or pager number) to the autoverification system, for the purpose of making it accessible to authorized  technologists who are responsible for verifying test results, during the verification process. |
| **Related Options** | | | | | None |
| **Related Routines** | | | | | LA7UIO1 |
| **Data Dictionary (DD) References** | | | | | None |
| **Related Protocols** | | | | | None |
| **Related Integration Control Registrations (ICRs)** | | | | | None |
| **Data Passing** | | | | | Invoked by LA7UIO1 when building the ORC segment for the ORM Order Message |
| **Input Attribute Name and Definition** | | | | | Order Provider IEN from file #200, from the related accession |
| **Output Attribute**  **Name and Definition** | | | | | None |
| **Current Logic** | | | | | See below. |
|  | | | | | ORC13(LA7J,LA7FS,LA7ECH) ; Build ORC-13 sequence - Enterer's location  ; Call with LA7J = variable pointer to file #4 or #44  ; LA7FS = HL field separator  ; LA7ECH = HL encoding characters  ;  ; Returns ORC-13 sequence  ;  N LA74,LA744,LA7X,LA7Y,LA7Z  ;  S (LA74,LA744,LA7Y)=""  ;  ; Pointer to file #44  I $P(LA7J,";",2)="SC(" D  . S LA744=$P(LA7J,";")  . S LA74=$$GET1^DIQ(44,LA744\_",",3,"I")  ;  ; Pointer to file #4  I $P(LA7J,";",2)="DIC(4," S LA74=$P(LA7J,";")  ;  ; Build 1st component (point of care), 6th component (person location type)  I LA744 D |
|  | **Modified Logic** | | |  |
| **(Changes are in** | |  |
| **bold)** |  | |
|  | | | | |

|  |  |
| --- | --- |
| **Routines** | **Instructions** |
|  | . S LA7Z=$$GET1^DIQ(44,LA744\_",",.01)  . S  $P(LA7Y,$E(LA7ECH,1),1)=$$CHKDATA^LA7VHLU3(LA7Z,LA7FS\_LA7ECH)  . S LA7Z=$$GET1^DIQ(44,LA744\_",",2,"I")  . S  $P(LA7Y,$E(LA7ECH,1),6)=$S(LA7Z="C":"C",LA7Z="W":"N",1:"D")  ;  ; Build 4th component (facility), demote delimiter from  component to sub-component  I LA74 D  . S LA7Z=$$FACDNS^LA7VHLU2(LA74,LA7FS,LA7ECH,2)  . I $P(LA7Z,$E(LA7ECH,4),2)'="" S $P(LA7Y,$E(LA7ECH,1),4)=LA7Z  Q  . S LA7Z=$$INST^LA7VHLU4(LA74,LA7FS,LA7ECH)  . I $P(LA7Z,$E(LA7ECH,1),3)="99VA4" S  $P(LA7Z,$E(LA7ECH,1),3)="L"  . S  $P(LA7Y,$E(LA7ECH,1),4)=$TR(LA7Z,$E(LA7ECH,1),$E(LA7ECH,4))  ;  Q LA7Y  ;  ;  **ORC14(LA7200,LA7DT,LA7FS,LA7ECH) ; Build ORC-14 sequence - Order**  **Callback Phone Number**  **; Call with LA7200 = ien of provider in file #200**  **; LA7DT = "as of" date in FileMan format**  **; LA7FS = HL field separator**  **; LA7ECH = HL encoding characters**  **;**  **; Returns ORC-14 sequence**  **;**  **Q $$XTN^LA7VHLU9(200,LA7200,LA7DT,LA7FS,LA7ECH)**  ;  ;  ORC17(LA74,LA7FS,LA7ECH) ; Build ORC-17 sequence - Entering  organization  ; Call with LA74 = ien of institution in file #4  ; if null/undefined then use Kernel Site file.  ; LA7FS = HL field separator  ; LA7ECH = HL encoding characters  ;  ; Returns ORC-17 sequence (ID^text^99VA4)  ;  Q $$INST^LA7VHLU4(LA74,LA7FS,LA7ECH) |

**5.3.2.3.3. Modify LA7VHLU9**

This routine does the constructing of the ordering provider contact information as an HL7 XTN

data type.

**Table 10: LA7VHLU9**

|  |  |
| --- | --- |
| **Routines** | **Instructions** |
| **Routine**  **Name** | Routine LA7VHLU9 |
| **Enhanceme nt Category** | Modify |

|  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Routines** | | | | **Instructions** | | | | |
| **RTM** | | | |  443954\_5 – The VistA Laboratory system shall send ordering provider contact information (including phone number and/or pager number) to the autoverification  system, for the purpose of making it accessible to authorized technologists who are  responsible for verifying test results, during the verification process. | | | | |
| **Related**  **Options** | | | | None | | | | |
| **Related**  **Routines** | | | | LA7VORC | | | | |
| **Data Dictionary (DD) References** | | | | None | | | | |
| **Related**  **Protocols** | | | | None | | | | |
| **Related Integration Control Registratio ns (ICRs)** | | | | None | | | | |
| **Data**  **Passing** | | | | Invoked by LA7VORC | | | | |
| **Input Attribute Name and Definition** | | | | IEN from the ordering provider from File # 200, New Person File | | | | |
| **Output Attribute Name and Definition** | | | | Returns ordering providers contact information as an XTN data type | | | | |
| **Current**  **Logic** | | | | See below. | | | | |
|  | | | |  | **XTN(LA7FN,LA7DA,LA7DT,LA7FS,LA7ECH) ; Build extended telecommunication number** | | |  |
| **;** | | **Call with LA7FN = Source File number** |  | |
| ; Presently file #2 (PATIENT), #4 (INSTITUTION) or  #200 (NEW PERSON)  **; LA7DA = Entry in source file**  **; LA7DT = As of date in FileMan format**  **; LA7FS = HL field separator**  **; LA7ECH = HL encoding characters**  **;**  **; Returns extended telecommunication numbers**  ;  N LA7X,LA7Y  S LA7Y=""  I $G(LA7DT)="" S LA7DT=DT  ;  ; Check if this field has been built previously for this entity  I LA7FN,LA7DA,$D(^TMP($J,"LA7VHLU","99VAXTN",LA7FN,LA7DA,LA7FS\_LA7ECH))  S LA7Y=^TMP($J,"LA7VHLU","99VAXTN",LA7FN,LA7DA,LA7FS\_LA7ECH)  ; | | | | |
|  | **Modified**  **Logic** | |  |
| **(Changes** |  |
| **are in bold)** | |
|  | | | |

**Routines Instructions**

; **Build from file #200 - Office Phone (#.132), Digital Pager**

**(#.138), Voice Pager (#.137)**

**; Max 2 Repetitions**

I LA7Y="",LA7FN=200,LA7DA D

. N LA7ERR,LA7I,LA7REP,LA7XTN

. D

GETS^DIQ(200,LA7DA\_",",".01;.132;.137;.138","E","LA7XTN(LA7DA)","LA7ERR")

. S (LA7I,LA7REP)=0

. F LA7I=.132,.138,.137 Q:LA7REP>1 I LA7XTN(LA7DA,200,LA7DA\_",",LA7I,"E")'="" D

. . S LA7X="",LA7REP=LA7REP+1

. . S $P(LA7X,$E(LA7ECH),2)="WPN"

. . S

$P(LA7X,$E(LA7ECH),3)=$S(LA7I=.132:"PH",LA7I=.138:"BP",LA7I=.137:"BP",1:"PH")

. . S

$P(LA7X,$E(LA7ECH),12)=$$CHKDATA^LA7VHLU3(LA7XTN(LA7DA,200,LA7DA\_",",LA7I,"E")

,LA7FS\_LA7ECH)

. . I LA7REP>1 S LA7Y=LA7Y\_$E(LA7ECH,2)\_LA7X

. . E S LA7Y=LA7X

;

; Build from file #2

I LA7Y="",LA7FN=2,LA7DA D

. N DFN,VAHOW,VAPA,VAERR,VAROOT,VATEST

. S DFN=LA7DA

. I LA7DT S (VATEST("ADD",9),VATEST("ADD",10))=LA7DT

. D ADD^VADPT

. I VAERR Q

. S $P(LA7Y,$E(LA7ECH),1)=""

. S $P(LA7Y,$E(LA7ECH),2)="PRN"

. S $P(LA7Y,$E(LA7ECH),3)="PH"

. S

$P(LA7Y,$E(LA7ECH),12)=$$CHKDATA^LA7VHLU3($P(VAPA(8),"^"),LA7FS\_LA7ECH)

;

; Build info from file #4

I LA7Y="",LA7FN=4,LA7DA D

. Q

;

; Save this field to TMP global to use for subsequent calls.

I LA7Y'="" S ^TMP($J,"LA7VHLU","99VAXTN",LA7FN,LA7DA,LA7FS\_LA7ECH)=LA7Y

;

Q LA7Y

**5.3.2.3.4. Modify LA7VIN**

Modify VistA Laboratory routine LA7VIN to support “Auto Release”.

**Table 11: LA7VIN**

|  |  |
| --- | --- |
| **Routines** | **Instructions** |
| **Routine Name** | Routine LA7VIN |
| **Enhancement**  **Category** | Modify |

|  |  |
| --- | --- |
| **Routines** | **Instructions** |
| **RTM** |  443954\_1 – The VistA Laboratory system shall receive an indicator, with the result from the autoverification system, when  a test has been successfully autoverified.   443954\_2 – The VistA Laboratory system shall process test results received from the autoverification system, with an indicator of successful autoverified, to Auto Release, making results available to appropriate clinicians and providers with privileges to view the results in both CPRS and VistA Laboratory systems.   443954\_3 – The VistA Laboratory system shall receive an indicator and a unique user identifier, with the results from the autoverification system, when a test has been successfully verified by an authorized technologist.   443954\_4 – The VistA Laboratory system shall process test results received from the autoverification system, with an indicator of successful verification by an authorized technologist, to Auto Release, making results available to appropriate clinicians and providers with privileges to view the results in both CPRS and VistA Laboratory systems. |
| **Related Options** | None |
| **Related Routines** | LA7HL |
| **Data Dictionary (DD) References** | None |
| **Related Protocols** | HL7 Protocol : LA7UI ORU-R01 SUBS 2.2 |
| **Related Integration Control Registrations (ICRs)** | None |
| **Data Passing** | If universal interface and auto-release is turned on then task job(s) to process results  in LAH. |
| **Input Attribute Name and Definition** | LA76248 = internal entry number of message configuration in file #62.48. |
| **Output Attribute**  **Name and Definition** | None |
| **Current Logic** | Currently after extracting the results from the messages it checks for the interface  type POC and tasks the processing routine LRVRPOC to complete POC result processing (ordering, accessioning, result storage/release).  CHKPROC ; Check if any processing routine need to be tasked to process info in  LAH  ;  ; If point of care interface then task job(s) to process results in LAH. I LA7INTYP>19,LA7INTYP<30,$D(LA7INTYP("LWL")) D  . I $G(ZTSTOP)=1 Q  . S LA7I=0  . F S LA7I=$O(LA7INTYP("LWL",LA7I)) Q:'LA7I D |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Routines** | | | | | **Instructions** |
|  | | | | | . . D QLAH(LA7I,"EN^LRVRPOC")  . . K LA7INTYP("LWL",LA7I)  ; [+10] Q  Need to insert logic to support auto release after logic to handle POC interfaces. CHKPROC ; Check if any processing routine need to be tasked to process info in  LAH  ;  ; If point of care interface then task job(s) to process results in LAH. I LA7INTYP>19,LA7INTYP<30,$D(LA7INTYP("LWL")) D  . I $G(ZTSTOP)=1 Q  . S LA7I=0  . F S LA7I=$O(LA7INTYP("LWL",LA7I)) Q:'LA7I D  . . D QLAH(LA7I,"EN^LRVRPOC")  . . K LA7INTYP("LWL",LA7I)  ; [+10] Q |
|  | | | | | CHKPROC ; Check if any processing routine need to be tasked to process info in  LAH  ;  ; If point of care interface then task job(s) to process results in LAH. I LA7INTYP>19,LA7INTYP<30,$D(LA7INTYP("LWL")) D  . I $G(ZTSTOP)=1 Q  . S LA7I=0  . F S LA7I=$O(LA7INTYP("LWL",LA7I)) Q:'LA7I D  . . D QLAH(LA7I,"EN^LRVRPOC")  . . K LA7INTYP("LWL",LA7I)  ;  **; If universal interface and auto-release turned on then task job(s) to process results in LAH.**  **I LA7INTYP=1, $D(LA7INTYP("LWL")) D**  **. I $G(ZTSTOP)=1 Q**  **. S LA7I=0**  **. F S LA7I=$O(LA7INTYP("LWL",LA7I)) Q:'LA7I D**  **. . D QLAH(LA7I,"EN^LRVRAR")**  **. . K LA7INTYP("LWL",LA7I)**  ;  [+10] Q |
|  | **Modified Logic** | | |  |
| **(Changes are in** | |  |
| **bold)** |  | |
|  | | |
|  | | | | |

**5.3.2.3.5. Modify LA7VIN4A**

Modify VistA Laboratory routine LA7VIN4A to identify inbound messages from the

Universal Interface that are to be ‘Auto Released’.

**Table 12: LA7VIN4A**

|  |  |
| --- | --- |
| **Routines** | **Instructions** |
| **Routine Name** | Routine LA7VIN4A |

|  |  |
| --- | --- |
| **Routines** | **Instructions** |
| **Enhancement**  **Category** | Modify |
| **RTM** |  443954\_1 – The VistA Laboratory system shall receive an indicator, with the result from the autoverification system, when  a test has been successfully autoverified.   443954\_2 – The VistA Laboratory system shall process test results received from the autoverification system, with an indicator of successful autoverified, to Auto Release, making results available to appropriate clinicians and providers with privileges to view the results in both CPRS and VistA Laboratory systems.   443954\_3 – The VistA Laboratory system shall receive an indicator and a unique user identifier, with the results from the autoverification system, when a test has been successfully verified by an authorized technologist.   443954\_4 – The VistA Laboratory system shall process test results received from the autoverification system, with an indicator of successful verification by an authorized technologist, to Auto Release, making results available to appropriate  clinicians and providers with privileges to view the results in both CPRS and VistA Laboratory systems. |
| **Related Options** | None |
| **Related Routines** | LA7VIN1 |
| **Data Dictionary**  **(DD) References** | None |
| **Related Protocols** | None |
| **Related Integration Control Registrations (ICRs)** | None |
| **Data Passing** | Set flag if Lab UI Auto Release interface to start auto release processing routine |
| **Input Attribute**  **Name and Definition** | LA76249 = internal entry number of message in file #62.49 to be processed. |
| **Output Attribute**  **Name and Definition** | None |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Routines** | | | | | **Instructions** |
| **Current Logic** | | | | | Currently the flag we set LA7INTYP(“LWL”) is set in routine LA7VIN4A for the  POC interfaces as all results on POC interfaces are handle the same way.  LA7VIN4A;DALOI/JMC - Process Incoming UI Msgs, continued ;08/12/13  10:54  ;;5.2;AUTOMATED LAB INSTRUMENTS;\*\*74,80\*\*;Sep 27, 1994;Build  19  ;  ;This routine is a continuation of LA7VIN4 and is only called from there. Q  ;  ;  LAGEN ; Sets up variables for call to ^LAGEN, build entry in LAH  ; requires  LA7INST,LA7TRAY,LA7CUP,LA7AA,LA7AD,LA7AN,LA7LWL  ; returns LA7ISQN=subscript to store results in ^LAH global  ;  …  ;  ; Store method name with LAH entry  D METH^LAGEN(LA7LWL,LA7ISQN,METH)  ;  ; Set flag if POC interface to start POC processing routine when  ; finished - tasked by LA7VIN before shutdown  I LA7INTYP>19,LA7INTYP<30 S LA7INTYP("LWL",LA7LWL)=""  ; Q |
|  | | | | | If we keep that logic then need to add check for auto release on Lab UI (interface type=1) and set flag (LA7AUTORELEASE).  ; Set flag if POC interface to start POC processing routine when  ; finished - tasked by LA7VIN before shutdown  I LA7INTYP>19,LA7INTYP<30 S LA7INTYP("LWL",LA7LWL)=""  ;  **; Set flag if Lab UI Auto Release interface to start auto release processing routine when**  **; finished - tasked by LA7VIN before shutdown**  **I LA7INTYP=1,LA7AUTORELEASE S LA7INTYP("LWL",LA7LWL)=""**  ;  Q |
|  | **Modified Logic** | | |  |
| **(Changes are in** | |  |
| **bold)** |  | |
|  | | | | |

**5.3.2.3.6. Modify LA7VIN5**

Modify VistA Laboratory routine LA7VIN5 to process flag received on inbound

messages from the Universal Interface that are to be ‘Auto Released’.

If we have the flag moved to come over with the actual results (OBX segment) then need to put logic in routine LA7VIN5.

**Table 13: LA7VIN5**

|  |  |
| --- | --- |
| **Routines** | **Instructions** |
| **Routine Name** | Routine LA7VIN5 |
| **Enhancement**  **Category** | Modify |
| **RTM** |  443954\_1 – The VistA Laboratory system shall receive an indicator, with the result from the autoverification system, when  a test has been successfully autoverified.   443954\_2 – The VistA Laboratory system shall process test results received from the autoverification system, with an indicator of successful autoverified, to Auto Release, making results available to appropriate clinicians and providers with privileges to view the results in both CPRS and VistA Laboratory systems.   443954\_3 – The VistA Laboratory system shall receive an indicator and a unique user identifier, with the results from the autoverification system, when a test has been successfully verified by an authorized technologist.   443954\_4 – The VistA Laboratory system shall process test results received from the autoverification system, with an indicator of successful verification by an authorized  technologist, to Auto Release, making results available to appropriate clinicians and providers with privileges to view the results in both CPRS and VistA Laboratory systems. |
| **Related Options** | None |
| **Related Routines** | LA7VIN1 |
| **Data Dictionary (DD) References** | None |
| **Related Protocols** | None |
| **Related Integration Control Registrations (ICRs)** | None |
| **Data Passing** | LA7VIN1 routine will invoke this when processing an OBR segment within an HL7  message |
| **Input Attribute Name and Definition** | LA76249 = internal entry number of message in file #62.49 to be processed. |
| **Output Attribute**  **Name and Definition** | None |
| **Current Logic** | Currently routine LA7VIN5A  PROCESS ; Process results for a given test code  F LA7I=0,1,2 S LA76241(LA7I)=$G(^LAB(62.4,LA7624,3,LA76241,LA7I))  ; |

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Routines** | | | | | **Instructions** |
|  | | | | | ; Chem test fields incorrect  I LA76241(0)="" D CREATE^LA7LOG(18) Q  ;  …  ; If LEDI interface and order status change store which results  ; associated with ordered test. Used to determine if order status  ; changed bulletin needs to be generated.  I LA7INTYP=10,LA7SAC?1(1"A",1"G") D  . S LA7I=$G(LA7SAC(0)) Q:'LA7I  . S ^TMP("LA7 ORDER STATUS",$J,LA7I,+LA76241(0))="" Q |
|  | | | | | If we move flagging of auto release results with the actual results (OBX)  segment)  PROCESS ; Process results for a given test code  F LA7I=0,1,2 S LA76241(LA7I)=$G(^LAB(62.4,LA7624,3,LA76241,LA7I))  ;  ; Chem test fields incorrect  I LA76241(0)="" D CREATE^LA7LOG(18) Q  ;  …  ; If LEDI interface and order status change store which results  ; associated with ordered test. Used to determine if order status  ; changed bulletin needs to be generated.  I LA7INTYP=10,LA7SAC?1(1"A",1"G") D  . S LA7I=$G(LA7SAC(0)) Q:'LA7I  . S ^TMP("LA7 ORDER STATUS",$J,LA7I,+LA76241(0))=""  ;  ; **Set flag if Lab UI Auto Release interface to start auto release processing routine when**  **; finished - tasked by LA7VIN before shutdown**  **I LA7INTYP=1,LA7AUTORELEASE S LA7INTYP("LWL",LA7LWL)=""**  ;  Q  P.S. This is a rough list of criteria for auto release flag off the top of my head. Some of these might be unnecessary. Just a quick list of attributes/conditions might need to evaluate.  The flag LA7AUTORELEASE will be set based on several criteria:  1. Interface has auto release enabled.  2. Results has been flagged as auto verified/external tech verified  3. Results are not of a condition precluding auto release a. test excluded from auto verify/ auto release b. correction to previously verified results  c. results already verified by another process, i.e. tech jumped on  VistA and manually entered  d. retransmission of processed results already auto released  (duplicate transmission) |
|  | **Modified Logic** | | |  |
| **(Changes are in** | |  |
| **bold)** |  | |
|  | | |
|  | | | | |

**5.3.2.3.7. Add LRVRAR and LRVRARU**

Add VistA Laboratory routine LRVRAR and LRVRARU to perform the “Auto Release”

process.

The routine(s) to do the auto releasing will be in the LRVRAR\* namespace to keep the actual “verifying” in the automated results LRVR namespace, “AR” for Auto Release functionality.

**Table 14: LRVRAR**

|  |  |
| --- | --- |
| **Routines** | **Instructions** |
| **Routine Name** | Routine LRVRAR & LRVRARU (Initialization Routine with checks) |
| **Enhancement**  **Category** | Add |
| **RTM** |  443954\_1 – The VistA Laboratory system shall receive an indicator, with the result from the autoverification system, when  a test has been successfully autoverified.   443954\_2 – The VistA Laboratory system shall process test results received from the autoverification system, with an indicator of successful autoverified, to Auto Release, making results available to appropriate clinicians and providers with privileges to view the results in both CPRS and VistA Laboratory systems.   443954\_3 – The VistA Laboratory system shall receive an indicator and a unique user identifier, with the results from the autoverification system, when a test has been successfully verified by an authorized technologist.   443954\_4 – The VistA Laboratory system shall process test results received from the autoverification system, with an indicator of successful verification by an authorized technologist, to Auto Release, making results available to appropriate clinicians and providers with privileges to view the results in both CPRS and VistA Laboratory systems. |
| **Related Options** | None |
| **Related Routines** | LA7VIN |
| **Data Dictionary (DD) References** | None |
| **Related Protocols** | None |
| **Related Integration Control Registrations (ICRs)** | None |
| **Data Passing** | LA7VIN will invoke this routine |

|  |  |
| --- | --- |
| **Routines** | **Instructions** |
| **Input Attribute Name and Definition** | LRLL = internal entry number of load list file #62.8. |
| **Output Attribute**  **Name and Definition** | None |
| **Current Logic** | Not Applicable |
| **Modified Logic (Changes are in bold)** | TBD |

**5.3.2.3.8. Templates – No Changes**

No planned additions or modifications to Templates identified at this time for the VistA Auto

Release Capability enhancements.

**5.3.2.3.9. Bulletins – No Changes**

No planned additions or modifications to bulletins identified at this time for the VistA Auto

Release Capability enhancements.

**5.3.2.3.10. Data Entries Affected by the Design**

The follow data fields will be added to support the VistA Auto Release Capability.

Input from John (June 11, 2015)- We will have an overlap with LA\*5.2\*88 when I release these patches after doing my product support (PS) review. When these are released we’ll need to install in our development accounts (MHCVSS/VAHVRR) and integrate LA\*5.2\*88 with the changes made by LA\*5.2\*85. The BP test center account CHEYL174 will also need to updated, along with any other released patches.

Select Developer's Menu Option: Routines that overlap in patches

Select DHCP PATCHES PATCH DESIGNATION: LA\*5.2\*88 AUTOVERIFY UND CA Include patches released within how many months? (0 for only active overlaps): (0-

999): 0//

Routines in entered or completed patches that overlap with LA\*5.2\*88

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| Routine | Patch | Release | Date | Patch Entered by |
| LA7VHLU9 | LA\*5.2\*75 |  |  | SMULLEN,GEOFFREY |
| LA7VIN1 | LA\*5.2\*75 |  |  | SMULLEN,GEOFFREY |
| LA7VIN4 | LA\*5.2\*75 |  |  | SMULLEN,GEOFFREY |
| LA7VIN4 | LA\*5.2\*85 |  |  | KRUSE,DONNA |
| LA7VIN4A | LA\*5.2\*75 |  |  | SMULLEN,GEOFFREY |
| LA7VIN4A | LA\*5.2\*87 |  |  | CARPENTER,TERRY |
| LA7VIN5 | LA\*5.2\*75 |  |  | SMULLEN,GEOFFREY |
| LA7VIN5 | LA\*5.2\*77 |  |  | ANZALDUA,CAROL |

Once we have a version of LA\*5.2\*88 ready for the test sites we should start

coordination with VMP to make each aware of the other’s development on common code.

Also need to do the same for LR\*5.2\*458 and coordinate with VMP.

Currently there does not appear any overlap with other under-development patch in the LR namespace.

Select Developer's Menu Option: Routines that overlap in patches

Select DHCP PATCHES PATCH DESIGNATION: LR\*5.2\*458 AUTOVERIFY UND CA Include patches released within how many months? (0 for only active overlaps): (0-999): 0//

Routines in entered or completed patches that overlap with LR\*5.2\*458

Routine Patch Release Date Patch Entered by

Select Developer's Menu Option:

It’s important that we maintain the components of these two patches (LA\*5.2\*88/LR\*5.2\*458) on FORUM PATCH module to utilize the functionality to detect/monitor overlaps.

Once LA\*5.2\*88/LR\*5.2\*458 are installed in production at our test sites, we’ll need to provide them with new combined builds to allow the sites to maintain patch installation compliance of released patches and functionality of our test patches they are testing. It may necessitate quick turnaround if the released patches introduce changes that may require logic/code changes within our patches. We might also ask VMP for the patches they are testing prior to national release to have a preview of the patch changes and develop our plan to integrate once they are national released. I would rather be proactive than reactive to potential coding changes to integrate patches.

**5.3.2.3.10.1. 62.4,99 AUTO RELEASE**

New field in AUTO INSTRUMENT file #62.4 to designate which instruments using auto release

STANDARD DATA DICTIONARY #62.4 -- AUTO INSTRUMENT

FILE MAY 18,2015@17:36:27 PAGE 1

|  |  |  |  |
| --- | --- | --- | --- |
| STORED IN ^LAB(62.4, | (102 | ENTRIES) SITE: TECHNICAL INTEGRATION SERVICE | UCI: |
| MHCVSS,MHCVSS |  | (VERSION 5.2) |  |

|  |  |  |  |
| --- | --- | --- | --- |
| DATA | NAME | GLOBAL | DATA |
| ELEMENT | TITLE | LOCATION | TYPE |

-----------------------------------------------------------------------------------

------------------------------------------------

62.4,99 AUTO RELEASE 9;11 SET

process.

'0' FOR NO;

'1' FOR YES;

'2' FOR AUTO VERIFY ONLY;

'3' FOR USER RELEASE ONLY; LAST EDITED: MAY 18, 2015

HELP-PROMPT: Indicates if this entry is enabled for auto release

DESCRIPTION: If results received via this auto instrument entry

can be associated with an external auto or user verification system then enable this field.

This field will be checked in conjunction with the auto release master switch parameter LA7UI AUTO RELEASE MASTER and the specific HL7 message containing the results to determine if the lab results should be process by the Laboratory Auto Release process.

granularity.

It can be configured at several levels of

verification

been auto verified

0 - no auto release for this auto instrument

1 - yes instrument is enabled for auto and user

2 - yes however only process results that have

been user verified,

3 - yes however only process results that have

no auto verification.

**5.3.2.3.10.2. 68.23,2.4 AUTO RELEASE**

New field in LOAD/WORK LIST file #68.2 to designate the test profile to be used by the auto release process.

STANDARD DATA DICTIONARY #68.23 -- PROFILE SUB-

FILE MAY 18,2015@17:19:12 PAGE

1

STORED IN ^LRO(68.2,D0,10, SITE: TECHNICAL INTEGRATION SERVICE UCI: MHCVSS,MHCVSS

|  |  |  |  |
| --- | --- | --- | --- |
| DATA | NAME | GLOBAL | DATA |
| ELEMENT | TITLE | LOCATION | TYPE |

-----------------------------------------------------------------------------------

------------------------------------------------

68.23,2.4 AUTO RELEASE 0;6 SET

release.

'0' FOR NO;

'1' FOR YES; LAST EDITED: MAY 08, 2015

HELP-PROMPT: Designates if this is the profile used by auto

DESCRIPTION: If an auto release process to accept and file

laboratory results from an external system using auto verification and/or human verification is being used then this field indicates to the auto release process which profile on this load list to use to process the lab results.

There should only be one profile flagged per load list.

lab results.

FIELD INDEX: AR (#1170) REGULAR IR SORTING ONLY

Short Descr: Indicates which profile is used for auto release of

Description: Used to flag which profile within a given load list

will be used by the lab auto release process if lab has implemented auto release functionality in conjunction with an external auto verification/user verification process/system.

Set Logic: S ^LRO(68.2,DA(1),10,"AR",X,DA)="" Kill Logic: K ^LRO(68.2,DA(1),10,"AR",X,DA) Whole Kill: K ^LRO(68.2,DA(1),10,"AR")

X(1): AUTO RELEASE (68.23,2.4) (Subscr 1) (forwards)

FIELD INDEX: AR (#1171) REGULAR IR SORTING ONLY WHOLE FILE (#68.2)

Short Descr: Indicates which profile is used for auto release of

lab results.

Description: Used to flag which profile within a given load list

will be used by the lab auto release process if lab has implemented auto release functionality in conjunction with an external auto verification/user verification process/system.

Set Logic: S ^LRO(68.2,"AR",X,DA(1),DA)="" Kill Logic: K ^LRO(68.2,"AR",X,DA(1),DA) Whole Kill: K ^LRO(68.2,"AR")

X(1): AUTO RELEASE (68.23,2.4) (Subscr 1) (forwards)

If you need to document the input template (edit template) that’s called by the load list option to configure the load list.

Added the new field AUTO RELEASE to the fields presented to the user for editing.

OUTPUT FROM WHAT FILE: OPTION// INPUT TEMPLATE (1584 entries) Select INPUT TEMPLATE: LRLLDFT

(May 08, 2015@14:11) User #235 File #68.2

ANOTHER ONE:

STANDARD CAPTIONED OUTPUT? Yes// (Yes)

Include COMPUTED fields: (N/Y/R/B): NO// BOTH Computed Fields and Record Number

(IEN)

NUMBER: 56 NAME:

LRLLDFT DATE CREATED: MAY 08, 2015@14:11

FILE: LOAD/WORK LIST USER #:

235 DATE LAST USED: MAY 08, 2015

EDIT FIELDS (c): LOAD TRANSFORM EDIT FIELDS (c): TYPE

EDIT FIELDS (c): CUPS PER TRAY EDIT FIELDS (c): FULL TRAY'S ONLY

EDIT FIELDS (c): EXPAND PANELS ON PRINT EDIT FIELDS (c): INITIAL SETUP

EDIT FIELDS (c): VERIFY BY

EDIT FIELDS (c): SUPPRESS SEQUENCE #

EDIT FIELDS (c): INCLUDE UNCOLLECTED ACCESSIONS EDIT FIELDS (c): SHORT TEST LIST

EDIT FIELDS (c): WKLD METHOD EDIT FIELDS (c): PROFILE

EDIT FIELDS (c): ACCESSION AREA EDIT FIELDS (c): UID VERIFICATION

EDIT FIELDS (c): STORE DUPLICATE COMMENTS

EDIT FIELDS (c): DEFAULT REFERENCE LABORATORY

EDIT FIELDS (c): AUTO RELEASE COMPILED (c): NO

The option which we discussed yesterday is:

NAME: LRLLE DFT MENU TEXT: Edit the default parameters

Load/Work list. TYPE: edit

CREATOR: POSTMASTER LOCK:

LRLIASON PACKAGE: LAB SERVICE

DESCRIPTION: This function allows the user to edit the default parameters of the

Load/Work list file so that the preparation of

load or work lists can reflect the way the tests are being done on the instrument or at the bench.

DIC {DIC}: LRO(68.2, DIC(0): AEMQ DIE: LRO(68.2,

DR {DIE}: [LRLLDFT] TIMESTAMP OF PRIMARY MENU:

54224,27713 UPPERCASE MENU TEXT: EDIT THE DEFAULT PARAMETERS LO

The DR (DIE) field contains the name of the input (edit) template LRLLDFT that the menu option calls using FileMan Enter/Edit

**5.3.2.3.11. Unique Record(s) – No Changes**

No changes to unique record IDs identified at this time for the VistA Auto Release Capability enhancements.

**5.3.2.3.12. File or Global Size Changes**

No changes to files or globals identified at this time for the VistA Auto Release Capability enhancements.

**5.3.2.3.13. Mail Groups – No Changes**

No planned additions or modifications to mail groups identified at this time for the VistA Auto

Release Capability enhancements.

**5.3.2.3.14. Security Keys – No Changes**

No security keys added or modified to support the VistA Auto Release Capability enhancement are anticipated at this time.

**5.3.2.3.15. Options**

Each of the options affected by the functionality being designed are listed below in the tables. A

short description of the changes that will be made to the options affected is included.

Note: Once developed, this can be captured directly from VA FileMan DD after the fact.

**Table 15: Option LA7 UI SETUP**

|  |  |
| --- | --- |
| **Options** | **Instructions** |
| Option Name (MENU TEXT field) | LA7 UI SETUP Lab Universal Interface Setup |
| Data Passing | NAME: LA7 UI SETUP MENU TEXT: Lab Universal Interface  Setup  CREATOR: PACKAGE: AUTOMATED LAB INSTRUMENTS  ROUTINE: EN^LA7UCFG UPPERCASE MENU TEXT: LAB UNIVERSAL INTERFACE SETUP |
| Menu Text Description | DESCRIPTION: Allows configuring Lab Universal Interface entries (LA7UI\*)  in LA7 MESSAGE PARAMETER file (#62.48) and corresponding entries in  AUTO INSTRUMENT file (#62.4) which use the Lab Universal Interface. |
| Option Type | TYPE: run routine |
| Option Definition |  |
| Current Entry Action  Logic | None |
| Modified Entry Action Logic (Changes are in bold) | None |
| Current Exit Action Logic | None |

|  |  |
| --- | --- |
| **Options** | **Instructions** |
| Modified Exit Action Logic  (Changes are in bold) | None |

**Table 16: Option LA7 UI SETUP**

|  |  |
| --- | --- |
| **Options** | **Activities** |
| **Option Name** | LA7 UI SETUP Lab  Universal Interface Setup |
| **Enhancement**  **Category** | New Modify Delete No Change |
| **Associated Menu Options that will invoke this reference** | LA7 MAIN MENU Lab Universal Interface Menu |
| **Data Passing** | Input Output Both Global Reference  Local Reference |
| **Menu Text**  **Description** |  |
| **Option Type** | Edit Print Menu Inquire  Action Run Routine Other |
| **Associated Routine** |  |
| **Option Definition** |  |

**Table 17: Option LRLLE DFT**

|  |  |
| --- | --- |
| **Options** | **Instructions** |
| Option Name (MENU TEXT field) | LRLLE DFT Edit the default parameters Load/Work list |
| Data Passing | NAME: LRLLE DFT MENU TEXT: Edit the default parameters  Load/Work list.  CREATOR: POSTMASTER LOCK: LRLIASON PACKAGE: LAB SERVICE  DIC {DIC}: LRO(68.2, DIC(0): AEMQ DIE: LRO(68.2,  DR {DIE}: [LRLLDFT] TIMESTAMP OF PRIMARY MENU:  54224,27713 UPPERCASE MENU TEXT: EDIT THE DEFAULT PARAMETERS LO |
| Menu Text Description | DESCRIPTION: This function allows the user to edit the default parameters of  the Load/Work list file so that the preparation of load or work lists can reflect the way the tests are being done on the instrument or at the bench. |
| Option Type | TYPE: edit |

|  |  |
| --- | --- |
| **Options** | **Instructions** |
| Option Definition |  |
| Current Entry Action  Logic | None |
| Modified Entry Action Logic (Changes are in bold) | None |
| Current Exit Action Logic | None |

**Table 18: Option LRLLE DFT**

|  |  |
| --- | --- |
| **Options** | **Activities** |
| **Option Name** |  |
| **Enhancement**  **Category** | New Modify Delete No Change |
| **Associated Menu Options that will invoke this reference** | LRSUPERVISOR Supervisor menu |
| **Data Passing** | Input Output Both Global Reference  Local Reference |
| **Menu Text**  **Description** |  |
| **Option Type** | Edit Print Menu Inquire  Action Run Routine Other |
| **Associated Routine** |  |
| **Option Definition** |  |

**5.3.2.3.16. Protocols**

None

**5.3.2.3.17. Remote Procedure Call (RPC) – No Changes**

No Remote Procedure Calls added or modified to support the VistA Auto Release Capability enhancement.

**5.3.2.3.18. Constants Defined in Interface – No Changes**

Not Applicable

**5.3.2.3.19. Variables Defined in Interface – Not Applicable**

Not Applicable

**5.3.2.3.20. Types Defined in Interface – Not Applicable**

Not Applicable

**5.3.2.3.21. GUI – Not Applicable**

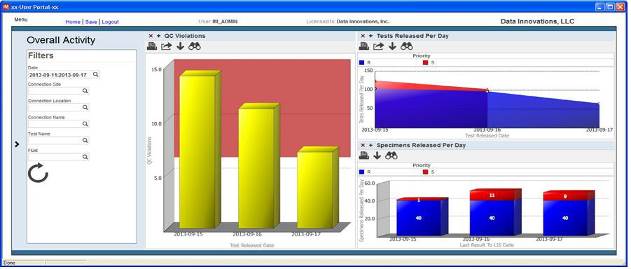
**5.3.2.3.21.1. VistA Auto Release**

No Graphical User Interfaces added or modified to support the VistA Auto Release Capability enhancement.

**5.3.2.3.21.2. Data Innovations – Instrument Manager**

The Autoverification COTS product, Instrument Manager, uses a graphical user interface to monitor autoverification processing, building rules, and for techs to manually verify results.

Instrument Manager: Monitoring Dashboard – example



Instrument Manager: Abnormal Results requiring manual verification.

Image redacted

**5.3.2.3.22. Modified Form – Not Applicable**

No Modified Forms added or modified to support the VistA Auto Release Capability enhancement.

**5.3.2.3.23. Events – Not Applicable**

Not Applicable

**5.3.2.3.24. Methods – Not Applicable**

Not Applicable

**5.3.2.3.25. Special References – Not Applicable**

Not Applicable

**5.3.2.3.26. Class Events – Not Applicable**

Not Applicable

**5.3.2.3.27. Class Methods – Not Applicable**

Not Applicable

**5.3.2.3.28. Class Properties – Not Applicable**

Not Applicable

**5.3.2.3.29. Uses Clause – Not Applicable**

Not Applicable

*.*

**5.3.2.3.30. Forms – Not Applicable**

Not Applicable

**5.3.2.3.31. Functions – Not Applicable**

Not Applicable

**5.3.2.3.32. Dialog – Not Applicable**

Not Applicable – No Changes

**5.3.2.3.33. Help Frame**

No anticipated changes needed for the VistA Auto Release Capability.

**5.3.2.3.34. HL7 Application Parameter – No changes**

See the VistA Document Library for Laboratory Universal Interface and select the Data Innovations Implementation guide at

**5.3.2.3.35. HL7 Logical Link – No changes**

Not Applicable

**5.3.2.3.36. COTS Interface**

The VistA Auto Release Capability leverages the existing interface between VistA, using the VistA Laboratory Universal Interface, and Data Innovations. Modifications to two message types the ORM, Order Message and the ORU, Results Message will be implemented as a result of

these enhancements. However, overarching implementation and operations of this interface will not change.

This section describes the HL7 changes anticipated to implement the requirements to support the

VistA Auto Release Capability.

**Table 19: COTS Interface**

**COTS Interface Instructions**

|  |  |
| --- | --- |
| **COTS Interface** | **Instructions** |
| **Communication Method** | TCP/IP using HL7 Standards using MLLP |
| **Application Interface** | VistA Laboratory Universal Interface |

**5.4. Network Detailed Design**

No new network infrastructure required to support the VistA Auto Release Capability and interface to the Data Innovations, Instrument Manager.

Messaging on the VA networks between VistA Laboratory’s Universal Interface and the Data Innovations Middleware, Instrument Manager exists today. Current order/results volume will not change.

**5.5. Service Oriented Architecture / ESS Detailed Design** Not Applicable, the VistA Auto Release Capability does not add to provided and/or consumed services.

**6. External System Interface Design**

The VistA Legacy Laboratory, Universal Instrument Interface, will be enhanced to include provider contact information in the Order messages to the Instrument Manager and an indicator will be added to the result messages from the Instrument Manager to indicate results autoverified.

**6.1. Interface Architecture**

Current Health Level 7 (HL7) messaging constructs, used by the VistA Laboratory Universal

Interface Module, will be modified. See sections 5.3.2.3.1, 5.3.2.3.2, and 5.3.2.3.3.

More details about the VistA Laboratory Universal Interface Module can be found on the VistA Document Library (VDL) at .

**6.2. Interface Detailed Design**

**6.2.1.1.1.1. Interface – ORM Message Changes**

The ORM Message will be modified to include provider contact information. This will be used by technologist who need to contact a provider during the verification of a laboratory result. Planned changes noted below in  **bold**.

VITROS-O-7950760502

LA7 UI Message Display Msg #1728 -

[\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Message Statistics

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*]

CONFIGURATION:

LA7UI1 DATE/TIME ENTERED: MAR 17, 2015@07:25:13

INSTRUMENT NAME: VITROS-O-

7950760502 MESSAGE CONTROL ID: 500315229

MESSAGE NUMBER:

1728 MESSAGE TYPE: ORM PROCESSING ID:

TRAINING SENDING APPLICATION: LA7LAB

STATUS: AWAITING ACK TYPE: OUTGOING

VERSION ID: 2.2

[\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Error Message

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*]

Found]

[None

[\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\* Text of Message

\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*\*]

MSH|^~\&|LA7LAB||||||ORM^O01||T|2.2

MSH-1 = |

MSH-2 = ^~\& MSH-3 = LA7LAB MSH-9 = ORM^O01

MSH-9-1 = ORM MSH-9-2 = O01

MSH-11 = T MSH-12 = 2.2

PID|1||53^1^M11||DUCK^DONALD^JOHN||19580626|M||2106-3- SLF^WHITE^HL70005^2106-3^WHITE^CDC|||||||||999-99-9999

PID-1 = 1

PID-3 = 53^1^M11

PID-3-1 = 53

PID-3-2 = 1

PID-3-3 = M11

PID-5 = DUCK^DONALD^JOHN PID-5-1 = DUCK

PID-5-2 = DONALD PID-5-3 = JOHN PID-7 = 19580626

PID-8 = M

PID-10 = 2106-3-SLF^WHITE^HL70005^2106-3^WHITE^CDC PID-10-1 = 2106-3-SLF

PID-10-2 = WHITE PID-10-3 = HL70005

PID-10-4 = 2106-3

PID-10-5 = WHITE PID-10-6 = CDC

PID-19 = 999-99-9999

PV1|1|O|LAB PV1-1 = 1

PV1-2 = O

PV1-3 = LAB

ORC|NW|7950760502|7950760502||||||20150317|||235- VA500^PROVIDER^ONE^^^^^99VA4||^WPN^PH^^^^^^^^^414 384

2000~^WPN^BP^^^^^^^^^777 12345

ORC-1 = NW

ORC-2 = 7950760502

ORC-3 = 7950760502

ORC-9 = 20150317

ORC-12 = 235-VA500^PROVIDER^ONE^^^^^99VA4

ORC-12-1 = 235-VA500

ORC-12-2 = PROVIDER ORC-12-3 = ONE

ORC-12-8 = 99VA4

ORC-14 = ^WPN^PH^^^^^^^^^414 384 2000~^WPN^BP^^^^^^^^^777 12345

ORC-14.1-2 = WPN ORC-14.1-3 = PH

ORC-14.1-12 = 414 384 2000

ORC-14.2-2 = WPN ORC-14.2-3 = BP

ORC-14.2-12 = 777 12345

OBR|1|7950760502|7950760502|GLU^GLUCOSE^99001^83756.0000^Glucose^99VA64|||

20150317071345-0600|||||||20150317071358-0600|SER&Serum&H

--->L70070&72&SERUM&99VA61&&5.2&SERUM|235-VA500^PROVIDER^ONE^^^^^99VA4

|^WPN^PH^^^^^^^^^414 384 2000~^WPN^BP^^^^^^^^^777

12345|VITROS|\S\\S\11\S\3150317\S\502\S\CH 0317

502\S\7950760502||||||||^^^^^R

OBR-1 = 1

OBR-2 = 7950760502

OBR-3 = 7950760502

OBR-4 = GLU^GLUCOSE^99001^83756.0000^Glucose^99VA64

OBR-4-1 = GLU

OBR-4-2 = GLUCOSE OBR-4-3 = 99001

OBR-4-4 = 83756.0000

OBR-4-5 = Glucose

OBR-4-6 = 99VA64

OBR-7 = 20150317071345-0600

OBR-14 = 20150317071358-0600

OBR-15-1 = SER OBR-15-2 = Serum OBR-15-3 = HL70070

OBR-15-4 = 72

OBR-15-5 = SERUM OBR-15-6 = 99VA61

OBR-15-8 = 5.2

OBR-15-9 = SERUM

OBR-16 = 235-VA500^PROVIDER^ONE^^^^^99VA4

OBR-16-1 = 235-VA500

OBR-16-2 = PROVIDER OBR-16-3 = ONE

OBR-16-8 = 99VA4

OBR-17 = ^WPN^PH^^^^^^^^^414 384 2000~^WPN^BP^^^^^^^^^777 12345

OBR-17.1-2 = WPN OBR-17.1-3 = PH

OBR-17.1-12 = 414 384 2000

OBR-17.2-2 = WPN OBR-17.2-3 = BP

OBR-17.2-12 = 777 12345

OBR-18 = VITROS

OBR-19 = ^^11^3150317^502^CH 0317 502^7950760502

OBR-27-6 = R

NOTE: '--->' indicates continuation of previous line. Enter RETURN to continue or '^' to exit:

NAME: PROVIDER,ONE INITIAL:

ODP ACCESS CODE: <Hidden>

FILE MANAGER ACCESS CODE: # DELETE ALL MAIL ACCESS: NO DELETE KEYS AT TERMINATION: NO

VERIFY CODE never expires: Yes TITLE: LAB

DEVELOPER DATE VERIFY CODE LAST CHANGED: DEC 9,2014

VERIFY CODE: <Hidden> NICK NAME: DOC OFFICE PHONE: 555 384 2000

VOICE PAGER: 555 358 21345 DIGITAL PAGER: 777 12345

**7. Human-Machine Interface**

There are no additional human-machine interfaces for the VistA Auto Release Capability. Current, Universal Instrument Interface functionality of VistA Legacy Laboratory module and Health Level 7 module are leveraged. The enhancements are background processing and changes to the interface. Current fields in VistA will be used to indicate autoverified results or externally verified results via proxy users.

The Autoverification system is a COTS product by Data Innovations called the Instrument Manager. This tool is approved for use and documented on the VA’s Technical Reference Model (TRM).

**8. Security and Privacy**

**8.1. Security**

No additional security concerns for the VistA Auto Release enhancement capability, all controls currently implemented for VistA apply.

**8.2. Privacy**

No additional privacy concerns for the VistA Auto Release enhancement capability, all controls currently implemented for VistA apply. For the COTS solution, Data Innovations “Instrument Manager” there are existing Technical Reference Model (TRM) constraints.

See TRM decision at

Veterans Affairs (VA) users must ensure VA sensitive data is protected properly in accordance with VA Handbook 6500 and the Federal Information Security Management Act (FISMA). Per VA Handbook 6500, FIPS 140-2 certified encryption must be used to protect and encrypt data in transit and at rest if Personally Identifiable Information/Protected Health Information/VA (PII/PHI/VA) sensitive information is involved. If FIPS 140-2 certified encryption is not used, additional mitigating

controls must be documented in an approved System Security Plan (SSP). In addition, the technology must be implemented within the VA production network (not in a Demilitarized Zone (DMZ)), unless the specific uses and instances of the technology are approved by the Enterprise Security Change Control Board (ESCCB). All instances of deployment using this technology should be reviewed by the local ISO (Information Security Officer) to ensure compliance with VA Handbook 6500. In cases

where the technology is used for external connections, a full ESCCB review is required in accordance

VA Directive 6004, VA Directive 6517 and VA Directive 6513.

A VistA Laboratory Enhancement Privacy Threshold Analysis was submitted in February 2015. Link to PTA Form:

**Attachment A – Approval Signatures**

This section is used to document the approval of the System Design Document. The review should be conducted face to face where signatures can be obtained ‘live’ during the review. If unable to conduct a face-to-face meeting then it should be held via LiveMeeting and concurrence captured during the meeting. The Scribe should add /es/name by each position cited. Example provided below.

The Chair of the governing Integrated Project Team (IPT), Business Sponsor, IT Program

Manager, and Project Manager are required to sign.

Signed:

VistA Laboratory Enhancements Integrated Project (IPT) Chair and Project Manager

Signed:

VistA Laboratory Enhancements Project Business Sponsor

Signed:

VistA Laboratory Enhancements Project IT Program Manager

**A. Additional Information**

This section provides additional information that supplements the design specification.

**A.1. RTM**

RTM is under development and will be located on TSPR .

**A.2. Packaging and Installation**

FORUM Patch Module will be used for distribution of VistA enhancements using a KIDs build.

**A.3. Design Metrics**

Not Applicable

**A.4. Required Technical Documents**

The following documents will be submitted for review to support proper approval:

 Conformance Validation Statement (CVS) - Section 508

 Systems Engineering and Design Review (SEDR) process

 One-VA TRM

**A.5. Attach Documents**

*Once the SDD is approved, submit the AERB Design Compliance Decision Certificate as an attachment to the completed and approved SDD.*

**A.6. Autoverification Test Planning by Innovations Site – Kansas City VA Medical Center**

**A.1.6 Autoverification Test Plan**

Link to KCVAMC Test Plan:

**A.2.6 Sample Testing**

Link to KCVAMC Testing Rules: