NEMSIS v3.4.0 Compliance Process

Date

April 19, 2012 (Initial)

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January 22, 2018 (Automated testing of "Receive and Process Data" products)

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 v3.4.0:

https://nemsis.org/NemsisV3ComplianceTest4R2/NemsisWsService?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**".

General Requirements for **Collect Data**:

- Data entry for the Demographic dataset and EMS dataset
- XML Schema (XSD) and Schematron validation when a record is finalized for the Demographic dataset and EMS dataset
- Send the Demographic dataset and EMS dataset via web service
- Modification of Demographics triggers a Demographic dataset submission
- Custom elements implemented in the user interface and dataset submission for the Demographic dataset and EMS dataset

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

- Receive and process the Demographic dataset and EMS dataset via web service
- Send the 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 / V3 Compliant Software Testing Status. Milestone requirements for each status are as follows:

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

☐ 2. **Pre-Testing**: The vendor is ensuring components are properly implemented.

   a. Pre-Testing cases, software interface, Schematron implementation, and other items will be reviewed by the NEMSIS TAC and the vendor via webinar.

   Note: Vendors already compliant do not need to complete Pre-Testing for recertification.

☐ 3. **Active Testing**: The NEMSIS TAC and the vendor are actively evaluating and validating test cases results.

   b. Test cases, Schematron, data export, and other items will be reviewed by the NEMSIS TAC and the vendor.

Collect Data

Products that **Collect Data** must demonstrate the implementation of all NEMSIS v3 DEMDataSet and EMSDataSet elements, implementation of custom elements, data validation at record finalization, and XML representation of the data. Products must also demonstrate the ability to send data via web services.

Overview of Requirements

1. The full NEMSIS v3 Demographic standard is implemented in the user interface.
2. The full NEMSIS v3 EMS standard is implemented in the user interface.
3. The software is capable of implementing custom elements as provided in the test cases.
4. XML Schema (XSD) validation is used when a Demographic record is finalized.
5. XML Schema (XSD) validation is used when an EMS record is finalized.
6. Schematron validation is used for business rules when a Demographic record is finalized.
7. Schematron validation is used for business rules when an EMS record is finalized.
8. The software is able to validate data using multiple Schematron files (national, state, etc.).
9. The software is able to properly submit data using the NEMSIS v3 Web Service standard.

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.

Pre-Testing Check List

*Note: Vendors already compliant do not need to complete Pre-Testing for recertification.

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. (Optional) To help vendors set up their software with a realistic environment for compliance testing, the Pre-Testing Package contains a StateDataSet. The vendor may use the information in the StateDataSet to configure the software as if it is being set up for use in a particular state. All test cases in the Pre-Testing package have been designed to be consistent with the information in the StateDataSet.

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

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

      a. Implement 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.

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

      a. Deploy the most current national Schematron schemas for v3.4.0 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.

☐ 4. **DEMDataSet and EMSDataSet Test Cases**: All DEMDataSet and EMSDataSet test cases must be entered into the system by the applicant and available to the NEMSIS TAC for review.

      a. Implement all DEMDataSet and EMSDataSet elements in the software user interface.

      b. Enter the test cases for DEMDataSet and EMSDataSet manually as follows:
         Step 1. Use the "DEM-1-FullSet_v340.html" test case to create the agency.
         Step 2. Use the five "EMS" test cases to create five PCRs within the agency.

      c. Each test case must remain in the system for verification by the NEMSIS TAC.

☐ 5. **Test Case XML Files**: The software must generate NEMSIS XML data.

      a. Generate XML exports of the test cases entered in the previous step.

      b. Verify that the files pass XSD and Schematron validation. The software should automatically perform all XSD and Schematron validation.

      c. Compare the XML files to the reference XML files in the "xml/full" folder of the Pre-Testing Package. Resolve any unexpected differences between the software-generated XML files and the Pre-Testing Package XML files.

☐ 6. **Web Service Submissions:** The software must send data via web services.

      a. Verify that the software automatically submitted data to the NEMSIS TAC Compliance Web Service and retrieved submission statuses.

Pre-Testing Web Conference

After completing the Pre-Testing Check List, schedule a web conference with the NEMSIS TAC compliance testing staff. During the web conference, the NEMSIS TAC will ask the vendor to demonstrate the following:

☐ 1. **Data Entry User Interface:**

    a. The NEMSIS TAC will ask the vendor to demonstrate one or more demographic data entry screens. The NEMSIS TAC will verify that the information shown matches the DEMDataSet test case.

    b. The NEMSIS TAC will ask the vendor to show one or more EMS data entry screens for each of the five EMSDataSet test cases. The NEMSIS TAC will verify that the information shown matches the EMSDataSet test cases.

☐ 2. **Web Services:**

    a. The NEMSIS TAC will verify that the NEMSIS TAC Compliance Web Service received all test cases and that all test cases passed XSD and Schematron validation.

☐ 3. **Demographic Dataset Update:**

    a. The NEMSIS TAC will instruct the vendor to change the value of a national element in demographics. The NEMSIS TAC will verify that the software automatically sends an updated DEMDataSet to the NEMSIS TAC Compliance Web Service within 24 hours. (It may take up to 24 hours after the webinar to verify this capability.)

☐ 4. **Custom Elements:**

    a. The NEMSIS TAC will ask the vendor to show the DEMDataSet and EMSDataSet custom data elements in the user interface. The NEMSIS TAC will verify that the custom elements are implemented correctly.

☐ 5. **Schematron:** Each Schematron file in the Pre-Testing Package has one warning-level assertion and one error-level assertion.

    a. The NEMSIS TAC will instruct the vendor to change data in the demographic record in order to trigger a Schematron error. The NEMSIS TAC will verify that the software displays the error and prevents the record from being completed/finalized

    b. The NEMSIS TAC will instruct the vendor to change data in the demographic record in order to trigger a Schematron warning. The NEMSIS TAC will verify that the software displays the warning but allows the record to be completed/finalized).

    c. The NEMSIS TAC will instruct the vendor to change data in an EMS record in order to trigger a Schematron error. The NEMSIS TAC will verify that the software displays the error and prevents the record from being completed/finalized.

    d. The NEMSIS TAC will instruct the vendor to change data in an EMS record in order to trigger a Schematron warning. The NEMSIS TAC will verify that the software displays the warning but allows the record to be completed/finalized).

☐ 6. **Ready for Market:** The NEMSIS TAC will review the software to determine whether it is in final form, ready for market, installation-ready, and versioned.

Active Testing Process

An Active Testing Package with instructions will be provided once the Pre-Testing Check List is complete and has been reviewed by the NEMSIS TAC via the Pre-Testing Web Conference.

The following items will need to be completed by the applicant:

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

    a. (Optional) The active testing package contains a StateDataSet. The vendor may use the information in the StateDataSet to configure the software as if it is being set up for use in a particular state.

    b. Configure the software to submit to the NEMSIS TAC Compliance Testing Automation Web Service.

☐ 2. **Custom Elements:**

    a. Implement all custom elements defined in the StateDataSet in the Active Testing Package.

☐ 3. **Schematron Rules:**

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

☐ 4. **DEMDataSet and EMSDataSet Test Cases:** All test cases must be entered into the system by the applicant and available to the NEMSIS TAC for review.

    a. Enter the test cases for DEMDataSet and EMSDataSet manually as follows:
        Step 1. Use the "DEM-1-FullSet_v340.html" test case to create the agency.
        Step 2. Use the five "EMS" test cases to create five PCRs within the agency.

    b. Each test case must remain in the system for verification by the NEMSIS TAC.

☐ 5. **Web Service Submissions:**

    a. Verify that the software automatically submitted data to the NEMSIS TAC Compliance Testing Automation Web Service. Note that the NEMSIS TAC Compliance Testing Automation Web Service uses the following data elements as test case keys. If the following elements do not exactly match the information provided in the Active Testing

Package, the NEMSIS TAC Compliance Testing Automation Web Service will fail to identify the test case:

  i. DEMDataSet: dAgency.02 EMS Agency Number
  ii. EMSDataSet: eResponse.03 Incident Number

☐ 6. **Test Case Verification:**

  a. Log into the NEMSIS TAC Compliance Testing Automation application.
  b. Review the Validation Report for each test case submission. Verify that it passed XSD and Schematron validation.
  c. Review the Comparison Report for each test case submission. Resolve any issues identified by the comparison report:
    • Empty line with gray background: The test case submission is missing data that is expected.
    • Non-empty line with gray background: The test case submission contains extra data that is not expected.
    • Line with yellow background: The test case submission contains data that differs from what is expected.
  d. Contact the NEMSIS TAC if technical assistance is needed to resolve issues.

Notify the NEMSIS TAC when the above items have been completed. The following will be completed by the NEMSIS TAC:

☐ 1. **Test Case Verification:** The NEMSIS TAC will verify the test cases in the NEMSIS TAC Compliance Testing Automation application.

Certification

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

☐ 1. The NEMSIS TAC will move the vendor to the appropriate "Compliant Software for EMS Agencies" 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.

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 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).

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.

Pre-Testing Check List

*Note: Vendors already compliant do not need to complete Pre-Testing for recertification.

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. (Optional) To help vendors set up their software with a realistic environment for compliance testing, the Pre-Testing Package contains a StateDataSet. The vendor may use the information in the StateDataSet to configure the software as if it is being set up for use in a particular state. All test cases in the Pre-Testing package have been designed to be consistent with the information in the StateDataSet.

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

☐ 2. **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.

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

    a. Deploy the most current national Schematron schemas for v3.4.0 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.

☐ 4. **Test Case Submission:** Submit the DEMDataSet and EMSDataSet test cases from the Pre-Testing Package to the software's web service. All test case submissions must remain in the system and available to the NEMSIS TAC for review.

    a. Submit "DEM-1-FullSet_v340.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.

☐ 5. **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.

☐ 6. **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.

After completing the Pre-Testing Check List, notify the NEMSIS TAC. The following will be completed by the NEMSIS TAC:

☐ 1. **Web Service Verification:** The NEMSIS TAC will verify that the valid test cases in the Pre-Testing Package were received by the NEMSIS Compliance Testing Web Service in both forms (all elements and national elements only) and passed validation.

Active Testing Process

An Active Testing Package will be provided once the Pre-Testing Check List is complete and has been verified by the NEMSIS TAC.

The following items need to be completed by the applicant:

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

    a. (Optional) The Active Testing Package contains a StateDataSet. The vendor may use the information in the StateDataSet to configure the software as if it is being set up for use in a particular state.

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

☐ 2. **Custom Elements:**

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

☐ 3. **Schematron Rules:**

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

☐ 4. **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 3.4.0 build): http://nemsis.org/media/nemsis_v3/release-3.4.0/XSDs/NEMSIS_**NAT**_XSDs/DEMDataSet_v3.xsd

      ii. DEMDataSet (specific 3.4.0 build): http://nemsis.org/media/nemsis_v3/3.4.0.160713CP2/XSDs/NEMSIS_**NAT**_XSDs/DEMDataSet_v3.xsd

iii. EMSDataSet (latest 3.4.0 build): http://nemsis.org/media/nemsis_v3/release-3.4.0/XSDs/NEMSIS_**NAT**_XSDs/EMSDataSet_v3.xsd

iv. EMSDataSet (specific 3.4.0 build): http://nemsis.org/media/nemsis_v3/3.4.0.160713CP2/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.

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 appropriate "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.

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
        Database Scripts

NEMSIS TAC Validator Web Service for **v3.4.0**:
https://www.nemsis.org/NemsisV3Validator4R2/NemsisWsService?wsdl