

XML

eXtremely Maddening Language

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MPAAA Spring Conference 2026*

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Connector

✓ Discussion 1:

- Introduce yourself (Name and District)
- Discuss one thing you know about XML

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Connector

✓ Discussion 2:

- Introduce yourself (Name and District)
- Discuss one thing you want to leave with here today

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AGENDA

Session Objectives

Learn XML files, and tools that can help safely and accurately navigate editing XML

- ✓ Connector
- ✓ XML – What and Why
- ✓ XML Structures
- ✓ Exercise
- ✓ XML Tools
- ✓ Questions

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What is XML

✓ EXtensible Markup Language

- It is Extensible because it is not a fixed format
 - HTML (webpage) is a fixed format; dedicated tags do specific things... `<font-color: blue>` means just that
- Markup is the technical name for "marking" or tagging (annotating) a document that indicates structure and layout instructions

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Why Use XML

✓ EXtensible Markup Language

- Purpose is to structure, store and transport data between multiple applications and data uses
- Allows for Flexible Reporting
 - Defines specific (often nested) "tags" to create hierarchy
 - Is self-descriptive
 - Efficiently uses data across multiple applications
 - Allows for infinite number of reporting characteristics
 - Just needs to be "well formed"

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XML Structure and Example

```

▼<FallGeneralCollectionGroup xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" SchemaVersionMinor="1"
  SubmittingSystemVersion="1.0" CollectionName="FallGeneralCollection" SubmittingSystemVendor="My System
  Vendor" CollectionId="263" SchemaVersionMajor="2022-2023" SubmittingSystemName="My System"
  xsi:noNamespaceSchemaLocation="https://cepi.state.mi.us/MSDSXML/MSDS/2022-2023/FallGeneralCollection2022-
  20231.xsd">
  ▼<FallGeneralCollection>
    ▼<SubmittingEntity>
      <SubmittingEntityTypeCode>D</SubmittingEntityTypeCode>
      <SubmittingEntityCode>33170</SubmittingEntityCode>
    </SubmittingEntity>
    ▼<PersonalCore>
      <UIC>0314140472</UIC>
      <LastName>Murray</LastName>
      <FirstName>Perkins</FirstName>
      <MiddleName>ANTHONY</MiddleName>
      <StudentSuffix>Sr.</StudentSuffix>
      <DateOfBirth>2016-10-10</DateOfBirth>
      <MultipleBirthOrder>5</MultipleBirthOrder>
      <Gender>M</Gender>
    </PersonalCore>
    ▼<SchoolDemographics>
      <OperatingDistrictNumber>33170</OperatingDistrictNumber>
      <SchoolFacilityNumber>07828</SchoolFacilityNumber>
      <StudentIdNumber>12578</StudentIdNumber>
      <GradeOrSetting>14</GradeOrSetting>
    </SchoolDemographics>
  </FallGeneralCollection>
</FallGeneralCollectionGroup>

```

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XML Structure

	A	B	C	D	E	F	G	H	I	J
1	UIC	LastName	FirstName	Middle	StudentSuffix	DateOfBirth	MultipleBirthOrder	Gender	SchoolFacilityNumber	G
2	0000000001	Smith	June	A		10/14/1999		M	55555	
3	0000000002	Jones	John	A		5/29/2003		M	55555	12
4	0000000003	Doe	Sue	A		6/25/2004		M	55555	12
5	0000000004	Smith	Betty	A		8/29/1999		F	55555	14
6	0000000005	Jones	June	A		10/5/2003		M	55555	12
7	0000000006	Doe	John	A		6/7/2004		M	55555	12
8	0000000007	Smith	Sue	A		12/25/2002		F	55555	12
9	0000000008	Jones	Betty	A		10/6/2003		M	55555	12
10	0000000009	Doe	June	A		8/8/2003		M	55555	12
11	0000000010	Smith	John	A		1/1/2004		F	02034	12

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XML Structure

✓ MSDS XML Files are Hierarchical and formatted as:

- Header/Declaration statement
 - Root Element (Parent)
 - Components (Child)
 - Elements (Sub-Child)
- } Elements are "nested"
- Elements are raw data values (Street Number, Street Name, City)
 - Components contain related data elements (Address)
 - A Root Element is comprised of components
 - Address, StudentDemographics, FTE, Special Education
 - A Collection contains all Root Elements.

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XML Structure – Elements

- ✓ Values in elements are contained in "Tags"
- ✓ Tags are considered as either opening tags <Tag>
- ✓ Or closing tags </Tag>
- ✓ **Data** are visible between opening/closing tags. Example:


```
<name>Toast $2</name>
```
- ✓ Schema dictates allowed tags, values and sequence
- ✓ Consider Elements as "Sub-child"

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XML Structure – Components

- ✓ A component is a collection of related Elements, require opening/closing tags and are dictated by schema
- ✓ The opening tag starts the component, followed by the related elements, then the closing tag ends the component
- ✓ Consider components as “Child” elements; Example:

```

<lunchmenu>      ← Component Open Tag (child)
  <name>Toast $2</name> ← Related Element (sub-child)
</lunchmenu>     ← Component Close Tag
  
```

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XML Structure – Root Element

- ✓ A Root element contains all related components and elements (all child and sub-child elements)
- ✓ A Root element requires opening/closing tags and are dictated by schema.
- ✓ The opening tag starts the Root Element, followed by the related components, then the closing tag ends the Root
- ✓ Consider Root as “Parent” elements
- ✓ Everything in-between the open/close Root tags are considered “Records”, then the pattern repeats

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XML Structure – Root Element

✓ Example:

<OnlineMenu>	←	Root Opening Tag (Parent)
<lunchmenu>	←	Component Opening Tag (Child)
<name>Toast \$2</name>	←	Related Element (Sub-Child)
</lunchmenu>	←	Component Closing Tag
</OnlineMenu>	←	Root Closing Tag

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XML Structure - Declaration

- ✓ The declaration begins the XML file; let's call this the "header"
- ✓ The header can include file identification, version ID, processing instructions and schema references
- ✓ The header may look different from file to file depending on the schema
- ✓ A Schema is a Document that contains Rules for the xml file
- ✓ Schemas define rules for a file's structure & content

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XML Structure - Declaration

- ✓ The header can look as simple as

<Collection ID ?xml Version="1.0">

- ✓ The Header can also be more complex as the headers we see in MSDS XML Files

- Note beginning opening tag <FallGeneralCollectionGroup....>

```
<FallGeneralCollectionGroup xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" SchemaVersionMinor="1"
SubmittingSystemVersion="1.0" CollectionName="FallGeneralCollection" SubmittingSystemVendor="My System
Vendor" CollectionId="263" SchemaVersionMajor="2022-2023" SubmittingSystemName="My System"
xsi:noNamespaceSchemaLocation="https://cepi.state.mi.us/MSDSXML/MSDS/2022-2023/FallGeneralCollection2022
20231.xsd">
  <FallGeneralCollection>
    <SubmittingEntity>
      <SubmittingEntityTypeCode>D</SubmittingEntityTypeCode>
      <SubmittingEntityCode>33170</SubmittingEntityCode>
    </SubmittingEntity>
    <PersonalCore>
```

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XML Structure – Recap

- ✓ XML files begin with the declaration statement (header)

```
<FallGeneralCollectionGroup xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" SchemaVersionMinor="1"
SubmittingSystemVersion="1.0" CollectionName="FallGeneralCollection" SubmittingSystemVendor="My System
Vendor" CollectionId="263" SchemaVersionMajor="2022-2023" SubmittingSystemName="My System"
xsi:noNamespaceSchemaLocation="https://cepi.state.mi.us/MSDSXML/MSDS/2022-2023/FallGeneralCollection2022
20231.xsd">
```

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XML Structure – Recap

- ✓ After the declaration (header), the next tag is the Root (parent) tag

```
xsi:noNamespaceSchemaLocation="https://cepi.state.mi.us/MSDSX
20231.xsd">
  ▼<FallGeneralCollection> ←
    ▼<SubmittingEntity>
      <SubmittingEntityTypeCode>D</SubmittingEntityTypeCode>
      <SubmittingEntityCode>33170</SubmittingEntityCode>
    </SubmittingEntity>
```

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XML Structure – Recap

- ✓ Within the Root (parent) tags, are components (child)

```
▼<FallGeneralCollection>
  ▼<SubmittingEntity> ←
    <SubmittingEntityTypeCode>D</SubmittingEntityTypeCode>
    <SubmittingEntityCode>33170</SubmittingEntityCode>
  </SubmittingEntity>
  ▼<PersonalCore> ←
    <UIC>0314140472</UIC>
    <LastName>Murray</LastName>
    <FirstName>Perkins</FirstName>
    <MiddleName>ANTHONY</MiddleName>
    <StudentSuffix>Sr.</StudentSuffix>
    <DateOfBirth>2016-10-10</DateOfBirth>
    <MultipleBirthOrder>5</MultipleBirthOrder>
    <Gender>M</Gender>
  </PersonalCore>
  ▼<SchoolDemographics> ←
    <OperatingDistrictNumber>33170</OperatingDistrictNumber>
    <SchoolFacilityNumber>07828</SchoolFacilityNumber>
    <StudentIdNumber>12578</StudentIdNumber>
    <GradeOrSetting>14</GradeOrSetting>
  </SchoolDemographics>
```

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XML Structure – Recap

- ✓ Within Components (child) tags, are elements (sub-child)
- ✓ Elements contain data values for the record; Example

```

▼ <FallGeneralCollection>
  ▼ <SubmittingEntity>
    <SubmittingEntityTypeCode>D</SubmittingEntityTypeCode>
    <SubmittingEntityCode>33170</SubmittingEntityCode>
  </SubmittingEntity>
  ▼ <PersonalCore>
    <UIC>0314140472</UIC>
    <LastName>Murray</LastName>
    <FirstName>Perkins</FirstName>
    <MiddleName>ANTHONY</MiddleName>
    <StudentSuffix>Sr.</StudentSuffix>
    <DateOfBirth>2016-10-10</DateOfBirth>
    <MultipleBirthOrder>5</MultipleBirthOrder>
    <Gender>M</Gender>
  </PersonalCore>
  ▼ <SchoolDemographics>
    <OperatingDistrictNumber>33170</OperatingDistrictNumber>
    <SchoolFacilityNumber>07828</SchoolFacilityNumber>
    <StudentIdNumber>12578</StudentIdNumber>
    <GradeOrSetting>14</GradeOrSetting>
  </SchoolDemographics>

```

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XML Structure – Recap

- ✓ Remember... Note beginning opening tag in header
<FallGeneralCollectionGroup....>

```

▼ <FallGeneralCollectionGroup xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" SchemaVersionMinor="1"
  SubmittingSystemVersion="1.0" CollectionName="FallGeneralCollection" SubmittingSystemVendor="My System
  Vendor" CollectionId="263" SchemaVersionMajor="2022-2023" SubmittingSystemName="My System"
  xsi:noNamespaceSchemaLocation="https://cepi.state.mi.us/MSDSXML/MSDS/2022-2023/FallGeneralCollection2022
  20231.xsd">
  ▼ <FallGeneralCollection>
    ▼ <SubmittingEntity>
      <SubmittingEntityTypeCode>D</SubmittingEntityTypeCode>
      <SubmittingEntityCode>33170</SubmittingEntityCode>
    </SubmittingEntity>
    ▼ <PersonalCore>

```

- ✓ At end of file, after last Root Closing tag, note collection closing tag </FallGeneralCollectionGroup>

```

  </EarlyOnServices>
  </FallGeneralCollection>
</FallGeneralCollectionGroup>

```

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XML Structure – Recap

✓ XML File is complete

```

<FallGeneralCollectionGroup xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" SchemaVersionMinor="1"
  SubmittingSystemVersion="1.0" CollectionName="FallGeneralCollection" SubmittingSystemVendor="My System
  Vendor" CollectionId="263" SchemaVersionMajor="2022-2023" SubmittingSystemName="My System"
  xsi:noNamespaceSchemaLocation="https://cepi.state.mi.us/MSDSXML/MSDS/2022-2023/FallGeneralCollection2022-
  20231.xsd">
  <FallGeneralCollection>
    <SubmittingEntity>
      <SubmittingEntityTypeCode>D</SubmittingEntityTypeCode>
      <SubmittingEntityCode>33170</SubmittingEntityCode>
    </SubmittingEntity>
    <PersonalCore>
      <UIC>0314140472</UIC>
      <LastName>Murray</LastName>
      <FirstName>Perkins</FirstName>
      <MiddleName>ANTHONY</MiddleName>
      <StudentSuffix>Sr.</StudentSuffix>
      <DateOfBirth>2016-10-10</DateOfBirth>
      <MultipleBirthOrder>5</MultipleBirthOrder>
      <Gender>M</Gender>
    </PersonalCore>
    <SchoolDemographics>
      <OperatingDistrictNumber>33170</OperatingDistrictNumber>
      <SchoolFacilityNumber>07828</SchoolFacilityNumber>
      <StudentIdNumber>12578</StudentIdNumber>
      <GradeOrSetting>14</GradeOrSetting>
    </SchoolDemographics>
  </FallGeneralCollection>
</FallGeneralCollectionGroup>

```

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XML Exercise

- ✓ SEE HAND-OUT...
- ✓ Using the information provided in our discussion thus far, write a properly formed XML document using the information given
- ✓ This resulting XML should contain a properly formatted menu listing breakfast, lunch and dinner items
- ✓ 10 Minutes...

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XML Exercise	
1	<onlinemenu>
2	<lunchmenu>
3	</breakfastmenu>
4	<name>Chicken \$10</name>
5	<name>Toast \$2</name>
6	<dinnermenu>
7	<breakfastmenu>
8	<Collection ID ?xml Version="1.0">
9	<description>With Rice</description>
10	</dinnermenu>
11	<name>Soup \$5</name>
12	</lunchmenu>
13	<description>Cream Soup</description>
14	<description> Wheat or White</description>
15	</onlinemenu>

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XML Exercise Results	
8	<Collection ID ?xml Version="1.0">
1	<onlinemenu>
7	<breakfastmenu>
5	<name>Toast \$2</name>
14	<description> Wheat or White</description>
3	</breakfastmenu>
2	<lunchmenu>
11	<name>Soup \$5</name>
13	<description>Cream Soup</description>
12	</lunchmenu>
6	<dinnermenu>
4	<name>Chicken \$10</name>
9	<description>With Rice</description>
10	</dinnermenu>
15	</onlinemenu>

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XML Tools

✓ **CEPI MSDS Website**

- **MSDS Collection Details Manual**

- ✕ **Manuals**

- [2022-23 MSDS Collection Details Manual](#)
 - [2021-22 MSDS Collection Details Manual](#)

- **Technical Materials = Download Schema Reference**

- ✕ **Technical Material**

- [2022-23 Collection Component Matrix](#)
 - [2021-22 Collection Component Matrix](#)
 - [Fall 2022 XML Sample File](#)
 - [Fall 2022 XML Schema](#) ←
 - [Fall 2022 Schema Summary](#)

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XML Tools

✓ **Component Matrix**

- **Sheet Tab Lists errors received in MSDS Validation**

	A	B	C	D	E	F	G	H	I
1	Enrollment								Last Updated: 7/26/2022
2									
3	Staging Area Business Rule Validations								
4									
5									
6	Characteristic	Rule Number	Data Validation				Severity	Error/Warning Message	
15	EnrollmentDate	70.18.1	[EnrollmentDate] must be >= (PersonalCore).[DateOfBirth]				1	The Date of Enrollment cannot be earlier than the Date of Birth.	
16		70.18.3	[EnrollmentDate] must be <= current system date				1	Enrollment Date must be on or prior to the current date; future dates are	
17		70.18.4	[EnrollmentDate] must be >= open date in EEM for the				1	Enrollment Date must be on or after the Operating District Open Date in	
18		70.18.5	[EnrollmentDate] must be <= close date in EEM for the				1	The Enrollment Date must be prior to the Operating District Close Date in	
19		70.18.6	If [EnrollmentDate] <= the latest date of enrollment in the enrollment				1	The Personal Demographics component is required when reporting a new	
20		70.18.7	If CollectionName contains "Fall", "Spring" or "EOY"				1	The date reported in Enrollment Date must be on or before the count	

- **Search XML for related error item**

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XML Tools

✓ Notepad or WordPad

- Exposes raw XML file for review and change
- Doesn't format data "pretty"

xml example.txt - Notepad

File Edit Format View Help

```
<?xml version="1.0" encoding="utf-8"?>
<EarlyRosterGroup SchemaVersionMinor="1" SubmittingSystemVersion="1.0" CollectionName="EarlyRoster" SubmittingSystemVendor="EarlyRoster">
  <SubmittingEntity>
    <SubmittingEntityTypeCode>D</SubmittingEntityTypeCode>
    <SubmittingEntityCode>63000</SubmittingEntityCode>
    <SubmittingEntityCode>63000</SubmittingEntityCode>
    <PersonalCore>
      <UIC>0000000000</UIC>
      <LastName>SMITH</LastName>
      <FirstName>John</FirstName>
      <DateOfBirth>2000-11-06</DateOfBirth>
      <SchoolDemographics>
        <OperatingDistrictNumber>63000</OperatingDistrictNumber>
        <SchoolFacilityNumber>00000</SchoolFacilityNumber>
        <PersonalDemographics>
          <ResidentLEANumber>63000</ResidentLEANumber>
          <StudentResidentCounty>63</StudentResidentCounty>
          <Ethnicity>
            <AddressTypeDescriptor>Physical</AddressTypeDescriptor>
            <StreetNumberName>29000 Smith Avenue</StreetNumberName>
          </Ethnicity>
        </SchoolDemographics>
      </PersonalCore>
    </SubmittingEntity>
  </EarlyRosterGroup>
```

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XML Tools

✓ Notepad++

- Exposes raw XML file for review
- Can set to pretty-print, use compare tools
- Allows for xml editing
- Free-ware

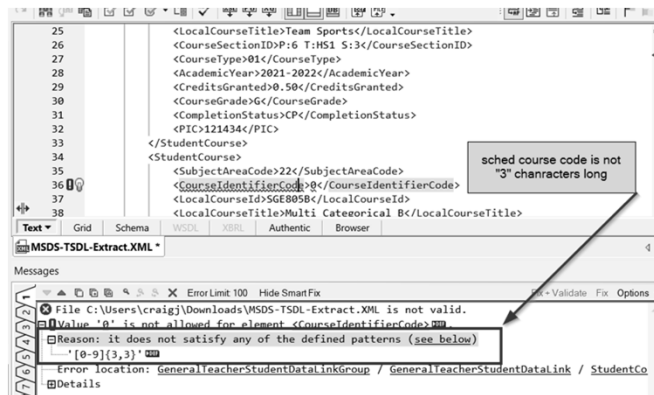
<pre><SubmittingEntity> <SubmittingEntityTypeCode>D</SubmittingEntityTypeCode> <SubmittingEntityCode>63000</SubmittingEntityCode> <SubmittingEntityCode>63000</SubmittingEntityCode> <PersonalCore> <UIC>0000000000</UIC> <LastName>Smith-Jones</LastName> <FirstName>Jane</FirstName> <DateOfBirth>2000-11-06</DateOfBirth> <SchoolDemographics> <OperatingDistrictNumber>63000</OperatingDistrictNumber> <SchoolFacilityNumber>00000</SchoolFacilityNumber> <PersonalDemographics> <ResidentLEANumber>63000</ResidentLEANumber> <StudentResidentCounty>63</StudentResidentCounty> <Ethnicity> <AddressTypeDescriptor>Physical</AddressTypeDescriptor> <StreetNumberName>29000 Smith Avenue</StreetNumberName> </Ethnicity> </SchoolDemographics> </PersonalCore> </SubmittingEntity> </EarlyRosterGroup></pre>	<pre><SubmittingEntity> <SubmittingEntityTypeCode>D</SubmittingEntityTypeCode> <SubmittingEntityCode>63000</SubmittingEntityCode> <SubmittingEntityCode>63000</SubmittingEntityCode> <PersonalCore> <UIC>0000000000</UIC> <LastName>Smith</LastName> <FirstName>Jane</FirstName> <DateOfBirth>2000-11-06</DateOfBirth> <SchoolDemographics> <OperatingDistrictNumber>63000</OperatingDistrictNumber> <SchoolFacilityNumber>00000</SchoolFacilityNumber> <PersonalDemographics> <ResidentLEANumber>63000</ResidentLEANumber> <StudentResidentCounty>63</StudentResidentCounty> <Ethnicity> <AddressTypeDescriptor>Physical</AddressTypeDescriptor> <StreetNumberName>29000 Smith Avenue</StreetNumberName> </Ethnicity> </SchoolDemographics> </PersonalCore> </SubmittingEntity> </EarlyRosterGroup></pre>
--	--

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XML Tools

- ✓ Fee Based XML Editors (too many to list - \$\$)
 - In this example, Altova XML Spy allows validation, editing

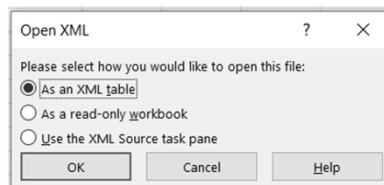


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XML Tools

- ✓ Excel – Open As Table – imports all



- Data Are displayed in row/column format

	A	B	C	D	E	F	G	H	I
1	SchemaVersionMajor	SchemaVersionMinor	CollectionId	CollectionName	SubmittingSystemVendor	SubmittingSystemName	SubmittingSystemVersion	SubmittingEntityTypeCode	SubmittingEntityCode
2	2022-2023	1	251 EarlyRoster	MISTARQ	MISTAR	1.0	D		63000
3	2022-2023	1	251 EarlyRoster	MISTARQ	MISTAR	1.0	D		63000
4	2022-2023	1	251 EarlyRoster	MISTARQ	MISTAR	1.0	D		63000

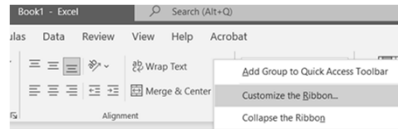
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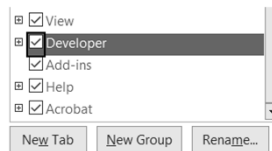
XML Tools

✓ Excel – Open with Source Pane

- Need to ensure "Rules" are in place before we start
- Ensure collection schema is downloaded from CEPI website
- Ensure developer menu options is available
- Right Click on ribbon – click Customize the Ribbon



- Click "Developer" to enable



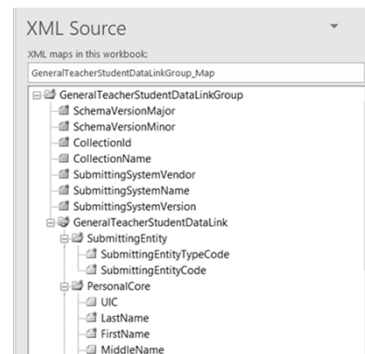
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XML Tools

✓ Excel – Open with Source Pane

- Click Developer menu in Excel
- Click Source Option (opens XML Source Pane)
- Click XML Maps
- Click "Add" to navigate to saved schema location, then OK
- Fields available in Collection are made available in the XML source Pane



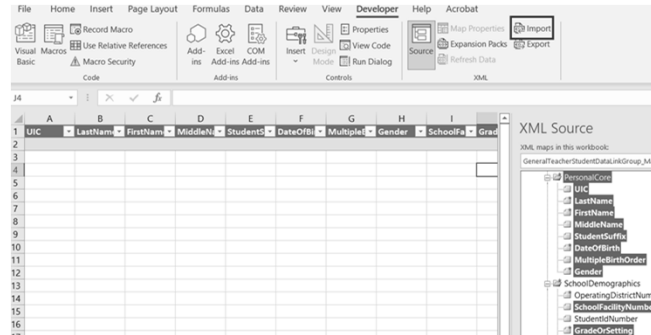
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XML Tools

✓ Excel – Open with Source Pane

- Rules are loaded, time to import
- Highlight fields to review
- Click and Drag fields from source pane to spreadsheet
- Click Import; select XML file to import



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XML Tools

✓ Excel – Open with Source Pane

- Highlighted fields are imported for review and DQ

	A	B	C	D	E	F	G	H	I	J
1	UIC	LastName	FirstName	MiddleName	StudentSuffix	DateOfBirth	MultipleBirthOrder	Gender	SchoolFacilityNumber	
2	0000000001	Smith	June	A		10/14/1999		M	55555	
3	0000000002	Jones	John	A		5/29/2003		M	55555	12
4	0000000003	Doe	Sue	A		6/25/2004		M	55555	12
5	0000000004	Smith	Betty	A		8/29/1999		F	55555	14
6	0000000005	Jones	June	A		10/5/2003		M	55555	12
7	0000000006	Doe	John	A		6/7/2004		M	55555	12
8	0000000007	Smith	Sue	A		12/25/2002		F	55555	12
9	0000000008	Jones	Betty	A		10/6/2003		M	55555	12
10	0000000009	Doe	June	A		8/8/2003		M	55555	12
11	0000000010	Smith	John	A		1/1/2004		F	02034	12

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Q & A?

✓ Now that everyone has **X**cellent **M**ad Ski**L**lz... 😊

- Final thoughts?
- Questions?

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