

# **FedState Modernized (MeF) E-File "101"**

Federation of Tax Administrators/TIGERS  
Guide to  
Implementing FedState MeF

Version 3.0

NOTE: Please send any comments, including suggestions for improvement, to any of the contacts listed in the last section

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## **FEDSTATE MEF BEGINNINGS**

### **What is Modernized eFile (MeF)?**

MeF is an integrated, web-based electronic filing platform replacing the Legacy efile system which had been essentially unchanged for IRS and the states since 1990. MeF uses new architecture for electronic filing and introduces a more fully automated, real-time, and scalable efile system. Not unlike initiatives in many states, the IRS MeF platform provides the taxpayer with the ability to conduct all interactions electronically and allows account management by electronic return originators, transmitters, and tax authorities.

### **How did states become involved with MeF?**

In May 2003, the Internal Revenue Service approached the states concerning its plans for development to extend efile capabilities to the 1120 and 990 families of tax return filings through the MeF system. The IRS proposed that the states develop a joint federal-state corporate efile program, to be known as FedState 1120. Oversight for the program would be provided by the Federation of Tax Administrators (FTA) – IRS Tactical Advisory Group (TAG), while technology standards would be developed through the FTA-sponsored TIGERS initiatives.

FTA solicited a Deployment Team to address the business issues of the new program, while TIGERS created a development team to build the technology foundation of the MeF FedState program. In addition to development for the FedState 1120, TIGERS also developed the standards for FedState 1065 partnership returns.

Both IRS and TIGERS then turned their attention to 1040 Individual Income Tax, the crown jewel of MeF. Because of the success of what is now called the Legacy efile system, a significant industry has grown up around 1040 electronic filing, including software developers, tax return preparers, tax return aggregators and transmitters, and the trade groups (NACTP, CERCA) representing them. For MeF to succeed, it had to enable success for all of these groups as well as IRS and the states. TIGERS became a forum for IRS, states, and Industry to come together to agree on technical design and performance issues, especially for Fed/State MeF. As of this writing, 1040 efile has completed transition to the MeF platform, and Legacy 1040 efile is being retired.

### **TIGERS – What is it?**

The Tax Implementation Group for E-Commerce Requirements Standardization (TIGERS) was formed in October 1994 by FTA, the states, the IRS, and business and service provider representatives, initially to provide an overall coordinative body for advice and counsel on government technical implementation of American National Standards Institute (ANSI)-based tax-related electronic data interchange applications.

The TIGERS initiative is modeled on previous successful industry-cooperation models in the petroleum, pharmaceutical, power, and other industry sectors. It began with efforts to model standard transactions in the area of electronic data interchange (EDI), and is now involved in similar initiatives for eXtensible Markup Language (XML).

TIGERS seeks to ensure success by providing a forum for government and industry members to regularly meet together and agree upon on "conventions" for the national-standard formatting of electronic business data. For example, it develops agreements on

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data formats, the names of data items (Name, Address, etc.) and the like within tax-related electronic transmissions for the tax administration industry, and publishes the results of these agreements. This effort follows consensus processes established by ANSI Accredited Standards Committee X12 (the X12 Committee focuses on business data interchange), to ensure validation by all stakeholders.

Dependent upon voluntary participation by business specialists and technical personnel from varied government and industry participants, the aim is to ensure that these data format and identification agreements are ultimately in agreement with and are vetted through both Government and Industry partners, and are widely used and adhered to by governments and businesses which wish to exchange together.

The goal is to achieve a great deal of uniformity and consistency in how standard transactions such as tax returns and other transactions are treated within the tax administration community. This significantly lowers the cost to all parties in understanding, documenting, and applying technology, leading to maximum business benefit for every trading partner involved.

Third party service providers such as software companies which can facilitate electronic trade are particularly advantaged, as this enables them to deliver services and products faster and more economically to their customers.

### **FedState Electronic Project Costs**

In addition to any state's internal implementation costs, a fee is required to be paid by the state to FTA to underwrite the development and continuing technical maintenance of FedState electronic filing technology standards, as well as review and assistance to the states and maintenance on the Web of an e-standards repository, so that resources for these efforts can be made available for support on an ongoing basis.

At the March 2005 meeting, the FTA Board of Trustees passed a resolution establishing a policy regarding financial support for the development and implementation of joint Federal and State (FedState) electronic filing projects.

FTA requests payment of an established amount from each state at the time it determines to enter into participation in each FedState Electronic Filing Program under development; upon joining the state will also assume a commitment to pay annual technical maintenance costs. To date, the costs have been quite modest. State initial-year participation costs run from \$1,500 - \$2,500 per program per state depending on size of the state. Annual maintenance fees have been estimated to be \$700 - \$900 per program per state.

### **FedState Electronic Project Meetings**

During the height of MeF technical development, TIGERS met six times per year, three in conjunction with ASC X12 trimester meetings and three sponsored by FTA. When the economic downturn hit, and states could no longer travel, these face meetings were replaced by conference calls and webinars. As the economy has improved, TIGERS face meetings have been reestablished in conjunction with the FTA Efile Symposium in spring and the FTA Technology Conference in late summer. States are encouraged to attend these meetings where possible.

Conference calls and webinars continue as needed. They may be project-oriented, to review and vote on new or modified schemas, or they may be more operational in nature, to discuss technical issues with IRS and/or industry.

Generally there is no charge for conference calls or webinar meetings. There is a moderate FTA registration fee (approximately \$150) to attend and participate in the face meetings associated with Efile Symposium and the Technology Conference. This fee serves to enable FTA to provide meeting room, audio/visual services, and meeting breaks.

### **TIGERS Listserve**

FTA maintains a listserv especially for TIGERS use, [TIGERS@lists.taxadmin.org](mailto:TIGERS@lists.taxadmin.org). This is a self-service list, and individuals may subscribe themselves or unsubscribe as needed. There are links to subscribe to the listserv both on the FTA home page, [www.taxadmin.org](http://www.taxadmin.org), and on the TIGERS home page, [www.statemef.com](http://www.statemef.com) (an FTA-operated web domain). There is no charge for listserv use, nor is there any limit on the number of individuals from a state who may sign up. This list, which is open to Industry and IRS participants as well as states, is an ongoing forum for discussion of any TIGERS-related issues.

**It is critical for states to subscribe to the TIGERS list**, because all notice of upcoming meetings/conference calls/webinars, as well as all notice of postings of new or modified TIGERS-approved draft and final schema sets, are published via the listserv. Resolution of technical issues, as well as IRS responses to questions posed by TIGERS, are also posted on the listserv. A state having any technical question or issue is encouraged to post it – generally states are quick to respond with advice and guidance.

### **TIGERS Website**

The TIGERS website is located at [www.statemef.com](http://www.statemef.com). Maintained by TIGERS's technical support team, the website contains notices of upcoming meetings, all final and working draft schema sets, minutes of recent meetings, TIGERS Change Request documents and IRS responses, and other TIGERS MeF and other resources. New members are encouraged to browse the website and become familiar with its navigation.

### **Participation**

Participation in TIGERS meetings and conference calls is strongly recommended. Decisions concerning technology standards for the MeF programs, including state data formats, communications protocols between the IRS and states, and security technologies are all presented, refined, and discussed at TIGERS sessions. A state that chooses not to participate will not have the ability to provide input into these decisions, and may not have access to in-depth discussion of implementation approaches for these technologies. In order to maximize the benefits of TIGERS participation, state representation should include at least one business specialist with in-depth understanding of the specific tax program, and one technical person.

Moreover, in order to maximize the success of the complex MeF efile programs, **all state XML data formats (schemas), for the MeF programs must be reviewed and approved by TIGERS**. Procedures for this review are posted on the TIGERS website, sponsored by FTA, at [www.statemef.com](http://www.statemef.com).

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## **FEDSTATE MEF IMPLEMENTATION**

There are seven major tasks that states must complete to implement the FedState MeF programs. These tasks include:

- **Registering with FTA and paying FTA fees**
- **Building a Communications Gateway**
- **Developing the State Schema Set Using TIGERS Standards**
- **Defining State Business Rules**
- **Developing or Interfacing to a Back-end System**
- **Creating a Viewing System**
- **Completing IRS Administrative Duties**

Each task is described in greater detail below. However, this document is not intended as a comprehensive technical how-to manual; rather it is intended as an overview for guidance to the states to ensure that the state is prepared to dedicate the appropriate resources and effort to the success of the Fed/State MeF e-file program.

### **I. Register with FTA and Pay Fees as Appropriate**

This was discussed in the introductory section. The remainder of this document will focus largely on the technical tasks to be completed by IT staff and efile coordinators.

### **II. Build Communications Gateway**

#### 1. Gateway to/from IRS

One of the most important technologies in MeF is the use of web services to provide Application to Application (A2A) communications. The concept is that the state's computer system interacts with the IRS' computer system, with minimal human intervention. The MeF system is designed to be a real-time, transactional system rather than batch based. Submissions (packages containing all of the data parts of a filing) are received by the IRS, processed, and made available to the states continuously on a submission by submission basis.

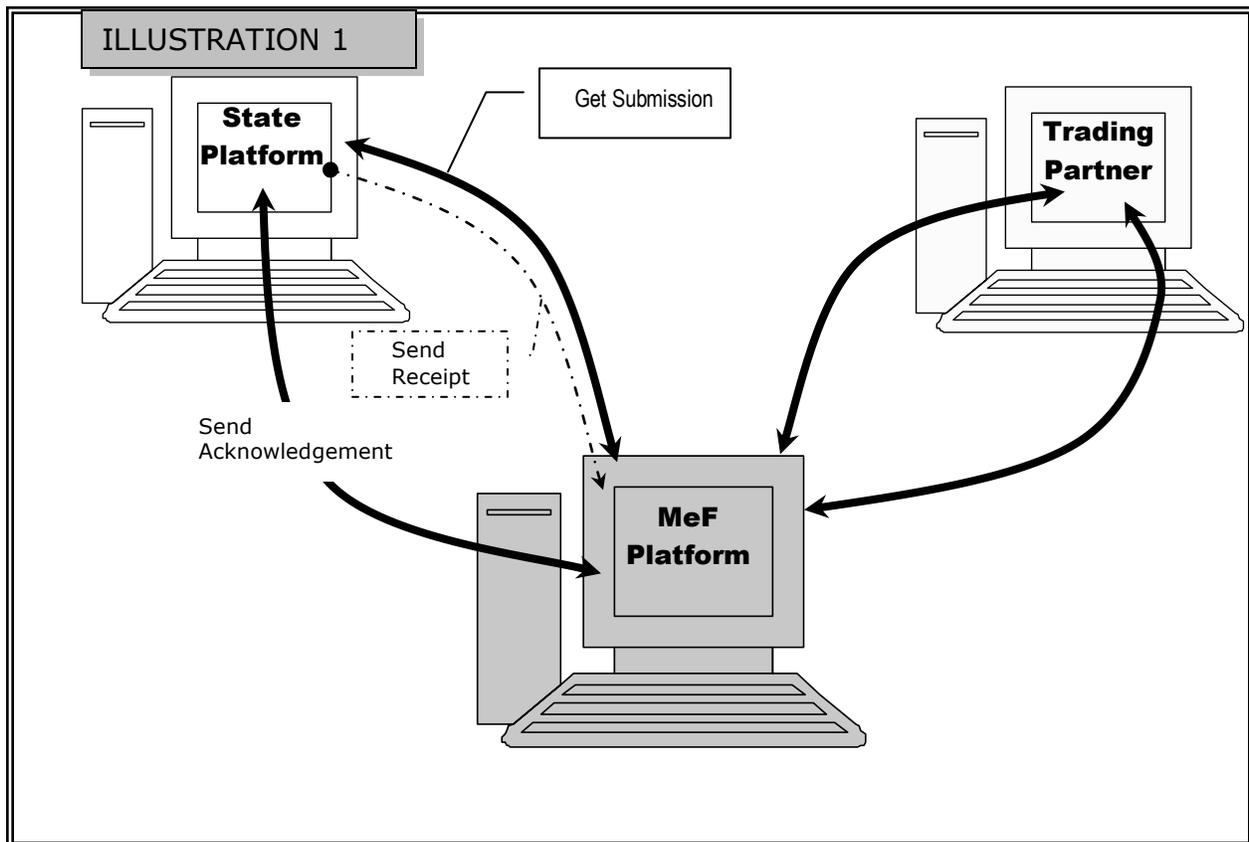
Each state participating in the Fed/State MeF programs must implement a web services gateway for communication with IRS to request and receive returns and to provide acknowledgements. The exact specifications for the web services, including the web services definition language (WSDL), are provided by IRS. (Illustration 1).

Although IRS does support other protocols, Fed/State returns will only be transmitted to the states through the IRS Application-to-Application services, and the state system and its delegates are required to register with the IRS.

A taxpayer's state submission may be linked to the taxpayer's federal submission through a parameter in the state submission. The federal and state submissions may be transmitted in the same message payload, or they may be transmitted separately. In these "linked" submissions, the state submission is not sent to the state by the IRS unless the linked federal submission has been accepted by the IRS. A state submission which is not

linked to a federal submission is sent to the state by the IRS regardless of whether a federal submission has been accepted by IRS for this taxpayer.

The state system currently supports a maximum of 5 multiple concurrent sessions for each system ID. Submissions (returns) will be pre-packaged by IRS in "messages" of up to 100 submissions, and are made available on a continuous basis, as they are received and processed by IRS. A message may include submissions from multiple transmitters and/or preparers. In addition, the state can transmit acknowledgements and receipts while receiving submissions simultaneously when multiple concurrent sessions are used.



a. Interface Control Document (ICD)

The Interface Control Document (ICD) is the documentation published by IRS that provides standards which the state must use for web services communications between the state and the IRS. The standards include such topics as SOAP messages, transmission (payload) package, etc. This document does not include the WSDL (web-services descriptive language), which is provide separately.

The IRS developed and now provides detailed documentation of system requirements to their Trading Partners (all states are considered trading

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partners and transmitters). For security reasons, this document is not published on the IRS website, and is provided to states after the MOU is signed.

b. Concept of Operations (ConOps)

The Concept of Operations (ConOps) of MeF FedState System contains a conceptual overview of the MeF FedState system. The ConOps provides information and definitions on the following:

- Originators
- Transmitters
- Security Management
- Communication Types
- Transmission Types
- Messages
- Submissions
- Service Request Types
- Transmitter Service Requests including:
  - Send Submissions
  - Get New Acknowledgements
  - Get Acknowledgements
  - Get New Submission Status
  - Get Submission Status
- State Agency Service Requests including:
  - Get New Submissions
  - Get Submissions
  - Send Submission Receipts
  - Send Acknowledgements
  - Get New Acknowledgement Notification Request
  - Get Acknowledgement Notification Request
- Service Request for Transmitters or State Agencies
  - Time Login
  - Logout
  - Change Password
  - Request ETIN Status
  - Request list of ETINs
  - Request list of State Participation Service Request
  - Processing Submissions
- IRS Submissions
  - State Filing Options
    - FedState Submissions
    - Stand-Alone State Submission

c. Web Services Definition Language (WSDL)

The WSDL is provided directly from the IRS. The WSDL is code in XML format and is used by the state's web platform (generally either Microsoft .Net or J2EE) to build the state's proxy code automatically, for example when used with WSDL.exe for Microsoft users. The agency must create a web services client for the web services hosted by IRS. For states using Microsoft .Net, the .Net tool WSDL.exe will generate a client from the WSDL provided by IRS. For Java states, there are several environments, including IBM WebSphere and Apache Tomcat, which will generate the web services

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client from the WSDL. **This will take one to two months of effort, depending on the state's level of experience with web services.**

3. Security

Security for the MeF system is provided by what the IRS terms as "strong authentication." This requires the states to purchase a digital certificate from a certificate authority approved by IRS, such as Verisign, EnTrust, or IdenTrust, and register it with IRS. The digital certificate will be used to sign requests from the state to IRS. Strong authentication is described in detail in an IRS document that will also be provided upon request. Strong authentication will require the state to customize the web service client generated from the WSDL. Modified WSDL for strong authentication is provided by IRS.

4. Analysis of Receipt Pattern and Size

XML files are larger than non-tagged data, and Corporate 1120 returns can be extremely large. Even the 1040 returns will be larger than those that were created by the Legacy efile system. States must be prepared to monitor transmission volumes and patterns of receipt and adjust system capacity, number of concurrent sessions, and frequency and timing of requests accordingly.

Because the return submissions are handled one by one at IRS, and are queued for the states as they are ready, states have found that if they wish to utilize the timestamp to distinguish submissions, for example as part of a file name, then the state must utilize milliseconds in order to make the timestamps unique.

Under MeF, taxpayers may include supporting documentation required by a return that is not in the format of forms or schedules, as .pdf files. These "binary attachments" may, for example, include a corporation's profit and loss statement for 1120 returns. Even though Adobe has greatly improved the compression of .pdf files, they are still relatively large. A medium-sized state has found that it requires 15G of storage to comfortably handle all of the binary attachments for its Fedstate 1120 program. While a relatively small percentage of 1040 submissions will require binary attachments, they will still require significant storage space because of the overall volume of submissions.

### III. Build the State Schema Set Using TIGERS Standards

1. TIGERS Role

TIGERS has been designated by the IRS and FTA as the body to develop the technical standards for the FedState MeF programs. TIGERS has developed a framework for the schemas used by the FedState programs for the state submission data. This framework includes common schemas to be used by all states as well as specifications for each state to include the schemas for the state's own forms and schedules. The set of common schemas for each FedState program is posted on the TIGERS website, [www.statemef.com](http://www.statemef.com). TIGERS is the controlling entity for change requests and any activity that could potentially alter these schemas for any of the FedState programs. A

detailed document describing the common schemas and the requirements for the state-defined schemas is also available on the website.

**What is a schema?**

A *schema* is a model for describing the structure of information. It's a term borrowed from the database world to describe the structure of data in relational tables. In the context of XML, a schema describes a *model* for a whole class of documents. The model describes the possible arrangement of tags and text in a valid document.

In schemas, models are described in terms of *constraints*. A constraint defines what can appear in any given context. There are basically two kinds of constraints that you can give: *content model* constraints describe the order and sequence of elements and *datatype* constraints describe valid units of data.

The purpose of a schema is to allow machine validation of document structure. Every specific, individual document which doesn't violate any of the constraints of the model is, by definition, valid according to that schema.

The ability to test the validity of documents is an important aspect of large web applications that are receiving and sending information to and from lots of sources. If you're receiving XML transactions over the web, you don't want to process the content into your database if it's not in the proper schema. The earlier and easier it is to catch this sort of error, the better off you'll be.

Written by: *Norman Walsh*, Senior Application Analyst  
ArborText, Inc – July 1, 1999

## 2. Utilizing the TIGERS Schema Framework

### i. Using the TIGERS Common Schemas

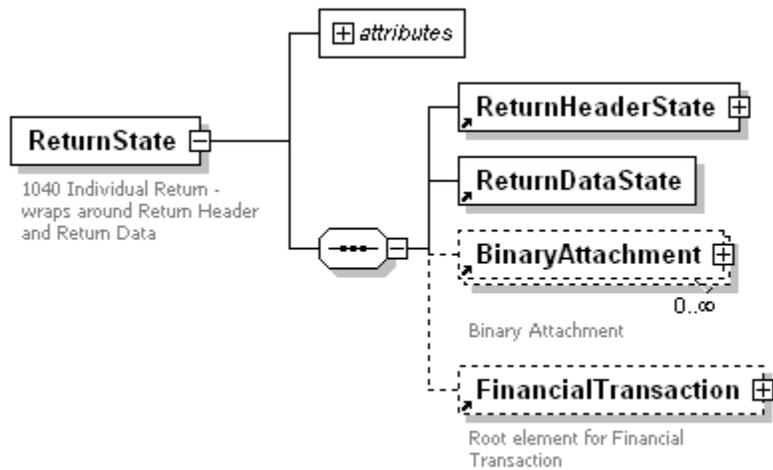
TIGERS provides a schema set called "Common" which is version controlled and available on the [www.statemef.com](http://www.statemef.com) website. A copy of Common is also included in the schema set for each FedState MeF program, including Business (1120 and 1065) and Individual (1040). Common includes the schemas for the "core" elements of the submission headers, the financial transaction data for payments or direct deposit of refunds, and the specification of binary attachments.

**States must use the Common schemas as is, and may not make any changes to them except as specifically published in the Standards document. A full description of the Common schemas is found in the TIGERS MeF Standards document, and will not be repeated here.**

### ii. Building State-defined Schemas

The TIGERS schema package for the 1120 and 1065 FedState programs, StateBusinessPackage, and the package for the 1040 FedState program, StateIndividualPackage, each contain schemas unique to those programs. These include the overall structure schemas for the state submissions, including the placement of the Common schemas and the state defined schemas.

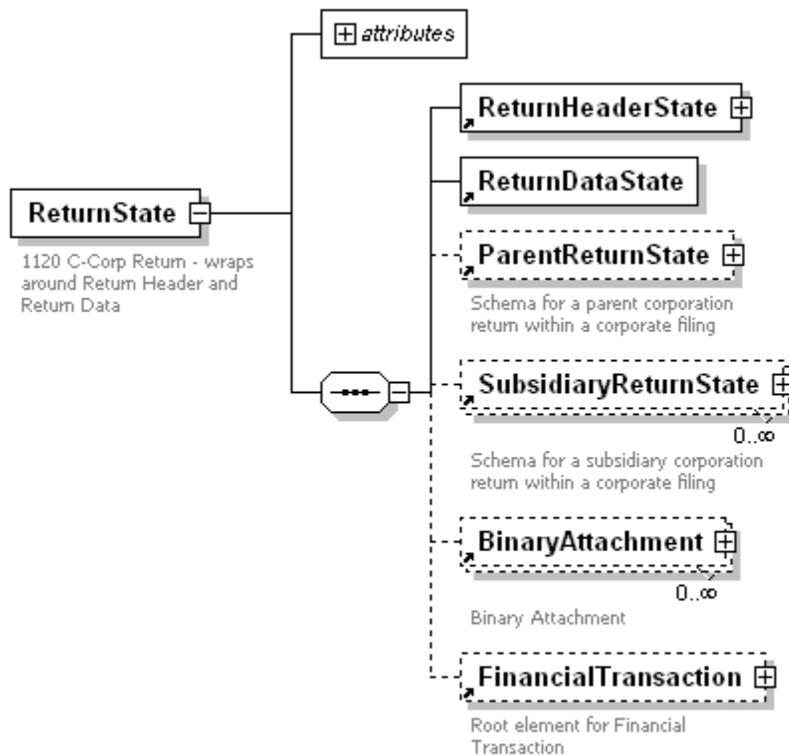
The structure for the FedState 1040 submission is shown below,



Generated by XmlSpy

www.altova.com

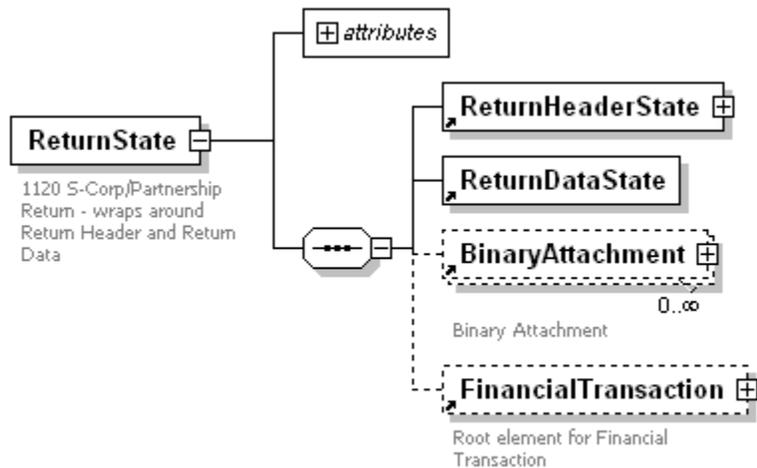
There are two schema structures for the Business submissions. BusinessReturnStateCombined includes sub-structures for parent and subsidiary returns, for a complex corporation.



Generated by XmlSpy

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BusinessReturnStateSingle is similar to IndividualReturnState, and does not allow for parent or subsidiary returns. It is generally used for simple corporations, S-corporations, and partnerships.



Generated by XmlSpy

www.altova.com

Note that each of the schemas above features an included schema called "ReturnDataState" as an element of the schema. ReturnDataState is provided for state use, and is to contain the sub-structure of forms and schedules required for state submissions. **ReturnDataState, BusinessStateEnumerations, and IndividualStateEnumerations (used to hold enumerated lists of values for specific elements) are three of the few TIGERS provided schemas which may be customized by the states.**

### 3. Building the state schemas.

It is necessary for each state to build schemas for each major form and schedule included in the state's efile program. This involves the process of mapping each line and field on a form or schedule to an element in the schema, and constructing complex types to represent compound elements and any tables on the form or schedule. Because this process requires both knowledge of the efile program, for example the ability to make decisions about such things as required vs. optional fields, as well as technical knowledge of XML schemas, the process works best when both a business person, such as an efile coordinator, and an IT person work together.

The ability of the Altova XMLSpy tool to produce graphic representations of the schemas, as shown on the previous pages, makes it straightforward for the business person to understand the schema structure without having to understand the schema code. **As noted previously, all state MeF schemas must be reviewed by the TIGERS review team for compliance with TIGERS standards and best practices.**

What is an element?

An element is the basic building block of a schema. It generally represents one item of information, such as a line item on a tax form. However, an entire schema, such as the schema for a specific form or schedule, may be included as an element in a larger schema, such as a complete return submission. Elements in the state schemas must be constructed according to TIGERS standards.

What is a State Agreed Upon Name?

Each element in an XML schema must be identified by a unique tag name. However, states may call similar line items on a return by slightly different names. In order to maximize the consistency and standardization which is of benefit to both the taxpayer and the software developer, it is desirable for the states to agree on an arbitrary, but acceptable common name for each element, such as "AdjustedGrossIncome." TIGERS provides a list of recommended tag names for elements common to most state tax returns; states are strongly urged to utilize these tag names wherever feasible. Element names must follow TIGERS standards.

What is an Efile Type?

XML has the concept of "simple" and "complex" element definitions or "types." A simple type, such as a single amount with eighteen significant digits and two decimal places, stands alone. A complex type is made up of sub-elements, such as an address made up of street address, city, state, and zip code. Multi-layer complex types are used to represent the various table structures that often appear in tax forms and schedules. The IRS has created an XML file of standardized, commonly used simple and complex type structures, and coined the term "eFileTypes" to refer to these structures. TIGERS has augmented this file with a similar file of "stateeFileTypes," that is, simple and complex XML structures that appear across state tax filings. Just as states are strongly encouraged to use established element names, they are also strongly encouraged to use established standard eFileTypes for simple and complex structures needed for their state MeF efile program.

There are two documents provided for state use, to assist in building the state schema sets. The first is the **TIGERS Standards for Fedstate MeF**, which gives standards approved by the TIGERS membership. **Compliance with TIGERS standards is required for all states; state schema sets will not be approved by TIGERS unless they comply with the Standards.**

The second document is the **TIGERS Best Practices**. Best practices fall into two categories. "Tier One" best practices are those which make it easier for the software development industry to support the state. These

practices establish uniformity among states where feasible, and include practices which simplify maintenance of state efile software. **States must comply with Tier One best practices unless they can show strong business reasons for variance.** Tier Two best practices are those which experienced states have determined make it easier for states to develop the schema sets, or to maintain the schema sets on an ongoing basis as tax legislation, forms, and schedules change. **States are strongly urged to comply with the Tier Two best practices wherever feasible.**

**The TIGERS Standards for Fedstate MeF and the TIGERS Best Practices are available on [www.statemef.com](http://www.statemef.com) and will not be discussed in any further detail in the current document.**

**Effort for building schemas ranges from half a day for a simple schedule or worksheet to three days (or more) for a complex form, depending on the state's experience level in building schemas.**

#### RULES: NAMING ELEMENTS

- Names can contain letters, numbers, and other characters
- Names cannot start with a number or punctuation character
- Names must not start with the letters xml (or XML or Xml)
- Names cannot contain spaces, and underscores are discouraged
- i. • Names are "Upper Camel Case" – words are concatenated and the first letter of each word is capitalized. For example: 2005 state filing period would use the following element naming convention:
  - 3. ○ StateFilingPeriod2005
  - 4.
- Element names **cannot** be longer than 30 characters, due to restrictions imposed by some database products. However, element names should be as short and simple as possible to still be clear and descriptive.
- XML documents often have a corresponding database, in which fields exist corresponding to elements in the XML document. A good practice is to use the naming rules of your database for the elements in the XML documents.
- Non-English letters like éòá are perfectly legal in XML element names, but watch out for problems if your software vendor doesn't support them – they are not recommended for TIGERS use.
- The ":" should not be used in element names because it is reserved to be used in XML schemas to denote special parameters such as namespaces.

#### 5. TIGERS Change Control – Add/Change Policy

A state may not alter the schema structure or any TIGERS provided schemas, except for ReturnDataState, BusinessStateEnumerations, and IndividualStateEnumerations, except through the TIGERS process.

- i. Changes and/or additions to the State Master Schema must be submitted using the TIGERS Change Control Procedure. The change control procedure is designed to promote consistency and uniformity of the State Master Schema.

- ii. The TIGERS Change Control Procedure is located on the working site for Fed/State MeF development, [www.statemef.com](http://www.statemef.com).

**IV. Define Business Rules**

1. Business Rule Document – State Specific Spreadsheet (ILLUSTRATION 2)  
 The schemas, no matter how well constructed, only tell part of the story for a state’s efile program. For example, math rules (line 1 + line 2 = line 3) cannot be coded in an XML schema. Each state must create a document for the software developer and electronic return originator community to define the remaining business rules. One way to convey business rules related to the data fields included in the schemas is to develop a spreadsheet of the fields, showing for each field such criteria as:
  - Under what circumstances is the field mandatory, if shown as optional in the schema?
  - How is the field calculated?

The purpose of a standardized spreadsheet is to allow each agency to distribute to the business community (both internal and external to the state), in the same manner, the information used for State Return transmissions. TIGERS can provide a recommended spreadsheet format for this purpose.

ILLUSTRATION 2

2. Binary Attachments  
 The MeF submission may also include non-XML documents submitted in PDF format, known as “binary attachments”. These attachments are included in the tax return as a separate file or files within the Zip Archive payload. The binary attachments allow taxpayers to provide requested documentation that includes required signature documents as well as third party documents such as corporation balance sheets and miscellaneous documents required for validation of some credits.

States must first determine their requirements for taxpayers submitting these binary attachments. Ideally any document that is required to be filed with a paper return should be attached in PDF format, so that it can be filed and viewed electronically. Many of the benefits of electronic filing are lost when the filing depends on some part of the documentation having to be sent as paper. The issue comes with “nice to have” documentation, since PDF files are generally large. States are advised to use best judgment in requiring PDF attachments. The Business Rules Document or Software Developers Guide must then clearly state the PDF requirements.

3. States must decide how they choose to have the binary attachment files identified, and specify naming conventions for each attachment required. The IRS Pub 4164 – *Modernized eFile Guide for Software Developers and Transmitters*, has many examples of naming convention that a state might want to adapt for their needs. Similarly, IRS provides a convention for “attaching” a PDF document to a specific form or line item which the states may want to adopt.
4. Federal Return Data  
Most states require that a copy of the Federal return be submitted along with the corresponding state return. In the FedState MeF programs, as was the case with Legacy 1040 efile, this is a separate copy of the federal data that is created by the software as part of the state submission – the IRS does not provide a copy of the federal return. In the case of Corporate returns, the issue becomes more complex, because rules for inclusion of federal data are not uniform. States may require the complete federal 1120/1120S, or may just require the first four pages. In the case of an out-of-state consolidation with an in-state subsidiary, the state may only require a pro forma return for the corporation or it may require copies of both the complete consolidated return and the subsidiary pro forma. The state must clearly document its requirement in the Business Rules document/Software Developers Guide.

NOTE: The federal return data will be transmitted in a zipped sub-file of the state submission. All federal forms and schedules will be in XML format following the schemas published by IRS. The file may also include PDF documents that were sent to IRS with the federal filing.

5. Payment Instructions
  - i. Refunds  
The TIGERS FinancialTransaction schema provides data to indicate the banks account(s) to which a refund is to be deposited. In order to align with IRS practice for the 1040 program, a refund may be split into as many as three separate bank accounts. The state must specify in its Business Rules document whether or not it allows such a split.
  - ii. Payments  
The TIGERS FinancialTransaction schema also provides data for the state to obtain payment from a taxpayer’s bank account via ACH debit. The taxpayer may only specify one account for the payment associated with the return. However, up to four Estimated or Declaration payments may be made at the time of the submission, using a separate bank account. The state must specify whether it will accept Estimated payments in this way.
6. Industry/ERO Manual  
These publications provide information necessary for the Electronic Return Originators, Transmitters, and Software Developers to accomplish their tasks. All of the information currently sent to industry participants in efile programs, including due dates for filing and payment, payment methods accepted, contact and error resolution information, etc., must be provided for Fed/State MeF. Below is a suggested outline of the document. While each state may have some unique requirements, the use of this outline

helps to ensure that all of the essential items are included, and again helps to foster consistency and standardization among states.

1. INTRODUCTION
  - Identify schema version number
  - Brief description of the State's program
2. CHANGES FOR TAX YEAR 20??
  - Identify all changes related to legislation, procedure or policy
  - Identify if schema version has changed
3. CONTACT PERSONNEL
  - IDENTIFY CONTACT PERSONNEL
  - LIST TELEPHONE & FAX NUMBERS, EMAIL AND MAILING ADDRESSES
4. ACCEPTANCE AND PARTICIPATION
  - PROVIDE A LIST OF REQUIREMENTS NEEDED TO PARTICIPATE IN THE STATE'S PROGRAM
5. DEVELOPERS RESPONSIBILITIES
  - CONFIDENTIALITY – LIST ANY CONFIDENTIALITY GUIDELINES, RULES AND VIOLATION CONSEQUENCES
  - COMPLIANCE REQUIREMENTS
  - PUBLICATIONS
    1. WEBSITES– REFERENCE FOR CON-OPS, FORMS, INSTRUCTIONS
  - STATE PUBLICATION – GUIDELINES AND ERROR CODES
    1. MISCELLANEOUS
  - TIMELINESS OF FILING
    1. POLICY ON REJECTED RETURNS
  - SOFTWARE ACCEPTANCE, TESTING AND APPROVAL – FIX FORMAT
6. ACKNOWLEDGEMENT SYSTEM
  - ERROR CODES AND CHECK SUM---BEST PRACTICE ITEMS
7. GENERAL INFORMATION
  - TESTING PERIOD
  - SIGNATURE REQUIREMENTS
  - PAYMENT METHODS
  - DATA REQUIREMENTS – ZERO FIELDS BLANK
  - TYPE OF FILINGS ACCEPTED – FED/STATE (LINKED), STATE-ONLY (UNLINKED)
  - DECIMAL PLACES FOR RATIOS
  - HANDLING OF ATTACHMENTS – PDF REQUIREMENTS
  - EDITS AND VERIFICATIONS
  - EXCLUSIONS FROM MANDATED ELECTRONIC FILING PROGRAM
8. SCHEMAS AND SPECIFICATIONS
 

SCHEMAS SHOULD BE PRESENTED IN STATE SPECIFIC SPREADSHEET. Elements must also be placed in the order of the state's form, as the form is what is used for presentation for the tax preparation and is the best reference for the software developer.

EXAMPLE INSTANCE DOCUMENTS

  - STATE SPECIFIC
  - PAYMENTS
  - TRANSMISSION, ENVELOPE, MANIFEST
  - ACKNOWLEDGEMENT
  - ENVELOPE
9. APPENDIX
  - COUNTY CODES
  - CITY CODES
  - SCHOOL DISTRICT NUMBERS
  - COMMON ABBREVIATIONS
  - STATE ABBREVIATIONS AND ZIP CODE
  - OTHER STATE SPECIFIC ABBREVIATIONS/INFORMATION
10. FEDERAL DATA REQUIREMENTS
 

State must specify the requirements for federal data, including whether the complete return or partial, and whether pro forma for the state.

- i. The ERO manual is similar, but focused on the ERO community. For example the state may require that the signature document be included in the submission file, so the ERO must know that they are required to scan the signature document once signed in order to include it in the submission as a PDF attachment.

#### 7. Error Codes

- i. Remember that once the software is in production, error codes and messages will be seen by the electronic return originators and transmitters, not by software developers. For that reason, error messages should be clear and concise, related to business terms. Tag names should not be used in error messages. However, the XPath of the data element in error (XPath is an XML facility that indicates the "path" through the schema structure from the root element to the element in question) should be included in the error Acknowledgment. All error messages must be provided in the Business Rules/ERO document.
- ii. Most XML parsers give cryptic to incomprehensible error messages, making the state-provided message critical. Some parsers enable the state to customize error messages. While this is a bit more work, it makes error correction much simpler and quicker for the ERO or software developer.

### **V. Developing or Interfacing to a Backend System**

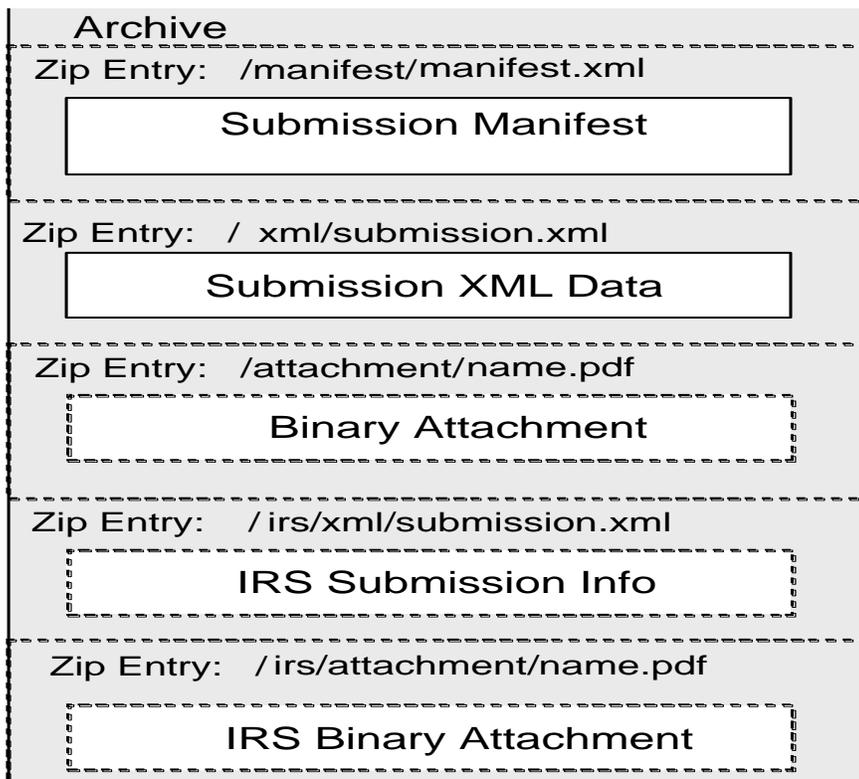
Everything that has been discussed to this point merely gets the FedState MeF submissions into the state's network. Each state is responsible for the processing of the submissions, and returning acknowledgements to the IRS for retrieval by the transmitters. The exact process will vary widely from state to state, and will be different if the state can process XML directly, on a real-time transaction basis, or whether the state must convert the input to flat file records and store them for a batch run on a legacy system. At minimum, however, each state must implement the following.

1. Receiving Submissions
  - i. Each state's gateway must immediately transmit a "receipt" to IRS to signify that the submission was received in its entirety with no protocol errors.
  - ii. The message payload and each submission contained in the payload must be unzipped before it can be processed further.

The following diagram illustrates the structure of the state submission, showing the zip archive structure. The state system must be able to handle this structure.

In the diagram below:

- There is one and only one manifest, named "manifest.xml"
- There is one and only one state submission XML file. The name of the file is the submission id assigned by the ERO, and NOT literally "submission"
- Each binary attachment is zipped, and its name is the .pdf file name
- The IRS submission XML is also identified by its submission id
- The IRS pdfs are also identified by their .pdf file name(s)



2. Parse Submissions
    - i. Each XML submission must be checked for validity against the state's schema set. Invalid submissions should generally be rejected.
    - ii. The XML data must be translated, if required, into the format for further processing. The state may wish to store the original XML, even if the data must be translated for further processing.
  3. Handling Data to Back-end Processing System
    - i. Information in the submission manifest, such as whether the submission is linked or unlinked, must be handled as appropriate to process the submission.
    - ii. The return filing must be processed by whatever system the state uses.
  4. Create Acknowledgements
    - i. The state must determine at what point the acknowledgment will be created. For states that can process the submissions on a real-time basis or with short turnaround, the state may want to completely process the submission before creating the acknowledgment. States requiring a longer turnaround may want to create the acknowledgement on the basis of the parsing of the XML, and handle any errors detected subsequently by the back-end system by more traditional means such as notices of adjustment.
    - ii. By consensus agreement of the participating states, a positive acknowledgement indicates that the return has been accepted by the state as having been filed. Whether it also means that the return is considered correct as filed is determined by the individual state, but must be clearly indicated in the state's documents.
    - iii. The Acknowledgement is an XML file created according to a schema published by the IRS. Acknowledgements must be transmitted to IRS using the web services discussed previously. Acknowledgments may be sent to IRS in any order, and do not need to correspond exactly to the order or packaging in which the original submissions were received by the state.
- 5. The amount of effort required for this work will vary, according to the state's capability of processing XML, and whether the back-end system is already in place or whether it is also being developed. A minimum of four to six months is advisable.**

## **VI. Develop Viewing System**

Electronically filed returns must be able to be displayed to state agency personnel, for purposes such as error resolution and audit. A state may also wish to make a taxpayer's past filed returns available online to the taxpayer. For these reasons, it is necessary to convert the submission to a more readable format.

1. XML Data

XML data can be displayed simply as a formatted "data sheet" listing the return items and the corresponding data. However, most states wish to be able to recreate the facsimile of a paper filing, including all of the returns and schedules. There are two main techniques for converting XML data to a form, and both have their merits.
- i. XSLT – eXtensible Stylesheet Language Transformation

XSLT is an XML-based language that allows the user to define a transformation of the XML data content into any format. XSLT has all of the power of HTML, so that almost any format can be accommodated. XSLT currently has the advantage that the IRS is using it internally, and is making the XSLT for the federal 1120, 1065, and 1040 families of forms and schedules available to the states. Since the state auditors will want to view the federal data as well as the state data, this potentially saves work for the agency. IRS has written a viewer for the federal XSLT stylesheets, and is making the viewer available to the states on an "as is" basis.

ii. Tagged PDF – Portable Document Format

The other technique for displaying XML data is to create a PDF template from the state's forms and schedules, and to "tag" the template fields with the corresponding XML tags from the return data. Adobe products can then merge the XML return into the PDF template. This method has the advantage of creating a PDF document that can then be stored or used in a variety of ways. A number of states are using this technique, and IRS is considering it.

2. Binary Attachments

Any PDF documents included in the submission package as binary attachments may also need to be displayed. There are many tools available for displaying and printing PDF documents. The challenge for the states is to create a system which links the PDF attachments to the method for viewing the XML data from forms and schedules, so that the user can view the complete return.

## VII. Administrative Matters

1. MOU Requirements

The Memorandum of Understanding (MOU) spells out the terms of the participation in a particular Fed/State program. The IRS creates the MOU and each state must execute it before participating in the program. While much of the development effort can proceed before the MOU is executed, IRS will NOT allow a state to interact with its network, even in test mode, without having the MOU in place. Certain IRS documents for the MeF program are considered sensitive, and will not be provided to a state until the MOU is in place.

2. ETIN Requirements

For purposes of the FedState MeF program, each state is considered a Transmitter, and must be assigned an Electronic Transmitter Identification Number or ETIN. Even if the state already had an ETIN for use in the Legacy 1040 efile system, a new ETIN is required for MeF. A state may have multiple ETINs for security purposes, especially if a non-revenue agency is retrieving Form 990 filings, but should not receive other tax return data. The same ETIN may, however, be used for multiple MeF programs.

3. System ID

Remember that MeF is a computer application to application (A2A) process. For this reason, it is necessary to register the computer system or systems that will be communicating with the IRS web services. This must be done before testing can proceed. Additionally, it will be required to register a digital certificate from a commercial Certificate Authority for each system.

4. Delegates

It is necessary to register the primary contact for each Fed/State MeF program with the IRS, as well as any delegates. While the primary contact

is generally the Efile Coordinator on the business side, it is strongly recommended to have at least one and preferably two delegates from the technical side. The IRS Help Desk will ONLY speak with those individuals who have been registered, so it is vital to have someone registered who is able to work with the Help Desk to debug a technical problem if one should occur in production operations. Also, if the state's system is being developed by contractors, it is recommended to have at least one permanent state employee as a delegate, to be able to work with the Help Desk after the contract is completed.

5. Application Process  
IRS has recently implemented an online e-Services process for the states to apply for ETINS, register systems, and add or change delegates. Paper application is no longer necessary. The required links are on [www.irs.gov](http://www.irs.gov).

#### **VIII. Contacts**

1. Terry Garber – [garbert@sctax.org](mailto:garbert@sctax.org), TIGERS State Co-Chair
2. Fluffy Cazalas – [fluffy.cazalas@vertexinc.com](mailto:fluffy.cazalas@vertexinc.com), TIGERS Industry Co-Chair
3. Donna Muccilli – [donna.muccilli@taxadmin.org](mailto:donna.muccilli@taxadmin.org), TIGERS Secretary
4. Jonathan Lyon – [jonathan.lyon@taxadmin.org](mailto:jonathan.lyon@taxadmin.org), for all FTA matters

#### **IX. Helpful Aids**

1. MeF Submission Composition Guide
2. Publication 4162 – Modernized eFile Test Package
3. Publication 4163 - Modernized eFile – Information for Authorized IRS eFile Providers
4. Publication 4164 - Modernized eFile – Guide for Software Developers and Transmitters
5. [www.statemef.com](http://www.statemef.com)