Connecting the
Data-Driven Enterprise >

Lab Guide

TDM Optional Modules

Version 6.1

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Welcome to Talend Training

Congratulations on choosing a Talend training module. Take a minute to review the following points to help you get the most from your experience.

Technical Difficulty

Instructor-Led

If you are following an instructor-led training (ILT) module, there will be periods for questions at regular intervals. However, if you need an answer in order to proceed with a particular lab, or if you encounter a situation with the software that prevents you from proceeding, don’t hesitate to ask the instructor for assistance so it can be resolved quickly.

Self-Paced

If you are following a self-paced, on-demand training (ODT) module, and you need an answer in order to proceed with a particular lab, or you encounter a situation with the software that prevents you from proceeding with the training module, a Talend Support Engineer can provide assistance. Double-click the **Live Expert** icon on your desktop and follow the instructions to be placed in a queue. After a few minutes, a Support Engineer will contact you to determine your issue and help you on your way. Please be considerate of other students and only use this assistance if you are having difficulty with the training experience, not for general questions.

Exploring

Remember that you are interacting with an actual copy of the Talend software, not a simulation. Because of this, you may be tempted to perform tasks beyond the scope of the training module. Be aware that doing so can quickly derail your learning experience, leaving your project in a state that is not readily usable within the tutorial, or consuming your limited lab time before you have a chance to finish. For the best experience, stick to the tutorial steps! If you want to explore, feel free to do so with any time remaining after you've finished the tutorial (but note that you cannot receive assistance from Tech Support during such exploration).

Additional Resources

After completing this module, you may want to refer to the following additional resources to further clarify your understanding and refine and build upon the skills you have acquired:

- Talend product documentation (help.talend.com)
- Talend Forum (talendforge.org/)
- Documentation for the underlying technologies that Talend uses (such as Apache) and third-party applications that complement Talend products (such as MySQL Workbench)

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LESSON 1

Mapping the EDI Format

This chapter discusses the following.

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Overview

Lesson Overview

This lab provides an example of how to work with complex standards like EDI. It uses X12 Structures as an example.

ANSI X12 was originally conceived to support companies across different industry sectors in North America however today there are more than 300,000 companies worldwide using X12 EDI standards in daily business transactions. It is important to be able to read/write EDI formats, or map them to other standards like XML.

Objectives

After completing this lesson, you will be able to:

- Create an input Structure manually so it matches a sample data file
- Test the Structure on some sample data and check the elements are correctly described
- Reuse an existing EDI Structure for the output
- Create a Map between the manual input Structure and the existing output Structure
- Test the Map and check the results are the expected ones

Next Step

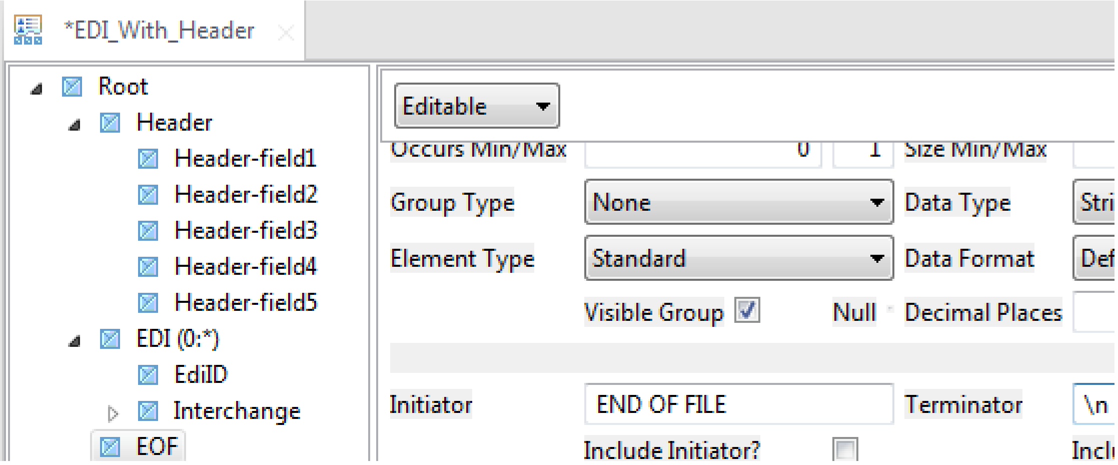
First, let's create the input Structure manually so it matches the available data file.

Creating the Input Structure

Overview

The objective is to create a Structure that matches the available data:

- The first line contains header information split across five fields
- Each field is separated by `|`
- The second line contains an ID, a `|` separator and then an EDI document
- The last line is the end of file indicator



*EDI_With_Header

- Root
  - Header
    - Header-field1
    - Header-field2
    - Header-field3
    - Header-field4
    - Header-field5
  - EDI (0:*)
    - EdiID
    - Interchange
  - EOF

Editable

Occurs Min/Max 0 1 Size Min/Max

Group Type: None

Data Type: Stri

Element Type: Standard

Data Format: Def

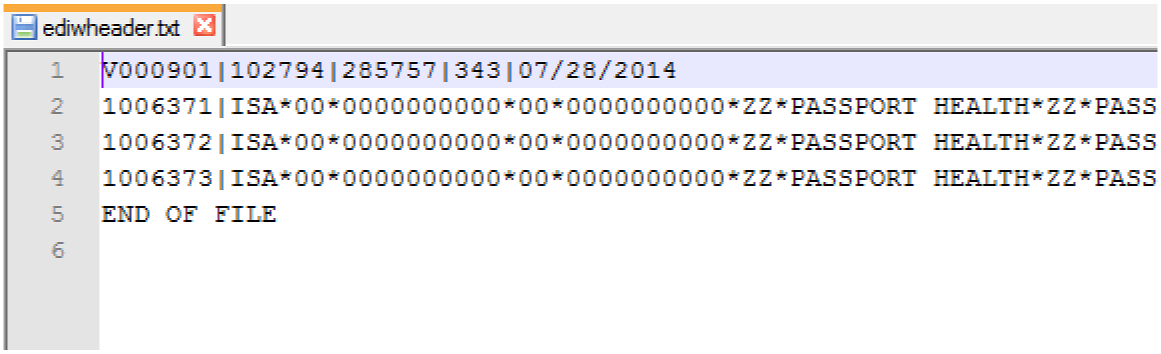
Visible Group ☑ Null Decimal Places

Initiator: END OF FILE

Terminator: \n

Include Initiator? □

Incl



ediwheader.txt

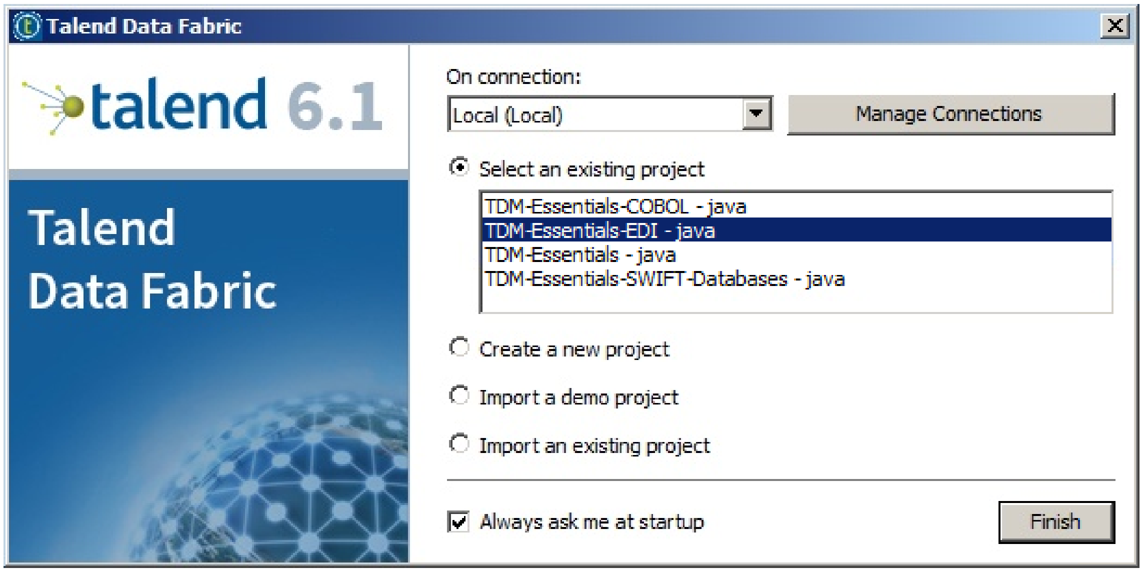
```
V000901|102794|285757|343|07/28/2014
1006371|ISA*00*0000000000*00*0000000000*ZZ*PASSPORT HEALTH*ZZ*PASS
1006372|ISA*00*0000000000*00*0000000000*ZZ*PASSPORT HEALTH*ZZ*PASS
1006373|ISA*00*0000000000*00*0000000000*ZZ*PASSPORT HEALTH*ZZ*PASS
END OF FILE

```

Starting Talend Studio

1. Click the **Talend Studio** link on the desktop.

2. Select the existing **TDM-Essentials-EDI** project and click **Finish**.



Talend Data Fabric

talend 6.1

Talend Data Fabric

On connection: Local (Local)

Manage Connections

● Select an existing project

TDM-Essentials-COBOL - java
TDM-Essentials-EDI - java
TDM-Essentials - java
TDM-Essentials-SWIFT-Databases - java

○ Create a new project

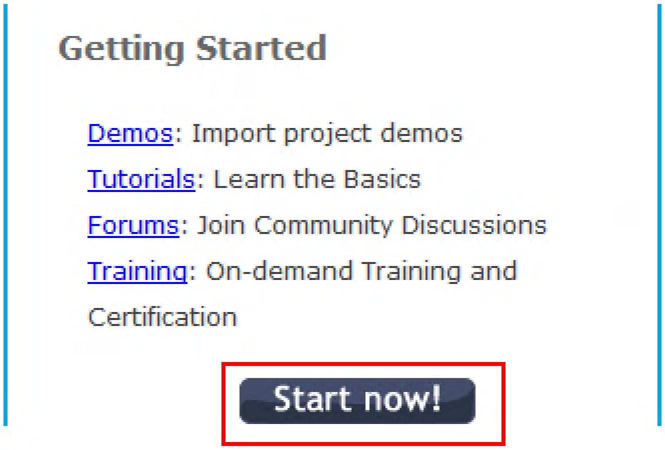
○ Import a demo project

○ Import an existing project

☑ Always ask me at startup

Finish

3. Click the **Start Now** button if the Welcome screen shows up. Otherwise, go to the next step.



Getting Started

Demos: Import project demos

Tutorials: Learn the Basics

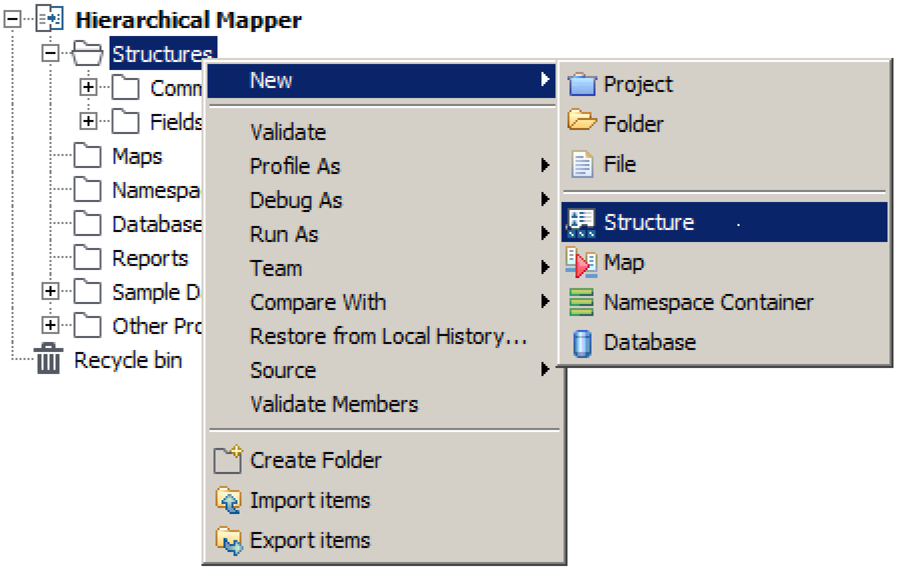
Forums: Join Community Discussions

Training: On-demand Training and Certification

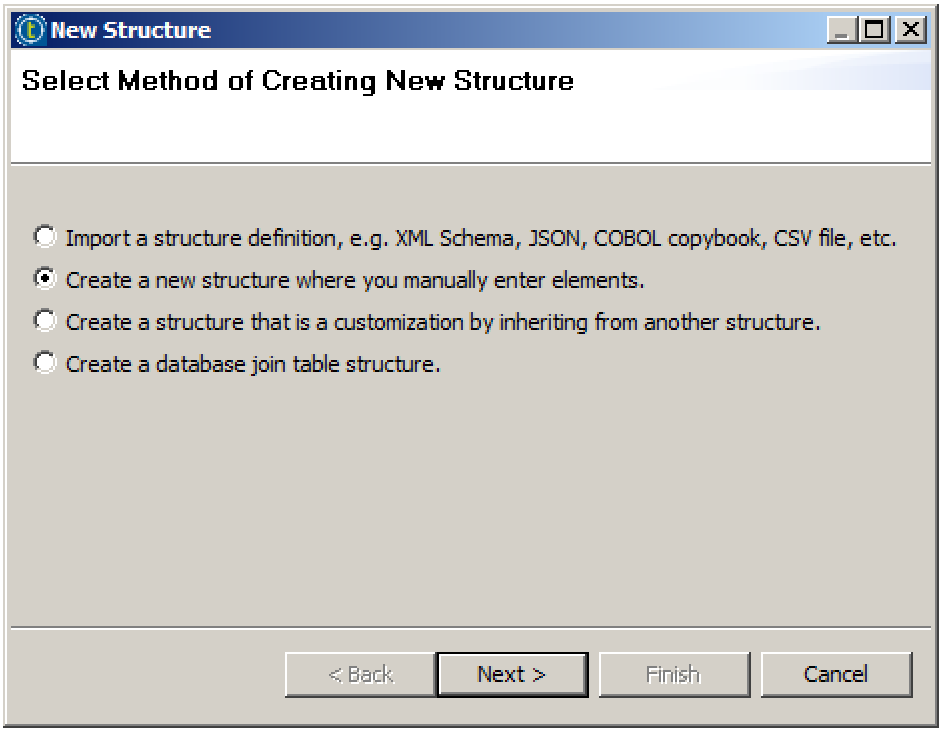
Start now!

Creating the Input Structure Manually

1. Right-click **Hierarchical Mapper > Structures** then select **New > Structure**.



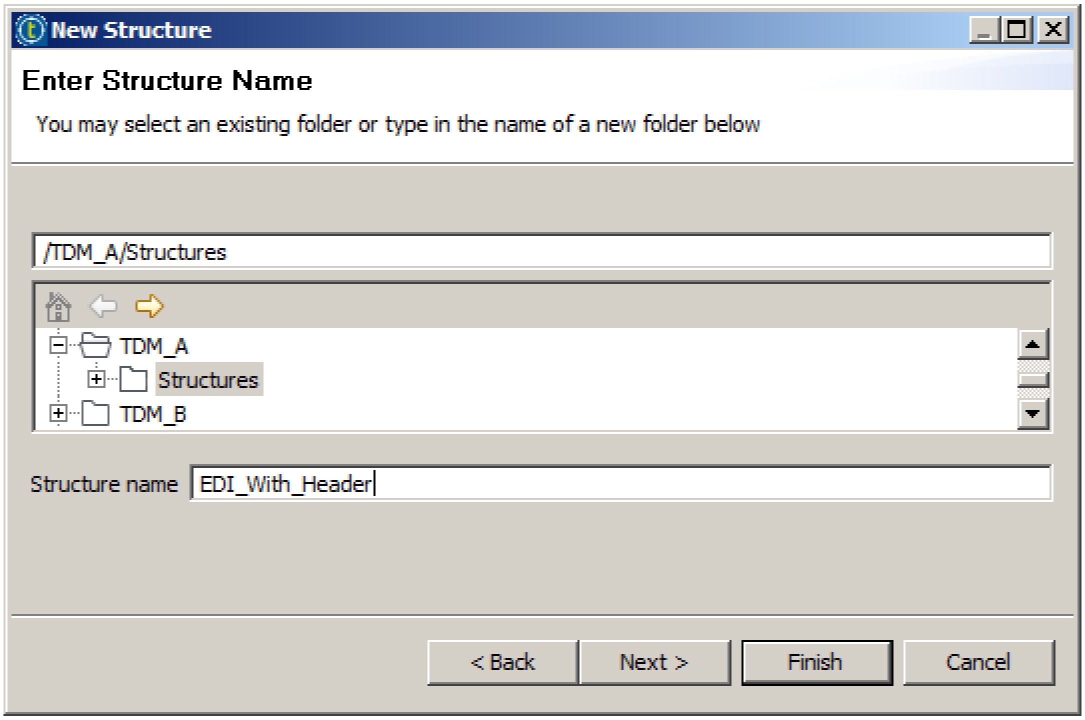
2. Select **Create a new structure where you manually enter elements** and click **Next >**:



Select Method of Creating New Structure

○ Import a structure definition, e.g. XML Schema, JSON, COBOL copybook, CSV file, etc.
● Create a new structure where you manually enter elements.
○ Create a structure that is a customization by inheriting from another structure.
○ Create a database join table structure.

3. Enter **EDI_With_Header** in the **Structure name** field and click **Next >**.



New Structure

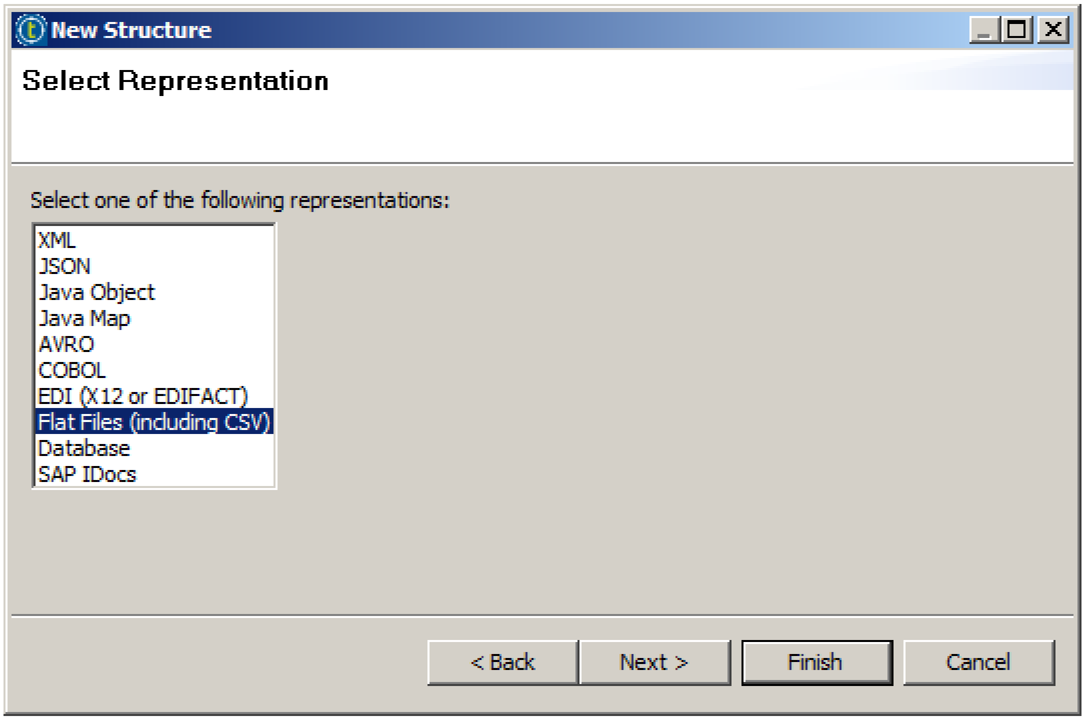
Enter Structure Name

You may select an existing folder or type in the name of a new folder below

/TDM_A/Structures

Structure name: EDI_With_Header

4. Select **Flat Files (including CSV)** and click **Finish**.

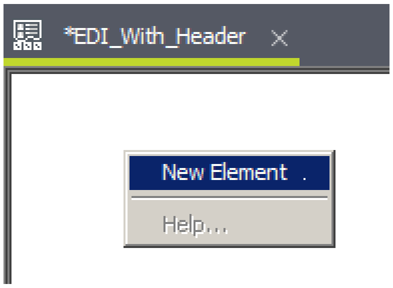


New Structure

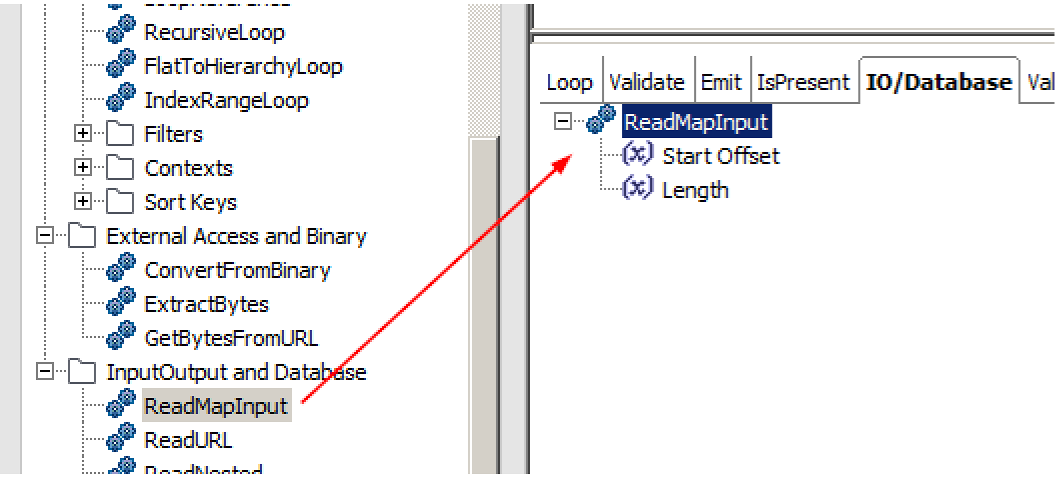
Select Representation

Select one of the following representations:

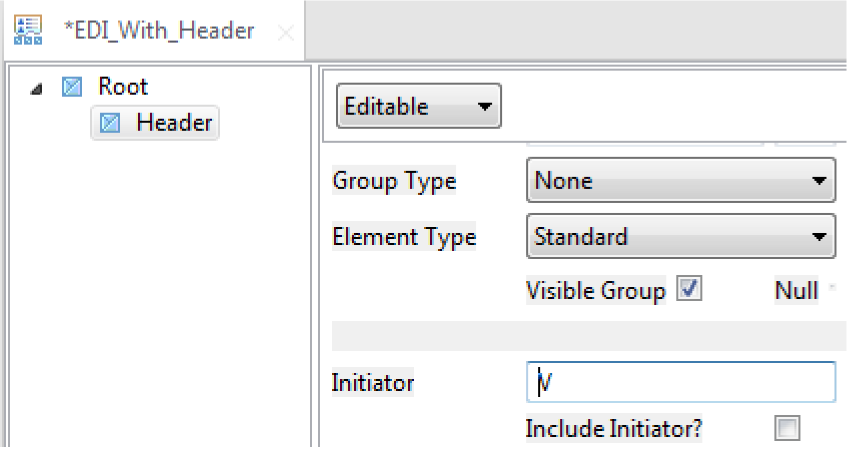
5. The new Structure opens in the editor. Right-click anywhere in the empty area and select **New Element**.



6. Name the new element *Root*. Switch to the **IO/Database** tab at the bottom of the Studio, then drag and drop a **Functions > InputOutput and Database > ReadMapInput** Function to it.



7. Right-click **Root** and select **New Element** to create a new child. Name the new element *Header*. Specify *V* in the **Initiator** field to let *Talend Data Mapper* know the actual header record begins with a *V* (like in the sample value *V000901* displayed on the first two screenshots of this section). Finally, make sure the **Include Initiator** option is not selected, as the *V* character is not part of the actual header field.



Group Type: None

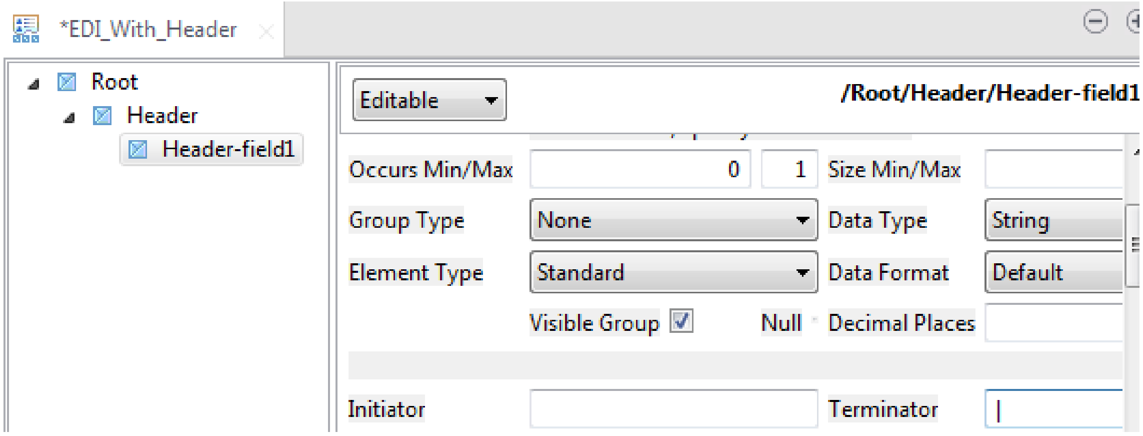
Element Type: Standard

Visible Group ☑ Null

Initiator: V

Include Initiator? □

8. Right-click *Header* and select **New Element** to create a new child element. Name it **Header-field1** and specify | in the **Terminator** field.



*EDI_With_Header

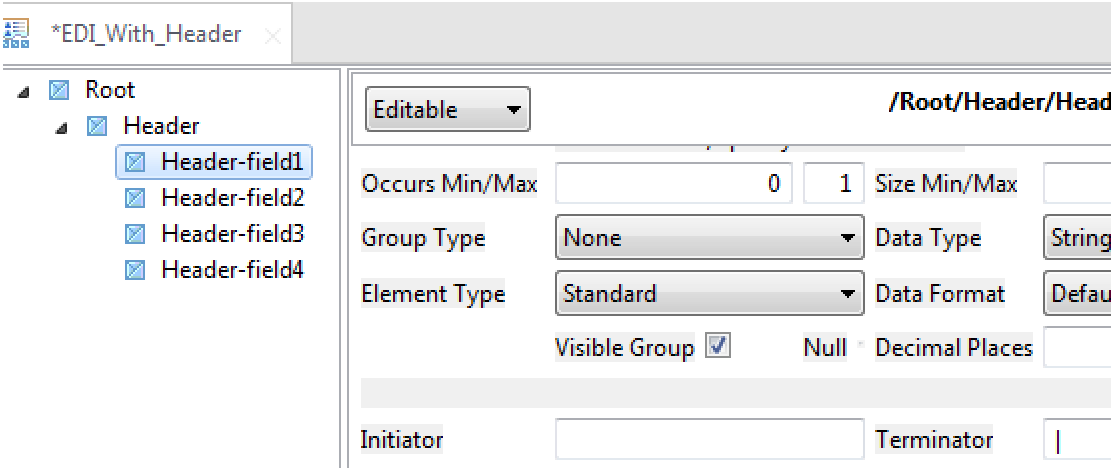
- Root
  - Header
    - Header-field1

Editable

/Root/Header/Header-field1

Occurs Min/Max: 0 / 1
Size Min/Max:
Group Type: None
Data Type: String
Element Type: Standard
Data Format: Default
Visible Group ☑
Null
Decimal Places:
Initiator:
Terminator: |

9. Now let's duplicate *Header-field1* to create three more children elements called *Header-field2* to *Header-field4*. Right-click *Header-field1* and select **Copy**. Then select *Header-field1*, right-click it again and select **Paste as Sibling** to duplicate the element. Repeat this last step twice and update the *Name* property of the new elements to match the following architecture:



*EDI_With_Header

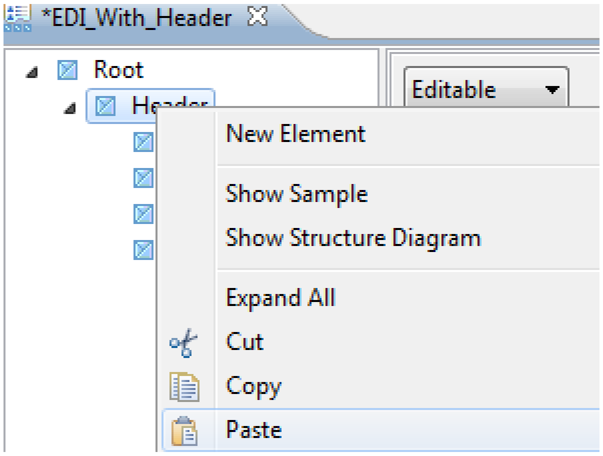
- Root
  - Header
    - Header-field1
    - Header-field2
    - Header-field3
    - Header-field4

Editable

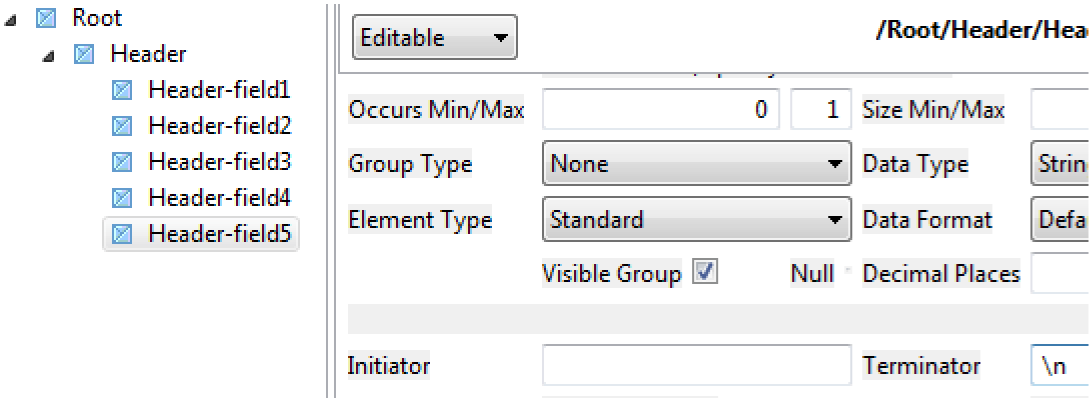
/Root/Header/Head

Occurs Min/Max: 0 / 1
Size Min/Max:
Group Type: None
Data Type: String
Element Type: Standard
Data Format: Defau
Visible Group ☑
Null
Decimal Places:
Initiator:
Terminator: |

10. To create the last header field, right-click *Header-field4* and select **Copy**. Then right-click **Header** and select **Paste**:

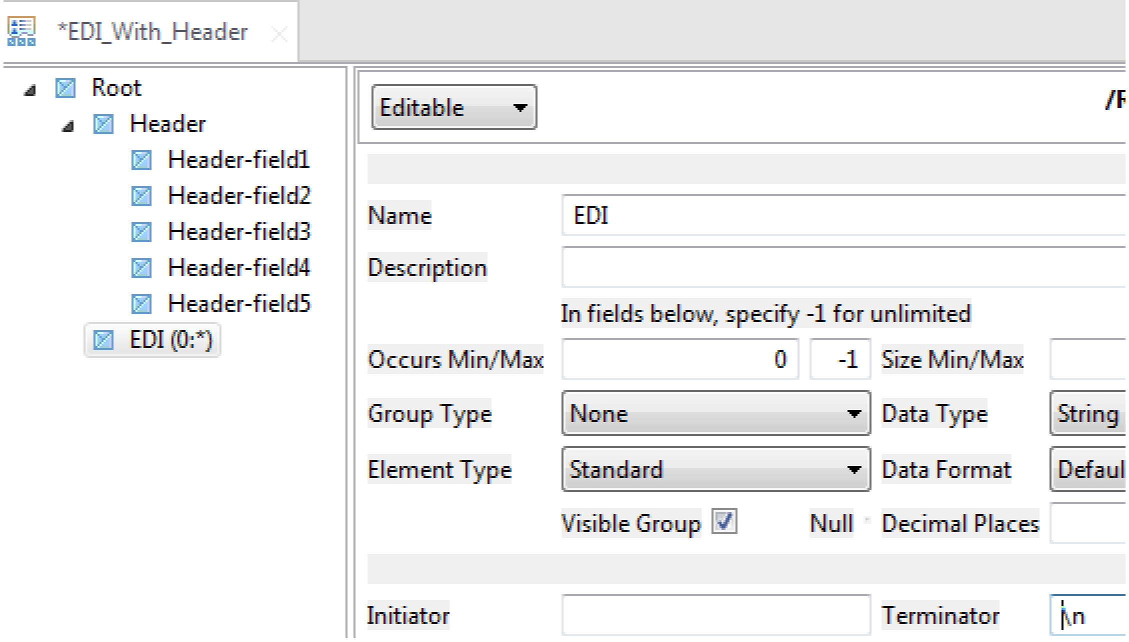


11. Change the **Name** property of the new element to *Header-field5* and the **Terminator** property to *\n* (meaning a new line):



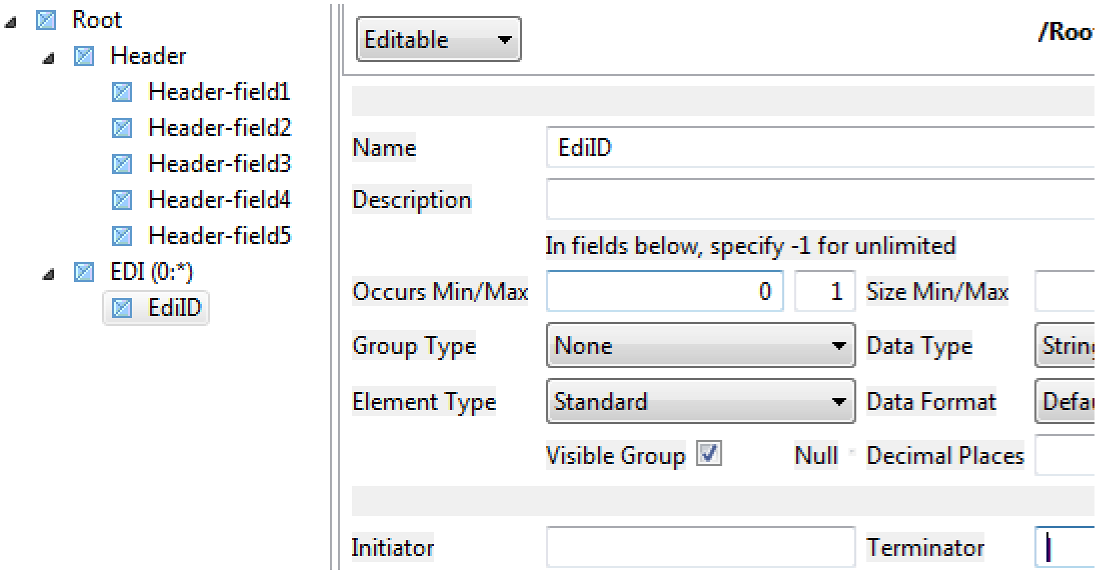
Occurs Min/Max 0 1 Size Min/Max
Group Type None Data Type Strin
Element Type Standard Data Format Defa
Visible Group ☑ Null Decimal Places
Initiator Terminator \n

12. Add a new *EDI* element under *Root*. Specify *0* and *-1* in the **Occurs Min/Max** field to make it a looping element (confirmed by the updated *EDI (0:*)* label) then enter *\n* in the **Terminator** field:



Name EDI
Description
In fields below, specify -1 for unlimited
Occurs Min/Max 0 -1 Size Min/Max
Group Type None Data Type String
Element Type Standard Data Format Defaul
Visible Group ☑ Null Decimal Places
Initiator Terminator \n

13. Create a new *EdiID* element under *EDI*. Enter | for the **Terminator**:



- Root
  - Header
    - Header-field1
    - Header-field2
    - Header-field3
    - Header-field4
    - Header-field5
  - EDI (0:*)
    - EdiID

Editable /Roo

Name: EdiID

Description:

In fields below, specify -1 for unlimited

Occurs Min/Max: 0 1 Size Min/Max:

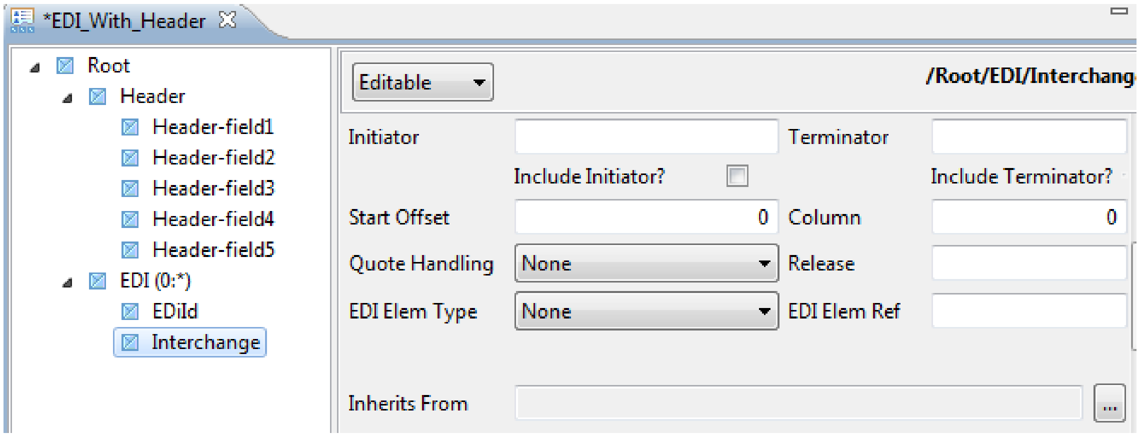
Group Type: None Data Type: Strin

Element Type: Standard Data Format: Defa

Visible Group ☑ Null Decimal Places

Initiator: Terminator:

14. Create a new *Interchange* element under *EDI* and then click the **...** button next to the **Inherits From** field to select an existing Structure and let the new element inherit from it:



*EDI_With_Header

- Root
  - Header
    - Header-field1
    - Header-field2
    - Header-field3
    - Header-field4
    - Header-field5
  - EDI (0:*)
    - EDIId
    - Interchange

Editable /Root/EDI/Interchang

Initiator: Terminator:

Include Initiator? ☐ Include Terminator?

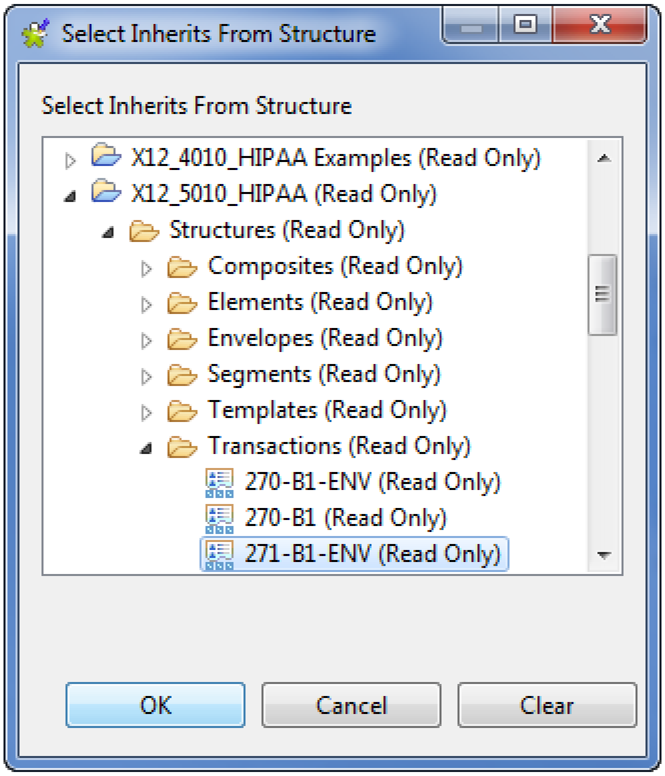
Start Offset: 0 Column: 0

Quote Handling: None Release:

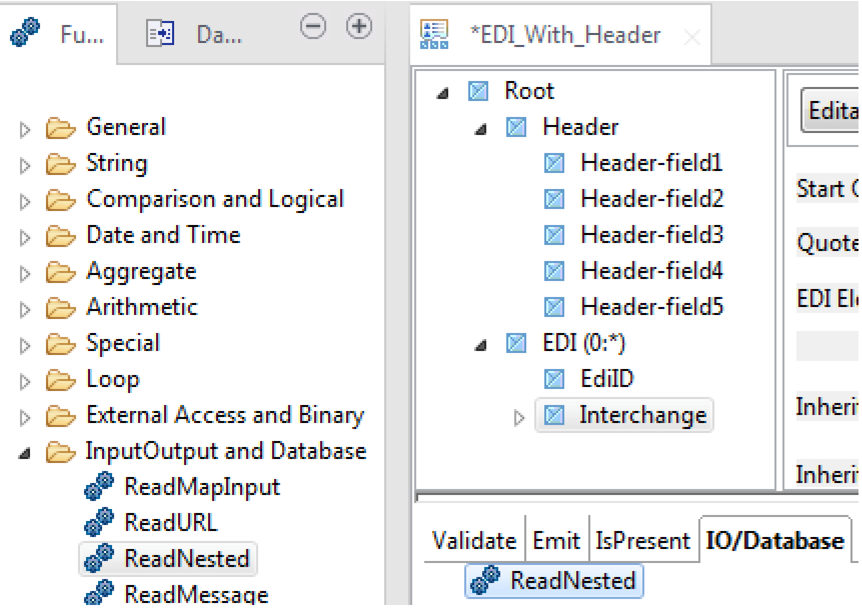
EDI Elem Type: None EDI Elem Ref:

Inherits From: ...

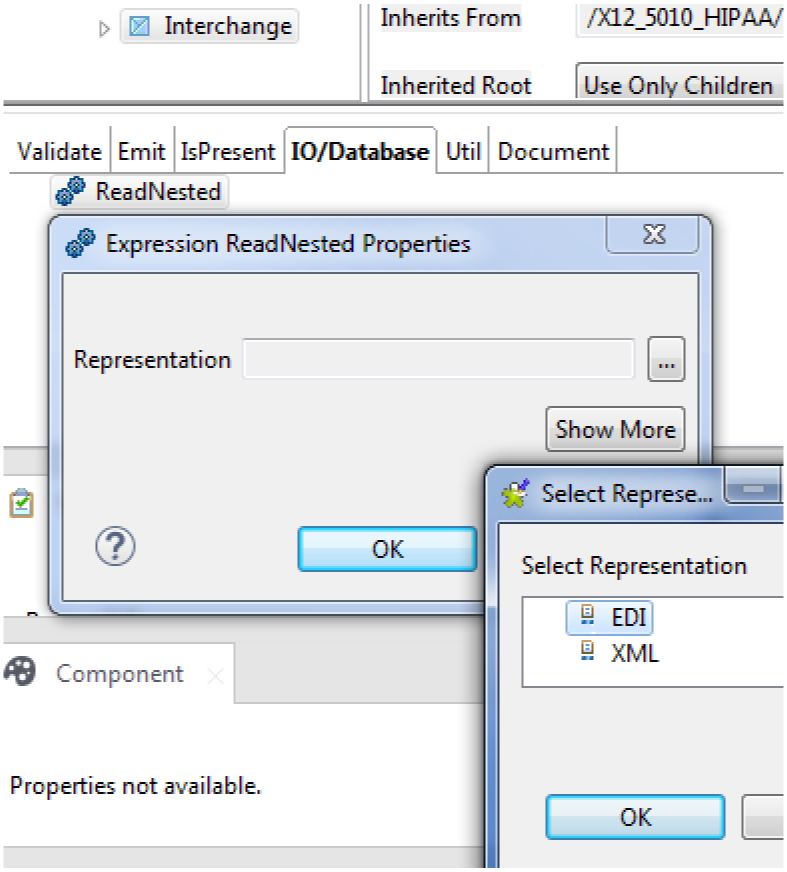
15. Select **X12_5010_HIPPAA (Read Only) > Structures > Transactions > 271-B1-ENV (read Only)** as the parent element to inherit from then click **OK**:



16. Switch to the **IO/Database** tab of the new *Interchange* node, then drag and drop a **Functions > InputOutput and Database > ReadNested**Function to it. Specifying this function will cause the data normally read for this element to be processed using the representation of the structure from which this element inherits.



17. Double-click the **ReadNested** Function, select *EDI* for the representation after clicking the **...** button then click **OK**:



Inherits From: /X12_5010_HIPAA/

Inherited Root: Use Only Children

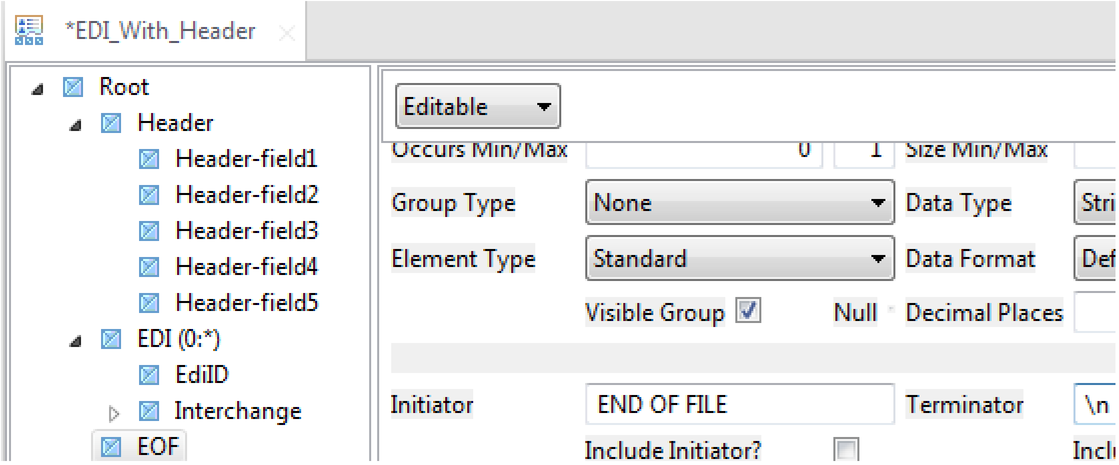
Representation:

Select Representation

- EDI
- XML

Properties not available.

18. Finally, let's add the end of file indicator to the Structure. Create a new *EOF* child under *Root*, enter *END OF FILE* for the **Initiator** and *\n* for the **Terminator**. Again, make sure the Include Initiator option is not selected.



- Root
  - Header
    - Header-field1
    - Header-field2
    - Header-field3
    - Header-field4
    - Header-field5
  - EDI (0:*)
    - EdiID
    - Interchange
  - EOF

Occurs Min/Max: 0 1

Size Min/Max

Group Type: None

Data Type: Stri

Element Type: Standard

Data Format: Def

Visible Group ☑

Null

Decimal Places

Initiator: END OF FILE

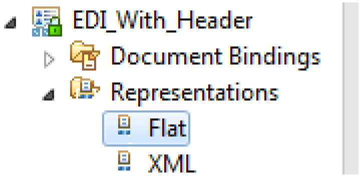
Terminator: \n

Include Initiator? □

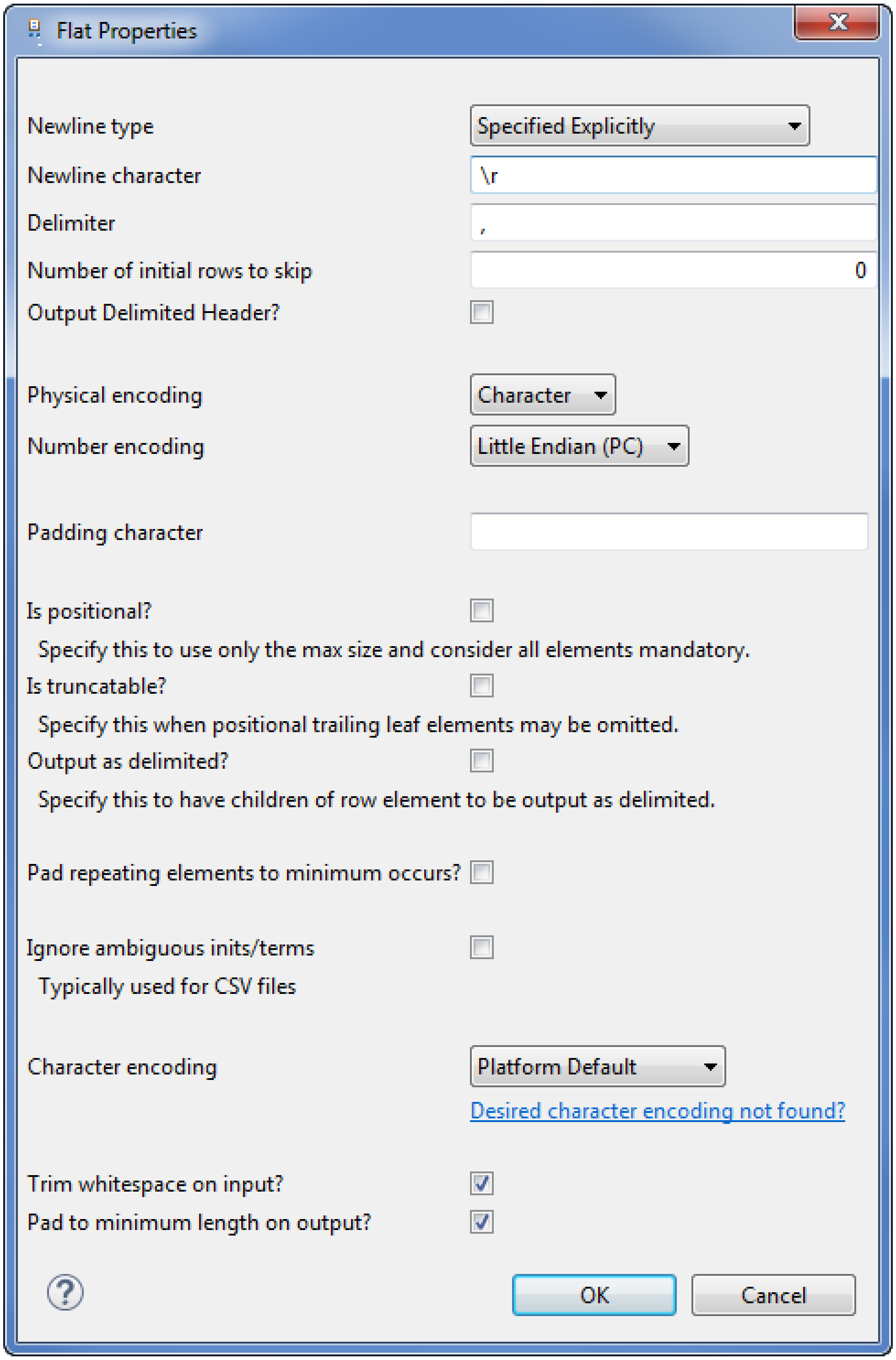
Incl

Setting the Representation Properties

1. Double click **Hierarchical Mapper > Structures > EDI_With_Header > Representations > Flat** to set the properties of the flat representation.



2. Set **Newline type** to *Specified Explicitly*, enter *\r* (meaning carriage return) in the **Newline character** field then click **OK**:



Flat Properties

Newline type: Specified Explicitly

Newline character: \r

Delimiter: ,

Number of initial rows to skip: 0

Output Delimited Header? ☐

Physical encoding: Character

Number encoding: Little Endian (PC)

Padding character:

Is positional? ☐

Specify this to use only the max size and consider all elements mandatory.

Is truncatable? ☐

Specify this when positional trailing leaf elements may be omitted.

Output as delimited? ☐

Specify this to have children of row element to be output as delimited.

Pad repeating elements to minimum occurs? ☐

Ignore ambiguous inits/terms ☐

Typically used for CSV files

Character encoding: Platform Default

Desired character encoding not found?

Trim whitespace on input? ☑

Pad to minimum length on output? ☑

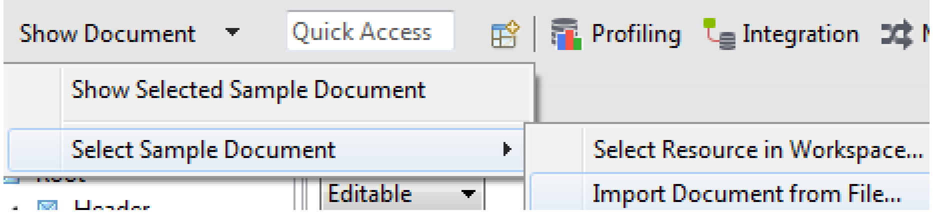
With these settings, TDM will always looks for a *\r* carriage return symbol to parse the data on each line, even if *\n* was specified in the **Terminator** field. It is necessary to differentiate a sequence of records from the rest of the file.

Next Step

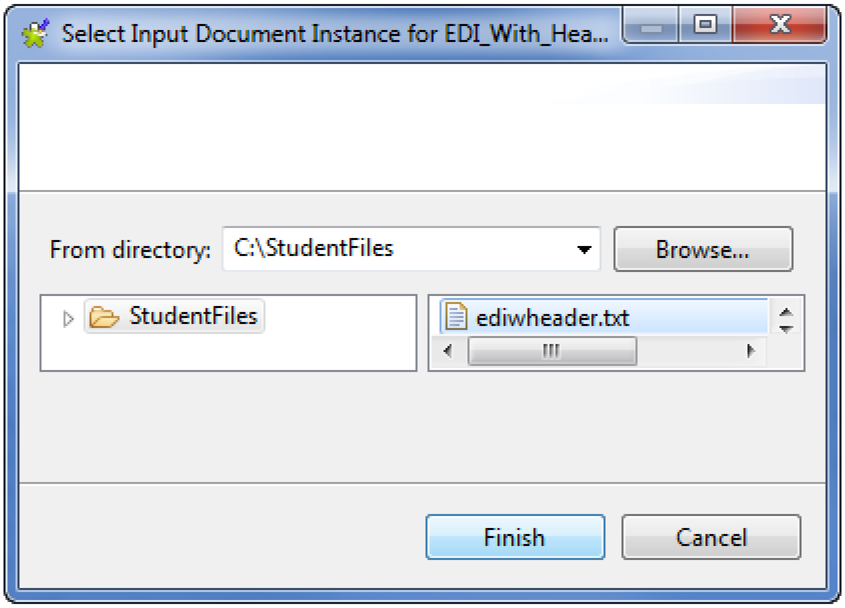
Let's test the new Structure by displaying a sample document from the available data.

Testing the Structure

1. Expand **Show Document** and click **Select Sample Document > Import Document from File...** to use an existing document and test the Structure definition on it.

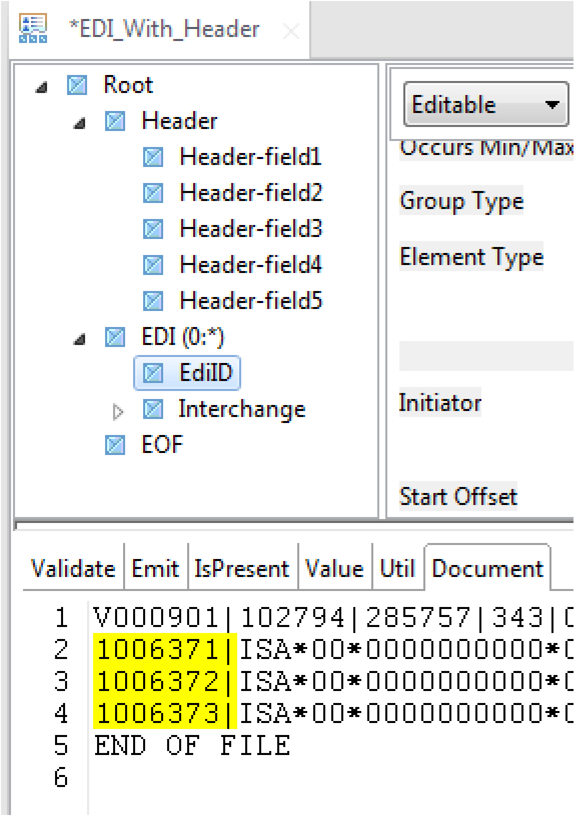

Show Document
Quick Access
Profiling
Integration
Show Selected Sample Document
Select Sample Document
Select Resource in Workspace...
Import Document from File...
Editable
Header

2. Click **Browse**, select the **C:\StudentFiles** folder then select the **ediwheader.txt** file and click **Finish**:



3. Select an element in the Structure, like *EdiID* for example. The matching input data should be highlighted in the **Document**

tab.



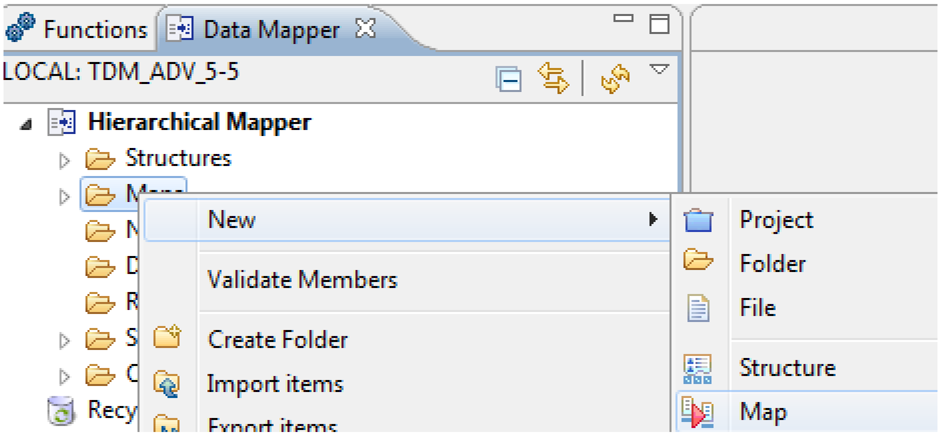
```
V000901|102794|285757|343|[
1006371|ISA*00*0000000000*[
1006372|ISA*00*0000000000*[
1006373|ISA*00*0000000000*[
END OF FILE
```

Next Step

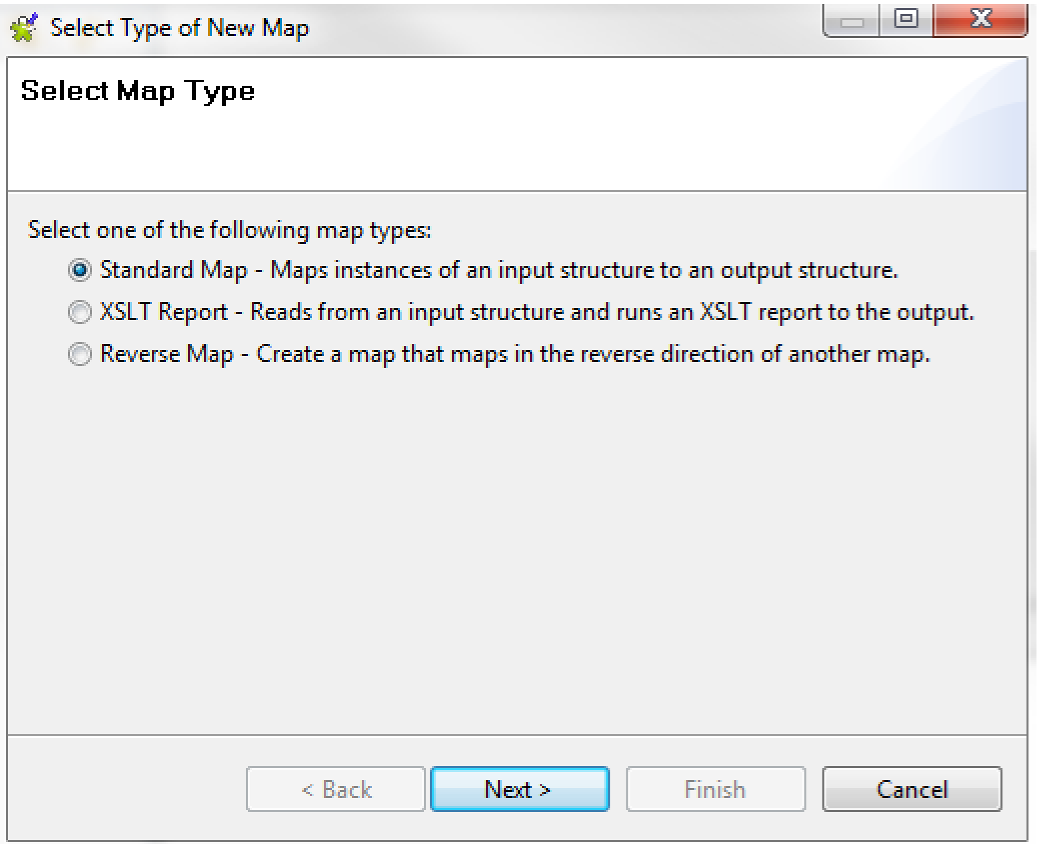
With the Structure created and validated, let's create the associated Map.

Creating the Map

1. Right-click **Maps** and select **New > Map**:



2. Select **Standard Map** and click **Next >**:


Select Type of New Map

Select Map Type

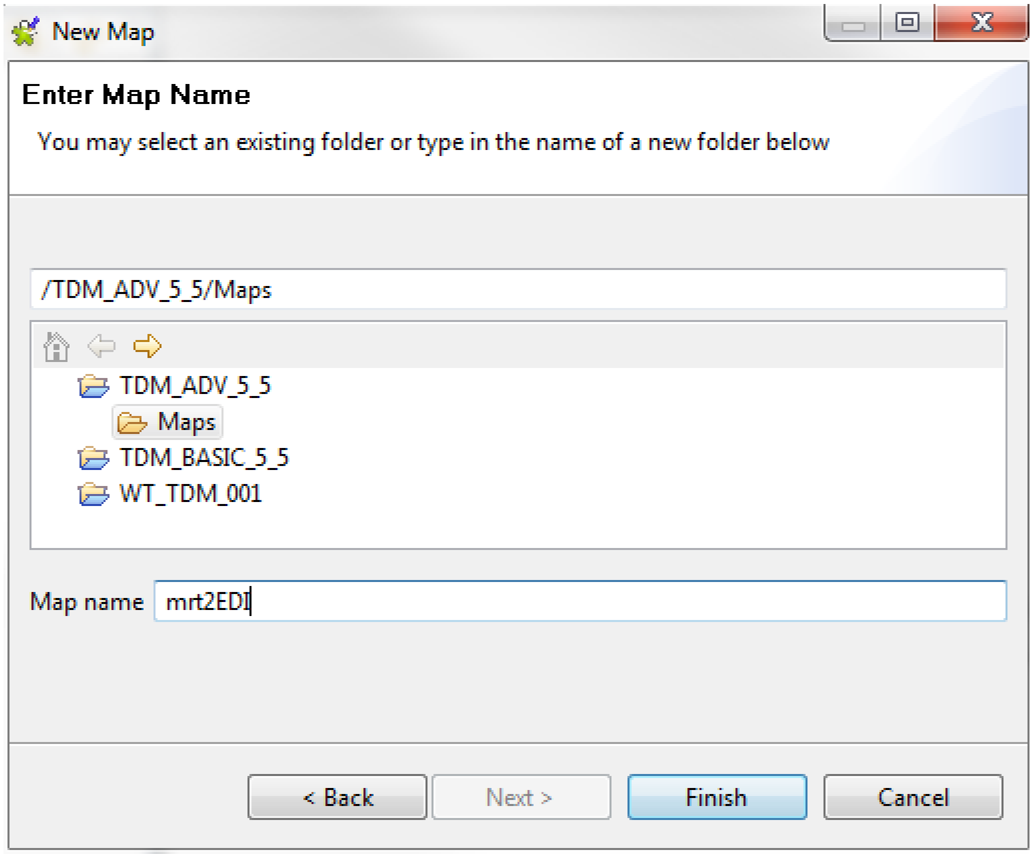
Select one of the following map types:

● Standard Map - Maps instances of an input structure to an output structure.

○ XSLT Report - Reads from an input structure and runs an XSLT report to the output.

○ Reverse Map - Create a map that maps in the reverse direction of another map.

3. Enter **mrt2EDI** for the **Map Name** and click **Finish**.



New Map

Enter Map Name

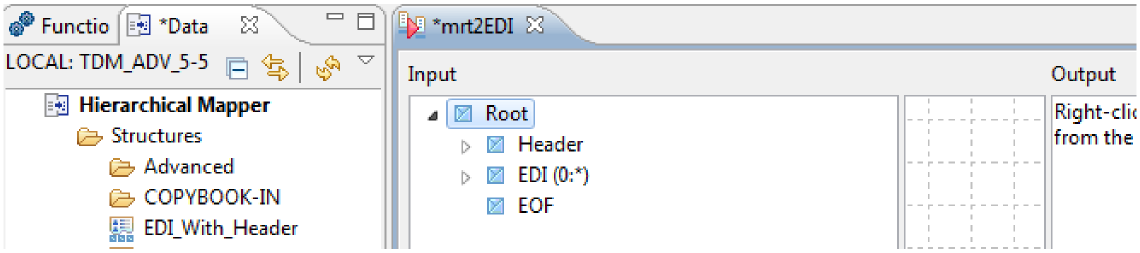
You may select an existing folder or type in the name of a new folder below

/TDM_ADV_5_5/Maps

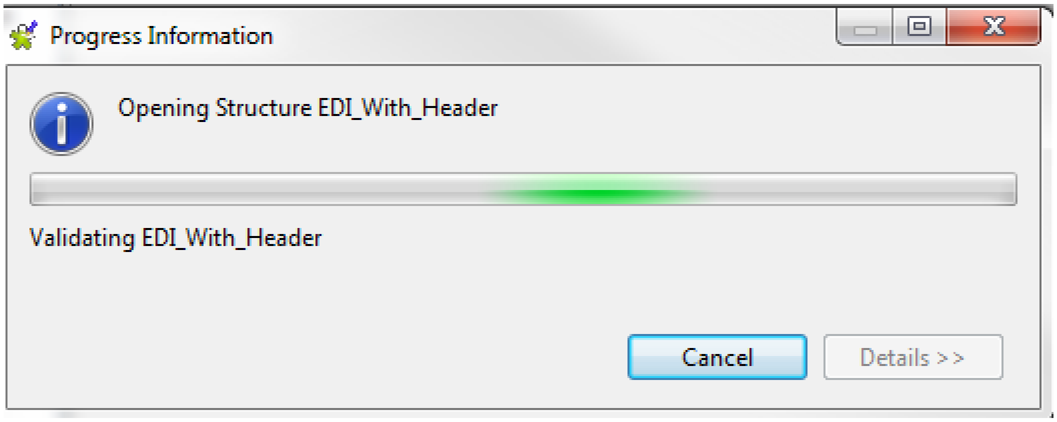
- TDM_ADV_5_5
  - Maps
- TDM_BASIC_5_5
- WT_TDM_001

Map name: mrt2EDI

4. Drag & drop the **EDI_With_header** Structure created earlier to the **Input** area:



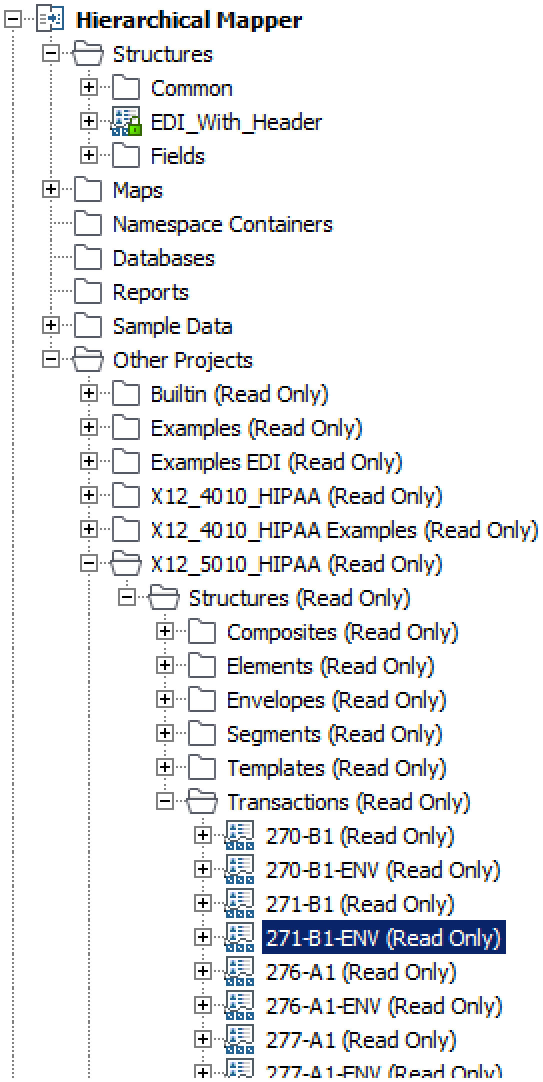
5. Wait for the validation process to complete.


Progress Information

Opening Structure EDI_With_Header

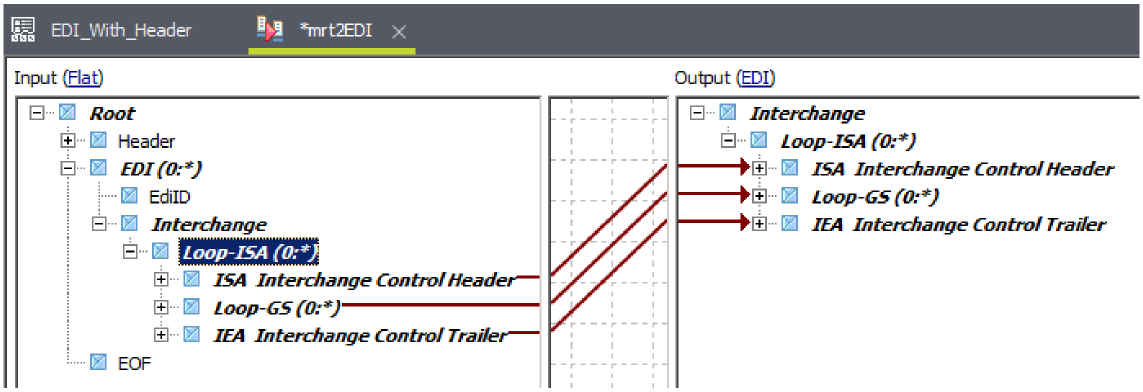
Validating EDI_With_Header

6. Drag & drop the **Hierarchical Mapper > Other Projects > X12_5010_HIPAA > Structures > Transactions > 271-B1-ENV** Structure to the **Output** area of the map.

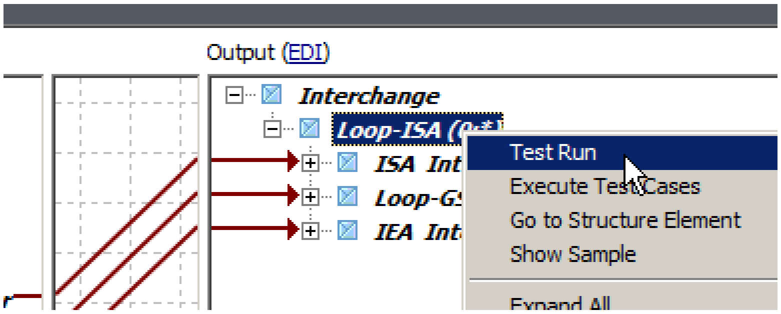

- **Hierarchical Mapper**
  - Structures
    - Common
    - EDI_With_Header
    - Fields
  - Maps
  - Namespace Containers
  - Databases
  - Reports
  - Sample Data
  - Other Projects
    - Builtin (Read Only)
    - Examples (Read Only)
    - Examples EDI (Read Only)
    - X12_4010_HIPAA (Read Only)
    - X12_4010_HIPAA Examples (Read Only)
    - X12_5010_HIPAA (Read Only)
      - Structures (Read Only)
        - Composites (Read Only)
        - Elements (Read Only)
        - Envelopes (Read Only)
        - Segments (Read Only)
        - Templates (Read Only)
        - Transactions (Read Only)
          - 270-B1 (Read Only)
          - 270-B1-ENV (Read Only)
          - 271-B1 (Read Only)
          - 271-B1-ENV (Read Only)
          - 276-A1 (Read Only)
          - 276-A1-ENV (Read Only)
          - 277-A1 (Read Only)
          - 277-A1-ENV (Read Only)

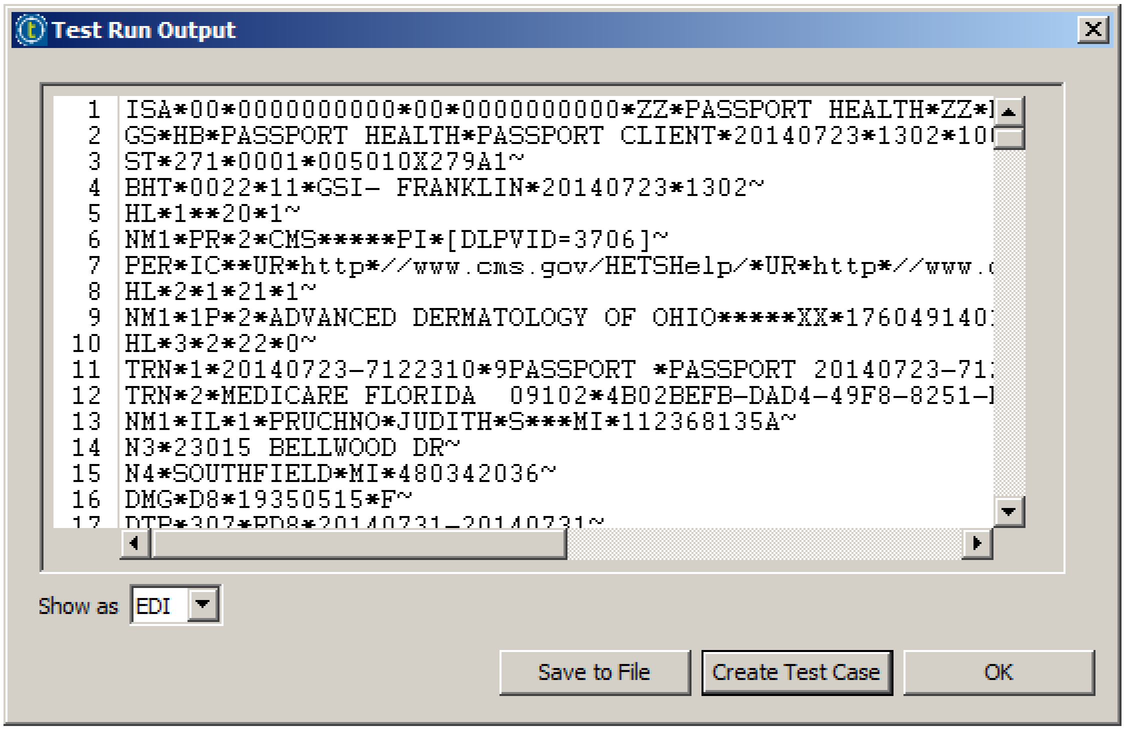
7. Expand the Structures on both sides and map **Root > EDI (0:*) > Interchange > Loop-ISA (0:*)** from the input to

Interchange > Loop-ISA (0:*) on the output.



8. Right-click **Loop-ISA (0:*)** in the **Output** area and select **Test Run** to test the Map and check the results:





```
ISA*00*0000000000*00*0000000000*ZZ*PASSPORT HEALTH*ZZ*I
GS*HB*PASSPORT HEALTH*PASSPORT CLIENT*20140723*1302*10(
ST*271*0001*005010X279A1~
BHT*0022*11*GSI- FRANKLIN*20140723*1302~
HL*1**20*1~
NM1*PR*2*CMS*****PI*[DLPVID=3706]~
PER*IC**UR*http*//www.cms.gov/HETSHelp/*UR*http*//www.(
HL*2*1*21*1~
NM1*1P*2*ADVANCED DERMATOLOGY OF OHIO*****XX*176049140:
HL*3*2*22*0~
TRN*1*20140723-7122310*9PASSPORT *PASSPORT 20140723-71:
TRN*2*MEDICARE FLORIDA  09102*4B02BEFB-DAD4-49F8-8251-I
NM1*IL*1*PRUCHNO*JUDITH*S***MI*112368135A~
N3*23015 BELLWOOD DR~
N4*SOUTHFIELD*MI*480342036~
DMG*D8*19350515*F~
DTP*307*RD8*20140731-20140731~
```

Next Step

This lesson is almost over. Head to the Wrap-Up section for a summary of the concepts reviewed in this lesson.

Wrap-Up

In this lesson, you learned how to:

- Create an input Structure manually so it matches a sample data file
- Test the Structure on some sample data and check the elements are correctly described
- Reuse an existing EDI Structure for the output
- Create a Map between the manual input Structure and the existing output Structure
- Test the Map and check the results are the expected ones

Next Step

Congratulations, you successfully completed this lesson. Click the **Check your status with this unit** button below in order to save your progress. Then click **Completed. Let's continue >** on the next screen to jump to the next lesson.