Importing ATS Schemas

You can import ATS schema information from:

- EXPRESS models
  File > Import > ATS Definition > From EXPRESS Schema
- CSV (comma-separated values) files:
  - *Table definitions*: database structure only
    File > Import > ATS Definition > From CSV File
  - *Data element definitions*: logical and physical descriptions of data structures
    File > Import > Data Element Definitions
  - *Data element maps*: logical and physical descriptions, as well as mapping targets
    File > Import > Data Element Maps
- XMP (XML MaP) files
  a Select **File > Import > XMP** and locate the file.
  b Select **Tools > Generate Transformation Map**.

When you import an ATS definition from an EXPRESS model or an XMP file, the Mapping Tool defines the mapping infrastructure for you. Otherwise, you must set up the infrastructure yourself.

Defining Mapping Infrastructure

In order to create mappings, you need:

- A data element group for each ATS
  a Select **Mapping > Add > Data Element Group**.
  b Specify a name and an optional description.
  c To add data elements based on your ATS, click **Build Names from ATS Definition**.
  d Or, fill in the information about individual data elements to add.
- Registration with an Abstract Conceptual Model schema for each data element group
  Edit > Register Abstract Conceptual Model
- An entry in the ATS Registry
  a Select **File > Exit** to close the Modulant Balisarda Mapping Tool and return to the Analyst Tool.
  b In the Analyst Tool, select **Design > ATS Registry**.
  c Fill in the **ATS Name**, **DTD Name**, and **Table Prefix** fields.
  d Fill in the **Source Data Element Group Name** and the **Target Data Element Group Name**.
  e Leave the **ATS Group Name** field blank.

Modifying the ATS Definition

To modify the ATS definition, you must:

1 Add new attributes to the ATS definition
  Edit > ATS Definition
2 Define the new attributes as data elements
  Mapping > Add > Data Element

Mapping Data Elements

The Mapping Tool stores mapping information and data converter specifications in the XMP file.

Specifying the Mapping Target

1 Select **Mapping > Add > Mapping Target**.
2 Select a data element and its mapping target.
3 To specify more than one mapping target, click **Complex Mapping** instead of **OK**.
4 In the **Select Root Mapping** dialog box, click **OK** or **Skip**.

About Complex Mappings

When a data element can have more than one functionally equivalent meaning:

- *Value Equal*: mapping usage always **Input**
- *OR Extraction*: mapping usage always **Output**

If necessary, change the mapping usage in the XMP from **I** or **O** to **B** to use for both input and output.

Completing the Structure Mapping

The structure mapping represents the relationships between the mapping target and the root mapping.

1 To add one or more entities, select the mapping ID at the top of the tree structure and click **Add**.
  - *Product Identification/Definition*: all aspects of a product and its relationships to other products
  - *Product Property/Representation*: properties of products and how they are represented
  - *Management Resources*: applies to other types of entities (such as people and groups)
  - *Management Resource Associations*: associates Management Resources to Product Information
2 If necessary, change the **Instance ID** value for attributes of the new entities you added.

To modify an existing structure mapping:

- Select **Edit > Structure Mapping**.

Specifying Context

1 In the structure mapping, select the entity for which you want to specify a domain constraint.
2 In the table at the bottom, select the **Constraint** cell for an attribute of that entity and click **Constraints**.
3 Type a constraint string or select an existing one.

Defining the Transformation

Fills in the "holes" in structure mappings.

1 Select **Tools > Define Transformation**.
2 Select an ACM attribute in the structure mapping and an associated ATS attribute from the list on the right and click **Connect**.

Using the Data Converter

To use the Data Converter, you do the following:

1 Identify where you need data conversion.
2 Create and map any new data elements needed.
3 Export an XMP file (**File > Export > XMP**).
4 Add conversion specifications to the XMP file.

```
<xmp>
  ...
  <dataConverter>
    <conversionList name="PREPROCESSOR">
    </conversionList>
    <conversionList name="POSTPROCESSOR">
    </conversionList>
  </dataConverter>
</xmp>
```

Each **conversionList** has one or more **conversion** elements, of one of the following types:

- **EXTRACTSUBSTR** (extract by substring position)
  Use extraction by substring position if you know the offset position where you want to split a field.

Input	Output		
HDate	HDay	HMonth	HYear
'07/09/2001'	9	7	2001

To extract the month portion:

```
<conversion type="EXTRACTSUBSTR" table="Person">
  <output>
    <column name="HMonth" type="varchar(2)"/>
  </output>
  <param name="input">
    <column name="HDate"/>
  </param>
  <param name="start">
    <constant value="1"/>
  </param>
  <param name="length">
    <constant value="2"/>
  </param>
</conversion>
```

- **EXTRACTDELIM** (extract by delimiter character)
  Use extraction by delimiter to split a field after a particular character or character string.

Input	Output	
Name	FirstName	LastName
'Doe#Jane'	'Jane'	'Doe'

To extract the first name:

```
<conversion type="EXTRACTDELIM" table="Person">
  <output>
    <column name="FirstName" type="varchar(50)"/>
  </output>
```

```
<param name="input">
  <column name="Name"/>
</param>
<param name="delim">
  <constant value="#"/>
</param>
<param name="token">
  <constant value="2"/>
</param>
</conversion>
```

- **CONCAT** (concatenation)

Use concatenation to combine two or more fields.

Input			Output
HDay	HMonth	HYear	HDate
'09'	'12'	'1987'	'09/12/1987'

To combine the date components to a single field:

```
<conversion type="CONCAT" table="Person">
  <output>
    <column name="HDate" type="char(10)"/>
  </output>
  <param name="input">
    <column name="HDay"/>
    <column name="HMonth"/>
    <column name="HYear"/>
  </param>
  <param name="delim">
    <constant value="/"/>
  </param>
  <param name="trim">
    <constant value="Y"/>
  </param>
</conversion>
```

- **ARITHMETIC** (arithmetic calculation)

Use arithmetic calculations (addition, subtraction, multiplication, and division) to derive new fields.

Input		Output
Price	Discount	SalePrice
50	10	45

To calculate the price of a 10% discount:

```
<conversion type="ARITHMETIC" table="Product">
  <output>
    <column name="SalePrice" type="varchar(4)"/>
  </output>
  <param name="expression">
    <constant value="? * (1 - ?/100)"/>
  </param>
  <param name="input">
    <column name="Price"/>
    <column name="Discount"/>
  </param>
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```

Troubleshooting

PopulationException error

Possible Solutions:

- Generate Transformation Map after importing XMP
- Match the Request ID value in the source data

TransformationException error

Possible Solutions:

- Import target data structure
- Examine and correct data converter specifications

Too many rows of output data

Possible Solutions:

- Make sure domain constraints are consistent
- Review connections in structure mappings
- Set **Enforce Unique** and **Group Output** in **Preferences** and **Enforce ATS Keys** in **Integrate** dialog box

Not enough rows of output data

Possible Solutions:

- Check input data for validity and fix any problems
- Review connections in structure mappings
- Examine and modify domain constraints

Duplicated rows of output data

Possible Solutions:

- Decide that extra data is not really a problem
- Set **Enforce ATS Keys** in **Integrate** dialog box and **Group Output** in **Preferences**

Missing output data (empty columns)

Possible Solutions:

- Review error log
- Examine and modify domain constraints
- Review connections in structure mappings
- In the XMP, verify that **tableName** and **fieldName** attributes of **dataElement** elements match the physical schema

Strange (wrong) data values

Possible Solutions:

- Review input data and fix any problems

Extra output columns

Possible Solutions:

- Review data converter specifications in the XMP file

MODULANT

Modulant Balisarda Mapping Tool
Quick Reference

Starting the Mapping Tool

Before you can start the Mapping Tool, you must:

1 Start the Analyst Tool:

Start > Programs > Modulant > Modulant Curtana

2 Define a database connection:

a Next to **Database Connection**, click **Edit**.
b Specify a name and login information.
c Click **Add** to add the connection to the list.
d Click **Close**.

3 Set the system configuration:

a Select **Design > Preferences**.
b Set the preferences as follows:

Next Request ID	A number for a transformation run that you have defined
Max Subquery Size	Always type 3
Abstract Conceptual Model Schema	Browse to locate ACM schema file
Strict Data Retrieve	Do not return blanks
Group Output*	Returns the maximum value for the combination of keys
Clean Up*	Removes transient tables and queries
Use Default Value	Places the default value the target ATS if no data
Enforce Unique*	Uses "unique" attributes of ACM entities as keys
Left Join On Keys*	Uses the intersection of database table keys, plus the records that match the keys
Delete Imported Source Data	Removes all data imported from source ATSs
* = recommended settings	

4 Select **Design > Modulant Balisarda**.

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  </param>
  <param name="start">
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Input	Output	
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To extract the first name:

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