NEMSIS v3.5.0 Compliance Process— "Receive and Process" Software

Date

December 3, 2019 (process changes and v3.5.0 testing)
February 25, 2020 (Updated web service URLs)

Compliance Testing Resources

Compliance Resources (including Pre-Testing Package):
https://nemsis.org/technical-resources/version-3/v3-compliance/

Compliant Software and Software in Compliance Testing:
https://nemsis.org/technical-resources/version-3/v3-compliant-software-and-compliance-testing-status/

NEMSIS TAC Compliance Web Service for v3.5.0:
https://compliance.nemsis.org/nemsisWs.wsdl

NEMSIS TAC Compliance Testing Automation Web Service:
https://cta.nemsis.org/ComplianceTestingWs/endpoints/compliancetestingws.wsdl

NEMSIS TAC Compliance Testing Automation application:
https://cta.nemsis.org/ComplianceTestingWebapp

Overview

Products seeking NEMSIS v3 compliance must be in final form, ready for market, installation-ready, and versioned. NEMSIS v3 compliance testing encompasses two processes called "**Collect Data**" and "**Receive and Process Data**". This guide defines the compliance testing process for "Receive and Process Data" software: products typically used at regional and state levels that receive and process agency demographics and patient care reports from other NEMSIS-compliant software.

General Requirements for **Receive and Process Data**:

- Create and validate the StateDataSet
- Receive and process the Demographic dataset and EMS dataset via web service
- Send the StateDataSet, Demographic dataset, and EMS dataset via web service (full dataset and national-only dataset)
- Receiving an updated Demographic dataset triggers a Demographic dataset submission

As a vendor proceeds with becoming compliant, its progress and status will be updated as milestones are achieved. The status of a vendor can be found on the NEMSIS Web site in Technical Resources / <u>V3 Compliant Software Testing Status</u>. Milestone requirements for each status are as follows:

☐ 1. **Application Received**: The NEMSIS TAC has received an application from the vendor.

☐ 2. **Test Cases Completed:** The NEMSIS TAC has submitted all active test cases to the vendor's product via web services, and the vendor's product has processed all test cases and submitted them to the NEMSIS TAC compliance testing application. The NEMSIS TAC has verified the correctness of the test cases.

☐ 3. **Testing Web Conference Completed**: The vendor has successfully demonstrated all product functionality required in the testing web conference with the NEMSIS TAC.

Receive and Process Data

Products that **Receive and Process Data** must demonstrate the ability to receive and process the NEMSIS v3 DEMDataSet and EMSDataSet via web services. Processing a dataset includes structural validation (XSD) and business rules validation (Schematron) of a dataset received. Products must also demonstrate the ability to send data (all elements and national elements only) via web services.

Overview of Requirements

- The software is able to properly interoperate using the NEMSIS v3 Web Service standard.
- The full NEMSIS v3 StateDataSet standard is implemented in the user interface.
- XML Schema (XSD) validation is used when a StateDataSet record is finalized.
- Schematron validation is used for business rules when a StateDataSet record is finalized.
- Natural language expressions of StateDataSet validation warnings and errors are presented to the user.
- The software is able to send State data, including change log notes.
- The software is able to receive Demographic and EMS data.
- XML Schema (XSD) validation is used when Demographic and EMS data are received.
- Schematron validation is used for business rules when Demographic and EMS data are received.
- The software is able to validate received data using multiple Schematron files (national, state, etc.).
- The software is able to send Demographic and EMS data (all elements and national elements only).

Pre-Testing

Before applying for compliance, please review the pre-testing materials to ensure you are fully prepared. While the pre-testing process is "on your own," it mirrors the active testing process, and completing these steps will significantly speed up testing. The NEMSIS TAC is available to offer technical assistance to any vendor, regardless of compliance testing status.

Use the **Pre-Testing Package** (see Compliance Testing Resources, p. 1) to complete the following:

☐ 1. **Setup:** Configure the pre-testing environment in the software.

    a. Configure the software to submit data to the NEMSIS TAC Compliance Web Service (see Compliance Testing Resources, p. 1).

☐ 2. **Schematron Rules:** The software must allow for dynamically adding Schematron rules.

    a. Deploy the most current national Schematron schemas for v3.5.0 in the software.
    b. Deploy the additional files from the "Schematron" directory of the Pre-Testing Package. They must be loaded dynamically and not built into the software.

☐ 3. **StateDataSet:** The software must create a StateDataSet:

    a. Implement a user interface for the creation and maintenance of StateDataSet.

    b. Implement a user interface element that allows a State Data Manager to record change notes prior to sending an updated StateDataSet.

    c. Enter the StateDataSet test case manually using "STATE-1_v350.html" to create the state configuration.

    d. Verify that the StateDataSet passes XML Schema (XSD) and Schematron validation. The software should automatically perform all XSD and Schematron validation. Present natural language expressions of validation warnings and errors to the user.

    e. Submit the StateDataSet to the NEMSIS TAC Compliance Web Service. Include the change notes in the <additionalInfo> element of the SOAP message. Verify that the software retrieved the submission status for the test case.

☐ 4. **Custom Elements:** The software must support custom elements.

    a. Implement the ability to receive, process, and send the custom elements defined in the StateDataSet in the Pre-Testing Package. (Support for custom elements will be tested in the test cases.)

    b. Custom elements must be included in the XML export of the software.

☐ 5. **Test Case Submission:** Submit the DEMDataSet and EMSDataSet test cases from the Pre-Testing Package to the software's web service.

    a. Submit "DEM-1_v350.xml" from the "xml/full" folder. Retrieve the submission status. Verify that the software performed XSD and Schematron validation and accepted the submission.

    b. Submit each of the five "EMS" test cases from the "xml/full" folder. Retrieve the submission statuses. Verify that the software performed XSD and Schematron validation and accepted the submissions.

    c. Submit each of the test cases from the "xml/fail" folder. Retrieve the submission statuses and verify that the software performed XSD and Schematron validation and rejected the submissions.

☐ 6. **Web Service Submissions—All Elements:** The software must send data (all elements) via web services.

    a. Verify that the software automatically submitted data (all elements) to the NEMSIS TAC Compliance Web Service and retrieved submission statuses for all test cases from the "xml/full" folder of the Pre-Testing Package.

☐ 7. **Web Service Submissions—National Elements:** The software must send data (national elements only) via web services.

   a. Reconfigure the software to submit data (national elements only) to the NEMSIS TAC Compliance Web Service.
   b. Resubmit the test cases from the "xml/full" folder to the software's web service.
   c. Verify that the software automatically submitted data (national elements only) to the NEMSIS TAC Compliance Web Service and retrieved submission statuses for all test cases.

Application

Submit the NEMSIS Compliance Application to begin the compliance testing process. The NEMSIS TAC will add the vendor to the V3 Compliant Software Testing Status page on the NEMSIS Web site.

Active Testing Process

The NEMSIS TAC will provide an Active Testing Package with instructions.

The applicant must complete the following items using the Active Testing Package:

☐ 1. **Setup:** Configure the active testing environment in the software:

   a. Configure the software to submit data—all data elements—to the NEMSIS TAC Compliance Testing Automation Web Service.

☐ 2. **Schematron Rules:**

   a. Deploy the most current national Schematron schemas and the schemas from the "Schematron" directory of the Active Testing Package.

☐ 3. **StateDataSet:**

   a. Enter the StateDataSet test case from the Active Testing Package manually using "STATE-1_v350.html" to create the state configuration.
   b. Verify that the StateDataSet passes XML Schema (XSD) and Schematron validation. The software should automatically perform all XSD and Schematron validation. Present any warnings or errors to the user using natural language.
   c. Submit the StateDataSet to the NEMSIS TAC Compliance Web Service. Include the change notes in the <additionalInfo> element of the SOAP message. Verify that the software retrieved the submission status for the test case.

☐ 4. **Custom Elements:**

       a. Implement the ability to receive, process, and send all custom elements defined in the StateDataSet in the Active Testing Package.

☐ 5. **Web Services Account:** The NEMSIS TAC will select an agency from the StateDataSet for which it will submit test data to the software's web service.

       a. Create a web service account for the NEMSIS TAC with permission to submit DEMDataSet and EMSDataSet data for the specified agency.

       b. Provide the web service username, password, organization, and WSDL or submission URL to the NEMSIS TAC.

The NEMSIS TAC will complete the following to verify that the software's web service is compliant with the national WSDL:

☐ 1. **QueryLimit:** Using the national WSDL, the NEMSIS TAC will submit a QueryLimit request. The NEMSIS TAC will validate the response.

☐ 2. **SubmitData:** Using the national WSDL, the NEMSIS TAC will submit the following SubmitData requests and validate the responses:

       a. A request with an incorrect username or password.

       b. One valid DEMDataSet submission.

       c. Five valid EMSDataSet submissions.

       d. Two invalid DEMDataSet submissions.

       e. Two invalid EMSDataSet submissions.

☐ 3. **RetrieveStatus:** Using the national WSDL, the NEMSIS TAC will submit RetrieveStatus requests for each SubmitData request. The NEMSIS TAC will verify the responses.

☐ 4. **Web Service Submissions—All Elements:** The NEMSIS TAC will verify that the software submitted all valid test cases to the NEMSIS TAC Compliance Testing Automation Web Service. The NEMSIS TAC will review the validation and comparison reports. If issues are found, the NEMSIS TAC will notify the vendor to review the reports in the Compliance Testing Automation application.

After completing the above steps, the NEMSIS TAC will instruct the vendor to reconfigure the software to submit data—national elements only—to the NEMSIS TAC Compliance Testing Automation Web Service. The NEMSIS TAC will then perform the following:

☐ 1. **SubmitData:** The NEMSIS TAC will resubmit the valid test cases.

☐ 2. **Web Services Submissions—National Elements Only:** The NEMSIS TAC will verify that the software submitted the test cases—national elements only—to the NEMSIS TAC Compliance Testing Automation Web Service. The NEMSIS TAC will review the validation and comparison reports. If issues are found, the NEMSIS TAC will notify the vendor to review the reports in the Compliance Testing Automation application.

      a. Note that the NEMSIS TAC Compliance Testing Automation Web Service uses the "schemaLocation" attribute in the root element of the data (DEMDataSet or EMSDataSet) to determine whether the test submission is for the full schema or for national elements only. If the schemaLocation attribute contains the string "NAT", the web service processes the test case as a national-elements-only test case. Example schema locations for national elements only are as follows:

          i. DEMDataSet (latest 3.5.0 build): [http://nemsis.org/media/nemsis_v3/release-3.5.0/XSDs/NEMSIS_**NAT**_XSDs/DEMDataSet_v3.xsd](http://nemsis.org/media/nemsis_v3/release-3.5.0/XSDs/NEMSIS_NAT_XSDs/DEMDataSet_v3.xsd)

         ii. DEMDataSet (specific 3.5.0 build): [http://nemsis.org/media/nemsis_v3/3.5.0.191130CP1/XSDs/NEMSIS_**NAT**_XSDs/DEMDataSet_v3.xsd](http://nemsis.org/media/nemsis_v3/3.5.0.191130CP1/XSDs/NEMSIS_NAT_XSDs/DEMDataSet_v3.xsd)

        iii. EMSDataSet (latest 3.5.0 build): [http://nemsis.org/media/nemsis_v3/release-3.5.0/XSDs/NEMSIS_**NAT**_XSDs/EMSDataSet_v3.xsd](http://nemsis.org/media/nemsis_v3/release-3.5.0/XSDs/NEMSIS_NAT_XSDs/EMSDataSet_v3.xsd)

        iv. EMSDataSet (specific 3.5.0 build): [http://nemsis.org/media/nemsis_v3/3.5.0.191130CP1/XSDs/NEMSIS_**NAT**_XSDs/EMSDataSet_v3.xsd](http://nemsis.org/media/nemsis_v3/3.5.0.191130CP1/XSDs/NEMSIS_NAT_XSDs/EMSDataSet_v3.xsd)

☐ 3. **Demographic Updates:** The NEMSIS TAC will change the value of a national element in the Demographic test case and resubmit it. The NEMSIS TAC will verify that the software submitted the updated test case to the NEMSIS TAC Compliance Web Service within 24 hours.

Testing Web Conference

Schedule a web conference with the NEMSIS TAC compliance testing staff. The web conference may be held any time after the applicant has entered the StateDataSet test case. During the web conference, the NEMSIS TAC will ask the vendor to demonstrate the following:

☐ 1. **Data Entry User Interface for StateDataSet:**

      a. The NEMSIS TAC will ask the vendor to demonstrate one or more state data entry screens. The NEMSIS TAC will verify that the information shown matches the StateDataSet test case from the pre-testing package.

Certification

After a vendor has successfully passed compliance testing, the NEMSIS TAC will do the following:

☐ 1. The NEMSIS TAC will move the vendor to the "Compliant Software for State Systems" list on the V3 Compliant Software Testing Status page of the NEMSIS Web site.

☐ 2. The NEMSIS TAC will send a letter to the vendor announcing the successful completion of compliance testing, along with links to compliance logos that the vendor may use to indicate that the software is certified NEMSIS compliant.

Maintaining Compliance

Once initial NEMSIS compliance is obtained, maintenance of NEMSIS compliance status will require retesting within two years of the last successful compliance test. Prior to expiration, the vendor should repeat the compliance testing process in order to maintain compliance status. The same process is used for initial certification and recertification. The NEMSIS TAC develops new pre-testing and active testing cases annually. The vendor should complete the testing process using the test cases in effect at the time of re-certification.

In addition, a key component of NEMSIS compliance includes participation in semimonthly NEMSIS V3 implementation webinars and representation at the annual NEMSIS V3 implementation meeting, traditionally held in Park City, Utah. The NEMSIS TAC will begin tracking (and reporting) attendance at these activities beginning in 2020. All products testing for NEMSIS compliance in 2020 will be required to attend 70% of scheduled semimonthly NEMSIS V3 implementation webinars and provide at least one representative at the annual NEMSIS V3 implementation meeting to maintain compliance status. This attendance requirement will be enforced beginning in 2021. A software certifying as NEMSIS compliant will have one full year from the date of initial compliance to complete the attendance requirement.

Appendix: Additional Resources

Vendors should use the following resources for product development prior to compliance testing, or during compliance testing if issues are identified by the NEMSIS TAC. All are found within the Technical Resources section of the NEMSIS Web site.

Data Dictionaries and XSDs

Schematron

Web Services

Additional Guides:
>   Custom Elements
>   Not Values
>   Pertinent Negatives
>   Demographic Dataset Submission
>   GNIS Codes
>   UUIDs
>   Database Scripts

NEMSIS TAC Validator Web Service for v3.5.0:
https://validator.nemsis.org/nemsisWs.wsdl