

State Fertilizer Tonnage Reporting Just Got Easier

with Paperless Fertilizer Tonnage Reporting (**PFTR**)
using uDeal from Lion Software

by Jon L Nevins, PhD

Copyright Lion Software November 9, 2015 - Beta 1.7



Table of Contents

Section	Page
Introduction	3
A Simple Example	4
iPad Version Overview	11
iPhone Version Detail	14
Reporting Tonnage Data	19
Advanced User	27
Windows Users Only	30
 Appendix A	 31
Standard Import Text File Format	31
Periods defined in UFTRS program	34
uDealMobile design criteria	35
A New Standard Format (CSV)	35
 Appendix B	 37
XML Schema Developed by AgGateway	37
 Appendix C	 49
uDealMobile MIT License	49
Requirements for Project Participation	50
 Appendix D	 51
History of UFTRS Project	51
 Appendix E	 53
An experiment with a direct interface to UFTRS	53
UFTRS Import Error Codes in uftrsv10	59
 AgGateway Agiis Database	 60
Summary and Recommendations	62

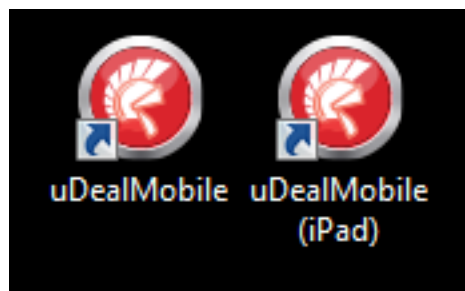
Introduction

All major fertilizer trade associations led by The Fertilizer Institute (TFI) and Agricultural Retailers Association (ARA) have joined Association of American Plant Food Control Officials (AAPFCO) in setting a goal to have **Paperless Fertilizer Tonnage Reporting by 2016**. There are 47 states that require this reporting by law and over 10,000 companies who sell fertilizer who must fill out countless forms. Some companies are very large fertilizer producers and distributors and many are small fertilizer dealers. Even small hardware stores or large ones like Walmart face this problem. Thankfully there is some uniformity due to early work by AAPFCO and TVA in creating the Uniform Fertilizer Tonnage Reporting System (UFTRS) but eBusiness has changed so much in the last 30 years that it is time for a redo. The above organizations contracted with AgGateway, the leader in agricultural eBusiness standards, to help design a new set of standards. That job is finished and now it is up to our industry to make it happen. This will require a dedicated community effort.

The owner of Lion Software, Dr. Jon Nevins, who wrote the TVA Form-U-Share (FUS) program which he sold to Software Solutions Integrated (SSI) has now written an App which can be very helpful in meeting this goal. It is named uDeal and designed to modernize the UDEAL program which was originally developed at TVA and incorporated in the FUS program. UDEAL can still be downloaded from the AAPFCO web site along with the UFTRS program used by states to process tonnage data and to assist in consolidation of this data to the national fertilizer database maintained by TFI and published in "Commercial Fertilizers" and sold electronic form.

uDeal runs on all versions of Microsoft Windows, Mac OS X, all versions of iOS products (iPod,iPhone & iPad) plus Android phones and tablets. In time uDeal will be in the Apple App Store and Google Play online stores, but for now is available at www.PFTR.net or www.UFTRS.com for testing on Windows. At the moment only a few states are ready to receive PFTR but more will be ready soon.

When you download uDeal be sure to check the create desktop option and you will see 2 icons



One will simulate an iPhone and the other an iPad. But being windows programs you can blow them up to fill your full screen or just stretch the edges to fit your working style.

A Simple Example

We will demonstrate with the iPhone but you can switch to iPad any time as the data files are exactly the same.

The first time you run uDeal you will see the screen:

uDealmobile Beta 1.7

Copyright (c) 2015 Lion Software

Reference

Date Shipped

Zip Search

FIPS	AL077	Florence
FertYY	1516	Alabama
Period	01	LAUDERDALE
		35630

Shipper ID

Enter Zip Code and ShipperID and Click

Start Product Orders Backup Firms State

Fill in the zip code of your store and the city, state and county should appear. Then enter the **ShipperID** (license) assigned by your state control official. Then click

Enter Zip Code and ShipperID and Click.

This will setup your store and state (license).

If you have a small business and sell fertilizer in only your county or if your state does not require reporting by county, the above **Product** screen is the only one you need for your daily entry. Being as small as the screen is you could hide it in the corner and just use it as a calculator when needed.

If you just sell custom mixed fertilizers, enter the grade N-P-K in the indicated boxes and press enter after each entry. If this is a dry bulk mix to be used on a farm just click the tons box and enter the number of tons sold. An estimated tax or fee which you owe will be shown. If you think you might sell this grade many times just click **Save Item** and begin accumulating a list. After a list is created the task is even easier since you just

choose from your drop down list instead of typing the grade. When finished just click **Save** and you are done until the end of the month or reporting period and you are ready to submit the report to the state. Even if your state is not ready to accept PFTR yet, you can use the printed report to fill out your form. The printed report shows by county the tons you sold by grade and how much was bag, bulk or liquid and how much was farm use and how much was non-farm use. When sending PFTR to Florida the file will also break out the non-farm use in more detail.

If not a mixed fertilizer, when the **Mixed** switch is turned off the following screen pops up

uDealmobile Beta 1.7

Copyright (c) 2015 Lion Software

Select a Product

Find Code 203 Done Clear

Show Form ☒ All ☐ Dry ☐ Liquid

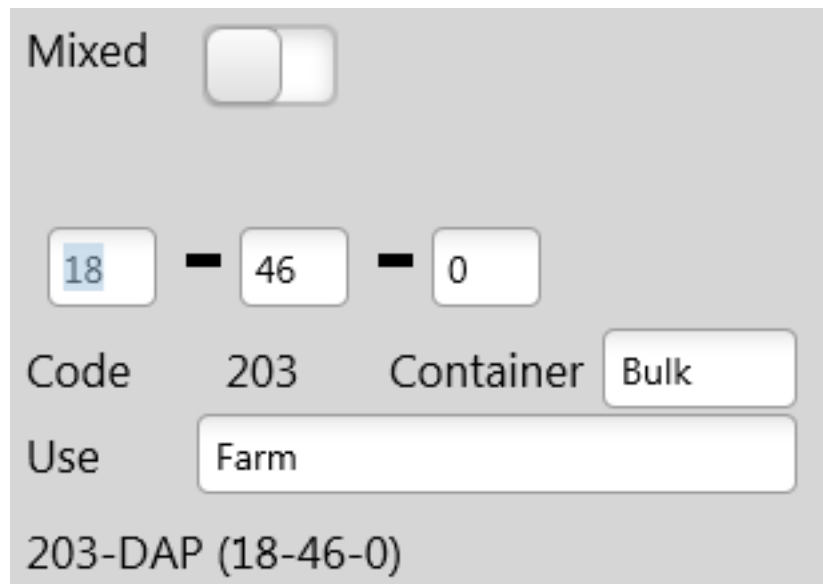
Show NPK ☒ All ☐ N ☐ P ☐ K

Code 203 AgGateway ☐

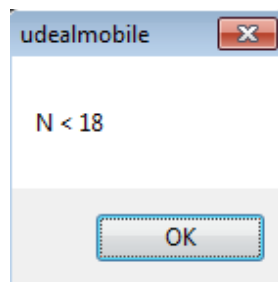
203-DAP (18-46-0)

If you know the fertilizer code, probably sent to you by your state fertilizer control official, then just enter it. In the example above it is 203 which shows you DAP. If this is correct just click **Done** which returns you to the Product screen. If you don't know the code you can search for it. Clicking on the Product box will drop down a complete list of products you can choose from. To make it easier especially for a clerk unfamiliar with fertilizer, there is the above search criteria. Form (Dry or Liquid) and NPK. With these checked the selection list will be shorter.

After clicking **Done** the following screen is shown.



You can actually change the grade if necessary but the state mainly wants to have an accurate code. DAP is probably dry bulk but clicking the Container box will allow **Bag Bulk or Liquid** instead. If the product selected had been a liquid like nitrogen solution the default would be **Liquid**. If you change the default grade, a check is made to see if your change was within **UFTRS** range limits. For example if you changed **N** to zero you would see:



If you click **OK** you can change **N**. If you press **Return** the lower result will remain and you will be editing the next field **P**. A similar result would happen if you entered a value greater than 21, as this is the upper limit for DAP (furnace grade). **Important:** if we do not check these ranges as the data is entered the state would be annoyed when the **UFTRS** program found them later and would have to contact the registrant.

If not farm use in your demo it will show a list of Florida uses. In the future the list will be state specific as Maryland has a different set of uses.

Most states don't require reporting secondary or minor elements but may in the future. If you turn the the **Sec/Micro** switch on you will see the following popup:

Calcium (Ca)	<input type="text"/>
Magnesium (Mg)	<input type="text"/>
Sulfur (S)	<input type="text"/>
Chlorine (Cl)	<input type="text"/>
Boron (B)	<input type="text"/>
Copper (Cu)	<input type="text"/>
Iron (Fe)	<input type="text"/>
Manganese (Mn)	<input type="text"/>
Molybdenum (Mo)	<input type="text"/>
Zinc (Zn)	<input type="text"/>
Clear All	Done

Just fill in the appropriate elements and when finished click **Done**. If you do much of this you will probably want to build a list of items to choose from. We won't demonstrate this here but the item codes will be 8 character codes NNPPKK## where the grade plus a 2 digit number will be unique per store.

Play with the demo and many things will become clear. If you sell in multiple counties and states you will want to use the **Start** screen to enter the final destination zip code. Entering the code will fill in the **FIPS** AL077 information **Fertilizer Year** and **Period** information required by the state. If the **Date Shipped** is not the day you made the entry

change it. If you have only one store (license) then the **Shipper ID** will be correct. For enterprises reporting for many stores click the **Store** drop down. If you have many customers per store you can setup a list under **Firms>Retail** which also tells what kind of business they have (Golf Course, Nursery, ...) and county code in case zip search fails.

Copyright (c) 2015 Lion Software

Reference 2A90ADCC

Store Store 1001 Name

Use Customer ☒

Customer Customer

Date Shipped 7/13/2015

Zip Search 35630

FIPS	AL077	Florence
FertYY	1516	Alabama
Period	01	LAUDERDALE
		35630

Shipper ID 123456

Start Product Orders Backup Firms State

There are cases where you do not pay the tax or fee. By unchecking **Taxable** the following wholesale screen on the **Firms>Wholesale** page pops up:

Copyright (c) 2015 Lion Software

☐ State ☒ Retail ☐ Wholesale ☐ Stores ☐ All

ID **Done**

Name

Address

City

State

Zip Code

Phone

eMail

Store ID

Navigation icons: Start, Product, Orders, Backup, **Firms**, State

Create Example - This Resets All Data
Restore from Example Data

This screen on the **Firms** page was generated by clicking the **Create Example** button. This task saves your current working data and creates 2 stores, 3 states, 3 wholesale customers per store and 5 customers per state. Use these examples to test some of the more advanced features of uDeal.

iPad Version Overview

As mentioned earlier there are 2 versions (Desk Top Icons) you can use. Other than screen real-estate they are identical and use the same data. On real mobile devices you are stuck with your purchase but in Windows you can make each screen a little larger or even full screen to match your work preference. More and more Windows and Mac work stations have multiple monitors so choices are limitless. This tutorial uses the iPhone model which is neater to print. In reality, day to day use for many will only need the **Product** screen. The iPad screen below (**Start**) screen might be more useful if you have to report by county and you need to lookup customers or enter different zip codes. For enterprise users it is also where you go to change stores. If you want to keep up with customers by store just uncheck the Use Customer switch. If you do you must also set up customer as well be shown on the **Firms** Page. The main difference in the real Mobile version is that instead of a Windows dropdown list you get an iOS or Android Rolodex type selection wheel that you can thumb through. For me, I love to be able to touch the screen.

Start Screen is Bigger and includes Product Screen

The screenshot displays the uDeal iPad application interface. The window title is "uDeal". The interface is divided into two main sections: "Customer Information" and "Product Information".

Customer Information:

- Reference: 3D39FF16
- Store: Store 1001 Name
- Use Customer: ☐
- Date Shipped: 10/27/2015
- Zip Search: 35630
- FIPS: AL077, Florence, Alabama, LAUDERDALE, 35630
- Shipper ID: 123456

Product Information:

- Mixed: ☒
- No Items: **Get Items** (trash icon)
- Code: 000, Container: Bulk
- Use: Farm
- Mixed Fertilizer: Tons
- Taxable: ☒
- Sec/Micro: ☐
- Pest: ☐

At the bottom of the form are three buttons: **Save**, **Cancel**, and **Save Item**.

The bottom navigation bar contains four icons: **Start** (heart icon), **Orders** (book icon), **Report** (book icon), and **Firms** (person icon).

Orders Screen is Bigger

uDealMobile Beta 1.7 Copyright (c) 2015 Lion Software

Get History Clear History Rpt STD Rpt XML Rpt CSV Share

Show ☐ State ☒ Required ☐ Optional ☐ All History No History Selected

Col# >123456789012345678901234567890123456
=====10=====20=====30=====40=====50=====60
UFTRS>OS1001SC1213150001 240 120 1800000020001110011

Shipper	State	Year	Period	Code	Units	N	P	K	Qty	Contai...	Use	Pesticide	County	Tax
OS1001	PA	1213	17	000	1	112	287	225	0000047...1	1	1	1	001	1
OS1001	PA	1213	17	002	1	820	000	000	0000014...2	1	1	1	001	1
OS1001	PA	1213	17	428	1	000	000	600	0000024...1	1	1	1	001	1
OS1001	PA	1213	17	428	1	000	000	600	0000024...1	1	1	1	001	1
OS1001	SC	1213	15	000	1	200	000	000	0000250...2	1	1	1	001	1
OS1001	SC	1213	15	000	1	200	000	000	0000218...2	1	1	1	001	1
OS1001	SC	1213	15	000	1	200	000	000	0000029...2	1	1	1	001	1
OS1001	SC	1213	15	000	1	200	100	100	0000068...1	1	1	1	001	1
OS1001	SC	1213	15	000	1	240	120	180	0000020...1	1	1	1	001	1
OS1001	SC	1213	15	000	1	030	100	000	0000964...2	1	1	1	001	1
OS1001	SC	1213	15	000	1	300	000	200	0000828...1	1	1	1	001	1
OS1001	SC	1213	15	000	1	340	000	000	0000245...1	1	1	1	001	1
OS1001	SC	1213	15	000	1	090	230	300	0000320...1	1	1	1	001	1
OS1001	SC	1213	15	000	1	090	230	300	0000320...1	1	1	1	001	1

Start Orders Report Firms

Reports Screen is Bigger

For those who really want to study XML or UFTRS formats

uDealMobile Beta 1.7 Copyright (c) 2015 Lion Software

Fertilizer Tonnage Report Backups

Import STD, CSV or AgXML Reports from backup

STD CSV XML

Show Import Clear

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<ns1:FertilizerTonnageReport xmlns:ns1="urn:cid:names:specification:ces:schema:all:5:3" xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance" xsi:schemaLocation="urn:cid:names:specification:ces:schema:all:5:3 http://www.w3.org/2001/XMLSchema-instance">
  <ns1:Header>
    <ns1:ThisDocumentIdentifier>
      <ns1:DocumentIdentifier>789</ns1:DocumentIdentifier>
    </ns1:ThisDocumentIdentifier>
    <ns1:ThisDocumentDateTime>
      <ns1:DateTime>2013-05-07T00:00:00.000</ns1:DateTime>
    </ns1:ThisDocumentDateTime>
    <ns1:From>
      <ns1:PartnerInformation>
        <ns1:PartnerName>ABC Products Inc</ns1:PartnerName>
        <ns1:PartnerIdentifier Agency="Other">123</ns1:PartnerIdentifier>
        <ns1:ContactInformation>
          <ns1:ContactNumber>123-456-7890</ns1:ContactNumber>
        </ns1:ContactInformation>
        <ns1:AddressInformation>
          <ns1:AddressLine>123 Main St</ns1:AddressLine>
          <ns1:CityName>ABC</ns1:CityName>
          <ns1:StateOrProvince>CO</ns1:StateOrProvince>
          <ns1:PostalCode>80538</ns1:PostalCode>
          <ns1:PostalCountry>US</ns1:PostalCountry>
        </ns1:AddressInformation>
      </ns1:PartnerInformation>
    </ns1:From>
  </ns1:Header>
  <ns1:From>
    <ns1:PartnerInformation>
      <ns1:PartnerName>ABC Products Inc</ns1:PartnerName>
      <ns1:PartnerIdentifier Agency="Other">123</ns1:PartnerIdentifier>
      <ns1:ContactInformation>
        <ns1:ContactNumber>123-456-7890</ns1:ContactNumber>
      </ns1:ContactInformation>
      <ns1:AddressInformation>
        <ns1:AddressLine>123 Main St</ns1:AddressLine>
        <ns1:CityName>ABC</ns1:CityName>
        <ns1:StateOrProvince>CO</ns1:StateOrProvince>
        <ns1:PostalCode>80538</ns1:PostalCode>
        <ns1:PostalCountry>US</ns1:PostalCountry>
      </ns1:AddressInformation>
    </ns1:PartnerInformation>
  </ns1:From>
</ns1:FertilizerTonnageReport>
```

Start Orders Report Firms

Firms Screen is Bigger

The right hand side will not show unless the Store button is on

uDealMobile Beta 1.7 Copyright (c) 2015 Lion Software

☒ State ☐ Retail ☐ Wholesale ☐ Stores ☐ All

ID

Name

Address

City

State

Zip Code

Phone

eMail

Shipper ID Store ID

State Reporting and Tax Information

Reporting Period

Beginning Month

Report By County ☒

Ton Tax

Ton Fee

N Ton Tax

P Ton Tax

N Tax

Lime Fee

Value Tax

Firm Filter [StoreID] = '0S1001' and [FirmType] = 0

Setup State Information ☐

Create Example - This Resets All Data

Restore from Example Data

Save State Information

Start Orders Report Firms

iPhone Version Detail

Firms Screen

The Firms Screen is used to set up and maintain four kinds of information.

- 1) **State** Shipper ID at least one is required per store
- 2) **Retail** Customers optional
- 3) **Wholesale** Customers optional
- 4) **Stores** at least one is required
- 5) **All** information

The category being maintained is shown across the top, in this case **Stores**. One store is required but enterprise users may need to do reporting for multiple stores. If more than one store (as in the example data) you must choose the store you want to edit and click **Set Store ID**. Once a store is selected then the navigator bar controls the category

uDealMobile Beta 1.7

Copyright (c) 2015 Lion Software

☐ State ☐ Retail ☐ Wholesale ☒ Stores ☐ All

ID

Name

Address

City

State

Zip Code

Phone

eMail

Shipper ID Store ID

County

Navigation icons: Start, Product, Orders, Backup, Firms, State

Create Example - This Resets All Data
Restore from Example Data

to be edited (**State, Retail, Wholesale, Stores**). The 4 direction keys select the store to edit. The + key adds a new store and a - deletes the current store. To the right is the edit key which when pressed enters edit mode and the check saves edit changes. The X is cancel.

This example was created by pressing the “**Create Example**” button which saves current data to be restored later by pressing “**Restore from Example Data**”. This feature lets you start setting up data and then experiment with other features.

Select **Retail** and customers for that store will be shown by the navigator as seen in the screen below.

The screenshot shows the uDealMobile Beta 1.7 application window. At the top, it says "Copyright (c) 2015 Lion Software". Below this are five radio buttons for selecting a store type: State, Retail (selected), Wholesale, Stores, and All. The form contains the following fields and values:

- ID: R1001
- Name: GA Retail 1001 Name
- Address: GA Retail 1001 Address
- City: Baxley
- State: GA
- Zip Code: 31515
- Phone: (###)###-####
- eMail: user@email.com
- Firm Use: Farm
- Store ID: OS1001
- County: 001

At the bottom of the form, there are two buttons: "Create Example - This Resets All Data" and "Restore from Example Data". Below these buttons is a navigation bar with icons for Start, Product, Orders, Backup, Firms (highlighted), and State.

While customers are optional, a State Shipper ID (**License**) is required for each state the store is registered to ship to. As can be seen in the screen below the Shipper ID box contains the license number. This has a length of 6 and is right justified and zero filled. The other requirement is an e-mail address to be used to send the PFTR to. With mobile this could be a windows work station in your business used to access web portals such as FL and SC. The default can be used if a state registers their e-mail with Lion Software where an alias will be setup pointing to the states real address. Sometimes a state or university e-mail can be very long and complex. This service is secure since information is actually captured only by the state.

The screenshot shows the uDealMobile Beta 1.7 application window. At the top, it says "Copyright (c) 2015 Lion Software". Below this are five radio buttons: "State" (selected), "Retail", "Wholesale", "Stores", and "All". The form contains several input fields: "ID" with "GA" and "License" (a dropdown or button), "Name" with "Georgia Dept of Ag", "Address", "City", "State" with "GA", "Zip Code" with a search icon, "Phone", and "eMail" with "GA@UFTRS.COM". At the bottom of the form are two input fields: "Shipper ID" with "001243" and "Store ID" with "0S1001". Below the form is a row of icons: a double left arrow, a left arrow, a right arrow, a double right arrow, a plus sign, a minus sign, a list icon, a checkmark, an 'X' icon, and a refresh icon. Below these icons are two buttons: "Create Example - This Resets All Data" and "Restore from Example Data". At the very bottom is a navigation bar with six icons and labels: "Start" (heart icon), "Product" (person icon), "Orders" (book icon), "Backup" (L-shaped icon), "Firms" (person icon, highlighted in blue), and "State" (three dots icon).

The State Reporting and Tax Information Screen

uDealMobile Beta 1.7

Copyright (c) 2015 Lion Software
State Reporting and Tax Information

Florida FL

Reporting Period: Monthly

Beginning Month: July - Default

Report By County: ☒

Ton Tax: 0

Ton Fee: 0.75

N Ton Tax: 0.5

P Ton Tax: 0.3

N Tax: 0

Lime Fee: 0

Value Tax: 0

Navigation icons: ⏮ ⏪ ⏩ ⏭ + - 📄 ✓ ✕ ↺

Save State Information

Bottom bar: Start Product Orders Backup Firms **State**

As mentioned above this screen is combined but hidden on the iPad **Firms** screen. uDeal's purpose is to help with tonnage reporting but as a service some may find it helpful for estimating tax or inspection fees. But users are responsible for the information on this screen.

The Fertilizer Institute (TFI) published information is used to fill in as much of this information as possible but you need to follow your state control official's supplied information. If you find the information we ship with the product in error please share it with Lion Software and TFI as this will help other users.

For each state you are licensed to ship to fill in **Reporting Period** from the dropdown box

- 1) **Monthly**
- 2) **Quarterly**
- 3) **Semi-Annual**
- 4) **Annual**

This is extremely important and affects many aspects. This together with **Beginning Month** determines the value of **Period** on the start screen and in the UFTRS reporting system. Values range from (1 to 20). Each report is uniquely identified by

SSPPYY#####

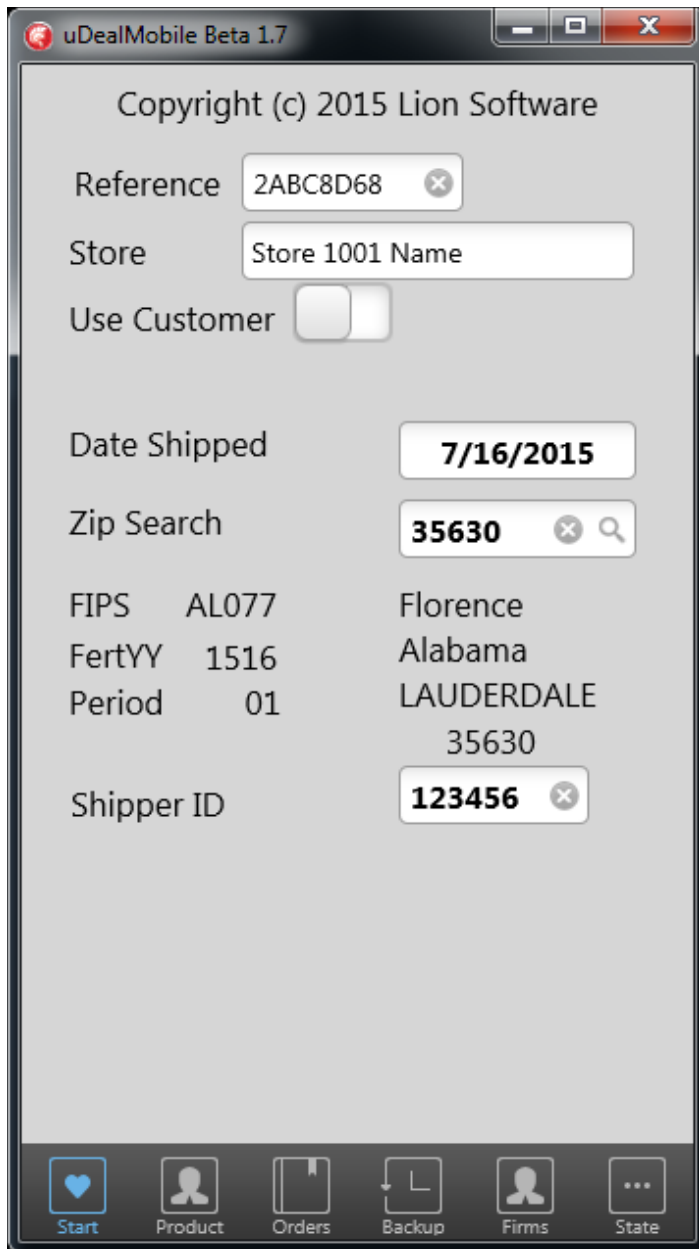
where SS is state, PP is period, YY is the last 2 digits of the fertilizer year. This critical information is shown on the **Start** screen as soon as the zip code and ship date are entered. Since the Shipper ID (license number) is unique within each state that makes this a unique identifier. It is used as the file name for the .txt , .csv or .xml formats generated by uDeal. It is also the unique ID inside the XML document. Default beginning month is July **07** but Texas **09** and Ohio **11** have different beginnings to their fertilizer (fiscal) years. As departments merge this could change over time.

States that require county level reports need to be noted. If your state does not require county level reporting just use your stores zip code as uDeal keeps up with counties any way. Carefully check the tax and inspection fees and test them. Florida fees are shown in the example which may be some of the more complex ones. If the UFTRS path at the bottom is shown it means the uDealStates version is being run. It will allow states using UFTRS to directly import your reports into their UFTRS program. (See Appendix E)

The **Save State Information** button saves not only the information on this screen but the state **Firm** information you entered when you set up the **State** information. This could be useful for enterprise users reporting for different stores in the same state. Only the ShipperID would be different. Over time as TFI collects more state reporting information the information shipped with uDeal may have this information as a default when you setup your licenses.

Reporting Tonnage Data (an example)

The following example will show how simple it is to enter state tonnage data and report it to the state paperless. The screen below left shows **Date Shipped** (ToDay), Zip Code and **Shipper ID** for Store 1001. Later the zip code will be changed to illustrate different counties. The **Product** screen to the right will be used repeatedly to show different orders. The first is 1 ton of 12-12-12 mixed bagged fertilizer for farm use. The **Container** box was clicked to choose (**Bag**, **Bulk** or **Liquid**). The **Save Item** button was clicked so that later the same grade can be sold in different counties. Finally the **Save** button is clicked to confirm the sale and hold it for later reporting to the state.



Copyright (c) 2015 Lion Software

Reference

Store

Use Customer ☐

Date Shipped

Zip Search

FIPS AL077 Florence
FertYY 1516 Alabama
Period 01 LAUDERDALE
35630

Shipper ID

Start Product Orders Backup Firms State



Copyright (c) 2015 Lion Software

Mixed ☒

No Items **Get Items**

12 - 12 - 12

Code 0 Container

Use

Mixed Fertilizer

Tons

Taxable ☒
Sec/Micro ☐
Pest ☐

Save Cancel Save Item

Start Product Orders Backup Firms State

In the next example the **Mixed** switch is turned off so the **Select a Product** screen pops up. The TFI product code **203** is typed in and return is pressed to show

203-DAP (18-46-0)

if it were clicked, a dropdown list of all products would be available to choose from. Instead the **Done** button was clicked which produced the screen on the lower right. The grade 18-46-0 is shown automatically but can still be changed. Tons are changed to 2 and return is pressed which shows the estimated fee owed to the state from that sale. Press **Save** and the sale is ready for later reporting.

The image displays two side-by-side screenshots of the uDealMobile Beta 1.7 application interface. Both screens show the copyright notice 'Copyright (c) 2015 Lion Software' at the top.

Left Screenshot: Select a Product

- Header: Copyright (c) 2015 Lion Software
- Section: Select a Product
- Find Code: 203 (with a search icon)
- Buttons: Done, Clear
- Show Form: All (selected), Dry, Liquid
- Show NPK: All (selected), N, P, K
- Code: 203 (with a clear icon)
- AqGateway: (toggle switch)
- Product Name: 203-DAP (18-46-0)

Right Screenshot: Product Details

- Header: Copyright (c) 2015 Lion Software
- Mixed: (toggle switch)
- Grade: 18 - 46 - 0
- Code: 203
- Container: Bulk
- Use: Farm
- Product Name: 203-DAP (18-46-0)
- Tons: 2 (with a clear icon)
- Price: \$1.50
- Taxable: (toggle switch, currently on)
- Sec/Micro: (toggle switch)
- Pest: (toggle switch)
- Buttons: Save, Cancel

Both screenshots feature a bottom navigation bar with icons for Start, Product, Orders, Backup, Firms, and State.

Turn the **Mixed** switch off again and in the lower left screen we want to choose a **Liquid** product that contains nitrogen **N**. We don't know the code. When the product list is clicked, a dropdown list is shown which is now limited to just liquid nitrogen products and we easily choose the one sold which is 30% N. The code is 59 which can just be entered the next time it is sold. For variety **Use** is changed to

N-Farm Golf, Athletic Field

which is a non-farm use. Alabama only requires Farm or Non-Farm.

The image displays two side-by-side screenshots of the uDealMobile Beta 1.7 application interface.

Left Screenshot (Select a Product):

- Copyright (c) 2015 Lion Software
- Select a Product
- Find Code: 59 [Search Icon] **Done** Clear
- Show Form: ☐ All ☐ Dry ☒ Liquid
- Show NPK: ☐ All ☒ N ☐ P ☐ K
- Code: 59 [X] AgGateway: ☐
- 59-NITROGEN SOL 30% (30-0-0)

Right Screenshot (Save/Cancel):

- Copyright (c) 2015 Lion Software
- Mixed: ☐
- 30 - 0 - 0
- Code: 59 Container: Liquid
- Use: N-Farm Golf, Athletic Field
- 59-NITROGEN SOL 30% (30-0-0)
- 4 [X] Tons
- \$3.00
- Taxable: ☒
- Sec/Micro: ☐
- Pest: ☐
- Save Cancel**

Both screenshots show a bottom navigation bar with icons for Start, Product, Orders, Backup, Firms, and State.

As an exercise you could repeat the examples above except let's change the zip code as seen below to illustrate different counties. Reference number has not been mentioned yet. You may want to enter your order number as shown on the right or pressing **Reference** will generate a unique number on the left below.

This will generate the examples to be used below.

Copyright (c) 2015 Lion Software

Reference: 2ABE9607

Store: Store 1001 Name

Use Customer: ☐

Date Shipped: 7/17/2015

Zip Search: 35620

FIPS	AL083	Elkmont
FertYY	1516	Alabama
Period	01	LIMESTONE
		35620

Shipper ID: 123456

Copyright (c) 2015 Lion Software

Reference: 1234

Store: Store 1001 Name

Use Customer: ☐

Date Shipped: 7/17/2015

Zip Search: 35640

FIPS	AL103	Hartselle
FertYY	1516	Alabama
Period	01	MORGAN
		35640

Shipper ID: 123456

Start Product Orders Backup Firms State

To see the results click on the **Orders** screen and see the results below. This is the required information Alabama (and most states need to have). The **Key** column shows the state and county code (FIPS in all states except Texas). **Code** is the required **TFI** required by the state and used by **TFI** to aggregate the national fertilizer data base. **Grade** is required for mixed fertilizers (Code 000) and may be useful otherwise. **Tons** is actually broken out by use (Bag Bulk Liquid) as well as Farm and Non-Farm. As we will see later this table could have multiple reporting periods and multiple states. The **Get History** button is very powerful in that it will investigate all possible reports and build a dropdown list for selection. It shows store number 0S1001 in AL (there could be more stores) and the date range.

uDeal Windows Beta 1.7

—
□
×

Copyright (c) 2015 Lion Software

[Get History](#)
[Clear History](#)

History

[Report Std](#)
[Report XML](#)
[Rpt CSV](#)
[Share](#)

☒ State
☐ Required
☐ Optional
☐ All

Key	Code	Grade	Tons	Bag	Bulk	Liq	Farm	nFarm
AL077	000	12-12-12	1	1	0	0	1	0
AL077	059	30-0-0	4	0	0	4	0	4
AL077	203	18-46-0	2	0	2	0	2	0
AL083	000	12-12-12	1	1	0	0	1	0
AL083	059	30-0-0	4	0	0	4	0	4
AL083	203	18-46-0	2	0	2	0	2	0
AL103	000	12-12-12	1	1	0	0	1	0
AL103	059	30-0-0	4	0	0	4	0	4
AL103	203	18-46-0	2	0	2	0	2	0

Start

Product

Orders

Backup

Firms

State

Once the appropriate report is selected you are ready to report paperless to the state. There are currently 3 choices **Report Std** the old standard, **Report XML** which is a new standard created by AgGateway, and a new uDeal suggestion **Rpt CSV** for compatibility with spreadsheets, covered at length in **Appendix A**. Your state control official will let you know which, if any to use. The fourth button shown below as **UFTRS** will say **Share** on your screen if you are not a state (see **Appendix E** for more details).

On a mobile device the **Share** button builds an e-mail for you to send with the Tonnage Report shown below as the cover and the UFTRS text file, CSV file or XML xml file as an attachment. With windows these files can be found in

MyDocuments\LionSoftware\uDealMobile

Copyright (c) 2015 Lion Software

Fertilizer Tonnage Report Backups

Import Reports from backup

STD CSV XML

Import Std or AgXML Report First

Show Import Clear

Alabama Tonnage Report

Code	Grade	Total	Bag	Bulk	Liquid	Farm	NonFarm
000	12-12-12	1.00	1.00	0.00	0.00	1.00	0.00
059	30-0-0	4.00	0.00	0.00	4.00	0.00	4.00
203	18-46-0	2.00	0.00	2.00	0.00	2.00	0.00
Total	LAUDERDALE	7.00	1.00	2.00	4.00	3.00	4.00
000	12-12-12	1.00	1.00	0.00	0.00	1.00	0.00
059	30-0-0	4.00	0.00	0.00	4.00	0.00	4.00
203	18-46-0	2.00	0.00	2.00	0.00	2.00	0.00
Total	LIMESTONE	7.00	1.00	2.00	4.00	3.00	4.00
000	12-12-12	1.00	1.00	0.00	0.00	1.00	0.00
059	30-0-0	4.00	0.00	0.00	4.00	0.00	4.00
203	18-46-0	2.00	0.00	2.00	0.00	2.00	0.00
Total	MORGAN	7.00	1.00	2.00	4.00	3.00	4.00
Total	Alabama	21.00	3.00	6.00	12.00	9.00	12.00

Start Product Orders Backup Firms State

The attachments for the two PFTR standards are shown below. This is a very simple example but note the amount of text the xml document format has (See Appendix B for the complete document). The amount of Tonnage information in both is essentially the same. Look at the **Backup** page to see the XML in a browser. Remember in Windows you can re-size the screen to see more detail. In general a typical user should have little interest in the formats since only the computer needs to read them.

Report Std e-mail attachment (Florida)

AL0615123456.txt

uDealMobile Beta 1.7

Copyright (c) 2015 Lion Software

Fertilizer Tonnage Report Backups

Import Reports from backup

STD CSV XML

OS1001 in AL Jul 1, 2015 - Jul 31, 2015

Show Import Clear

123456AL1516010001	120	120	12000000010001110771
123456AL1516010591	300	000	0000000040003210771
123456AL1516012031	180	460	0000000020002110771
123456AL1516010001	120	120	12000000010001110831
123456AL1516010591	300	000	0000000040003210831
123456AL1516012031	180	460	0000000020002110831
123456AL1516010001	120	120	12000000010001111031
123456AL1516010591	300	000	0000000040003211031
123456AL1516012031	180	460	0000000020002111031

Start

Product

Orders

Backup

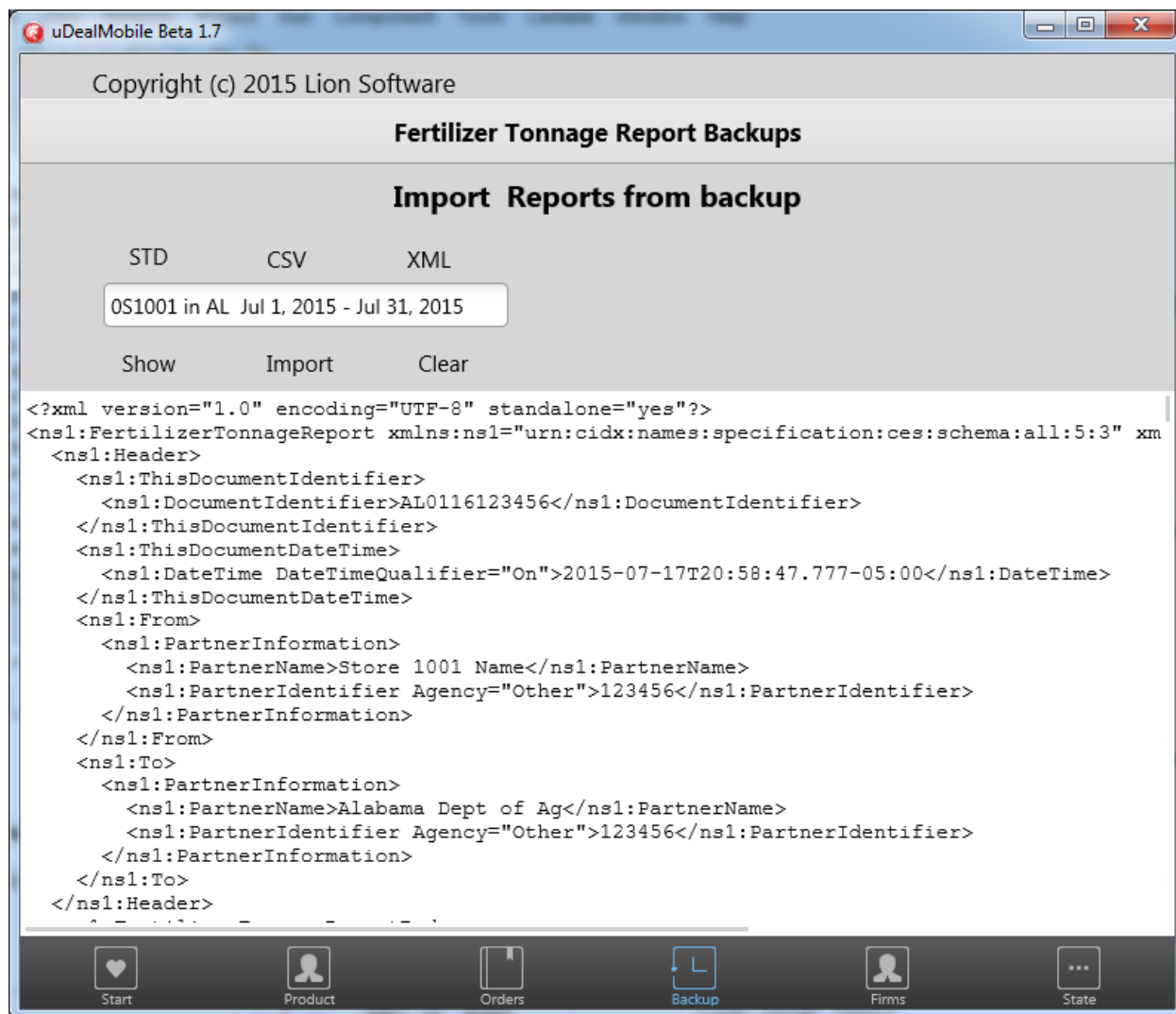
Firms

State

Report XML e-mail attachment

AL0615123456.xml

see Appendix B for full listing




If your state will accept PFTR by e-mail send it directly to the e-mail address they require. Some states (FL & SC) have web portals where you just drag and drop the file using their required browser. If you use a Mobile version of uDeal send the e-mail to a Windows workstation running the states required version of Microsoft Office.

Since uDeal is an open source project, hopefully other companies will accept our MIT License (see Appendix C) and continue support for the product well into the future and integrate it into commercial and corporate accounting systems on more than just Microsoft Platforms.

Advanced User

This section may be of interest to all users but it is geared to users who wish to understand the more detail aspects of Tonnage Reporting. On the **Orders** page below note the radio button is set to **Required**. The choices are:

State	Ordered the way it is reported to the state
Required	Data that use to be reported - Data Florida needs
Optional	Current UFTRS data format - see Appendix A
All	All data kept by uDeal

In the table below note the card columns are shown (1-46) which correspond to the first 46 in the UFTRS format. This format is required for UFTRS programs to import the data. As we will see later if companies want to check their XML data they can import them and see if the data will import into UFTRS programs. Choose **Optional** to check the remaining columns needed for the complete UFTRS format. By clicking on a given row and then clicking the **trash can**  row will be displayed close to the card columns. Do not click the **trash can** as that will delete the row. Currently this is the only way to edit an order. Delete and enter it again. The **Clear History** button deletes an entire reporting histories. history after the **Get History** button collects the Every time a **Report** is processed a copy is stored which can later be restored as shown next.

uDeal Windows Beta 1.7

Copyright (c) 2015 Lion Software

Get History Clear History

History 051001 in AL Dec 1, 2014 - Dec 31, 2014

Report Std Report XML Rpt CSV Share

☐ State
 ☒ Required
 ☐ Optional
 ☐ All

Col# >1234567890123456789012345678901234567890123456
 =====10=====20=====30=====40=====50=====

UFTRS>123456AL1415062031 180 460 0000000020002110771

Shipper	State	Year	Period	Code	Units	N	P	K	Qty	Contai...	Use	Pesticide	County	Tax
123456	AL	1415	06	000	1	120	120	120	0000010...1	1	1	1	077	1
123456	AL	1415	06	059	1	300	000	000	0000040...3	2	1	1	077	1
123456	AL	1415	06	203	1	180	460	000	0000020...2	1	1	1	077	1
123456	AL	1415	06	000	1	120	120	120	0000010...1	1	1	1	083	1
123456	AL	1415	06	059	1	300	000	000	0000040...3	2	1	1	083	1
123456	AL	1415	06	203	1	180	460	000	0000020...2	1	1	1	083	1
123456	AL	1415	06	000	1	120	120	120	0000010...1	1	1	1	103	1

Start

Product

Orders

Backup

Firms

State

We have seen the **Backup** page earlier as a way to display the Tonnage Report and show the content of the XML file. Let's look more closely at the portion of the page below for restoring this backup.



Import Reports from backup

STD CSV XML

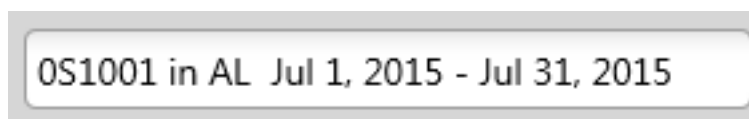
0S1001 in AL Jul 1, 2015 - Jul 31, 2015

Show Import Clear

There are 6 operational buttons:

- | | |
|---------------|---|
| STD | - Shows Standard Reports for import |
| CSV | - Shows C oma S eparated V alue Reports for import |
| XML | - Shows AgGateway XML Reports for import |
| Show | - Shows content of STD , CSV or XML Reports |
| Import | - Actually imports the data from the selected report |
| Clear | - Clears which ever report is being shown |

Every time a report is “sent” to the state a **Backup** copy is stored on the device which can later be restored. It can then be restored at a later time after recent reports have been deleted from the work area. In our example when the **STD** button is clicked the following is chosen



0S1001 in AL Jul 1, 2015 - Jul 31, 2015

Based on the spelling of the file name

AL0116123456.txt

the StoreID 0S1001 is looked up and based on the state the fertilizer was sold into and the store's license number 123456. The date range for the report is based on the period in which the fertilizer was delivered. See Appendix A for more information on how the UFTRS program defines Period. The process of translation from a file name to the above display and back again is very complex but for a user to select from a file name would be very unfriendly. In our example since we also shipped an XML report we can now choose **XML** and see the above display but in the dropdown box there will also be 2 strange looking choices which will be explained next. After a history report has been selected choose the **Import** button and the data will be added to the **Orders** page.

Shipper	State	Year	Period	Code	Units	N	P	K	Qty	Contai...	Use	Pesticide	County	Tax
123456	AL	1516	01	000	1	120	120	120	0000010...1	1	1	1	077	1
123456	AL	1516	01	059	1	300	000	000	0000040...3	2	1	1	077	1
123456	AL	1516	01	203	1	180	460	000	0000020...2	1	1	1	077	1
123456	AL	1516	01	000	1	120	120	120	0000010...1	1	1	1	083	1
123456	AL	1516	01	059	1	300	000	000	0000040...3	2	1	1	083	1
123456	AL	1516	01	203	1	180	460	000	0000020...2	1	1	1	083	1
123456	AL	1516	01	000	1	120	120	120	0000010...1	1	1	1	103	1
123456	AL	1516	01	059	1	300	000	000	0000040...3	2	1	1	103	1
123456	AL	1516	01	203	1	180	460	000	0000020...2	1	1	1	103	1

The first additional report starts with “pa_test ..” and the second starts with “SC_Test ...” these are 2 XML files that were provided by AgGateway staff for testing. Importing the first one added its data to the **Orders** page shown below:

If the files had been renamed according to our recommendation the ShipperID would have been correct. Note that the uDeal unique identifier is the same as the UFTRS file identifier (see Appendix A) except that the ShipperID is added. Below **Get History** was clicked and you can see that the data range is correct since PA reports semi-annually. When the SC data is imported you can see below that quarterly data is reported. XML does not have a definition of reporting periods only ReportingYear and FromYearMonth and ThurYearMonth. Therefore multiple months have to be aggregated into reporting periods. In the case of PA period 17 and with SC period 15.

It is possible that uDeal is an ideal tool for states running the UFTRS program to begin immediately accepting XML data.

uDealMobile Beta 1.7

Copyright (c) 2015 Lion Software

Get History Clear History

History 051001 in PA Jul 1, 2012 - Dec 31, 2012

Report Std Report AgXML Rpt CSV Share

☐ State
☒ Required
☐ Optional
☐ All

⏮

⏪

⏩

⏭

🔄

🗑

Col# >123456789012345678901234567890123456

=====10=====20=====30=====40=====50=====

UFTRS>0S1001PA1213170021 820 000 0000000014742110011

Shipper	State	Year	Period	Code	Units	N	P	K	Qty	Contai...	Use	Pesticide	County	Tax
0S1001	PA	1213	17	000	1	112	287	225	0000047...1	1	1	001	1	
0S1001	PA	1213	17	002	1	820	000	000	0000014...2	1	1	001	1	
0S1001	PA	1213	17	428	1	000	000	600	0000024...1	1	1	001	1	
0S1001	PA	1213	17	428	1	000	000	600	0000024...1	1	1	001	1	

Start

Product

Orders

Backup

Firms

State

OK

uDeal

Copyright (c) 2015 Lion Software

Get History

Clear History

History

OS1001 in SC Jan 1, 2013 - Mar 31, 2013

Report Std

Report XML

Rpt CSV

Share

State

Required

Optional

All

Col#

>123456789012345678901234567890123456

=====10=====20=====30=====40=====50=====

UFTRS>OS1001SC1213150001 240 120 1800000020001110011

Shipper	State	Year	Period	Code	Units	N	P	K	Qty	Contai...	Use	Pesticide	County	Tax
OS1001	SC	1213	15	000	1	200	000	000	0000250...	2	1	1	001	1
OS1001	SC	1213	15	000	1	200	000	000	0000218...	2	1	1	001	1
OS1001	SC	1213	15	000	1	200	000	000	0000029...	2	1	1	001	1
OS1001	SC	1213	15	000	1	200	100	100	0000068...	1	1	1	001	1
OS1001	SC	1213	15	000	1	240	120	180	0000020...	1	1	1	001	1
OS1001	SC	1213	15	000	1	030	100	000	0000964...	2	1	1	001	1
OS1001	SC	1213	15	000	1	300	000	200	0000828...	1	1	1	001	1
OS1001	SC	1213	15	000	1	340	000	000	0000245...	1	1	1	001	1
OS1001	SC	1213	15	000	1	090	230	300	0000320...	1	1	1	001	1
OS1001	SC	1213	15	000	1	090	230	300	0000320...	1	1	1	001	1

Start

Product

Orders









Backup

Firms

State

User Data Windows Only

On a real mobile device one cannot access user data though Apple backs it up nightly, but on Windows it is accessible in MyDocuments\LionSoftware\uDealMobile or wherever your shared drive is. For example we have generated custom **Firm** and **UFTRS** files for some customers from their existing data to help them get started. For testing we often delete the **UFTRS** file since it is re-created blank when uDeal is run. The **UFTRS.CDS** file contains history data for all stores. When uDeal is first loaded there are no CDS files. These are actually compact XML files and we have a version that creates them as such. The 2 AL0615123456 files are the state reports which are e-mailed or dropped in a web portal. The other 2 XML Documents are the AgGateway examples. If you want to test your XML files just copy them here and import them.

Name	Date modified	Type
 Firm.CDS	12/15/2014 9:02 PM	CDS File
 GRADES.CDS	12/20/2014 10:28 ...	CDS File
 Report.CDS	12/20/2014 11:24 ...	CDS File
 UFTRS.CDS	12/21/2014 2:22 PM	CDS File
 AL0615123456	12/20/2014 11:24 ...	Text Document
 AL0615123456	12/21/2014 2:16 PM	XML Document
 pa_test s2 2012 largepackage-Modified	8/26/2014 10:04 PM	XML Document
 SC_Test Q1 2013-modified	8/26/2014 10:04 PM	XML Document

Appendix A

Uniform Fertilizer Tonnage Reporting System Standard Import Text File Format*

www.aapfco.org

"How to Format the UFTRS Text File" (pdf)

Uniform Fertilizer Tonnage Reporting System Standard Import Text File Format*

Field Name	Start	End	Width	Implied Decimal	Type	Description
Shipper Code	1	6	6		A/N	Dealer /manufacturer code assigned by regulatory office. For numeric codes, right-adjust and zero-fill. For alphanumeric codes, right-adjust and zero-fill. If the correct code is not used, the regulatory office cannot import the file.
State	7	8	2			State postal code abbreviation(example: Kentucky = "KY")
Fertilizer Year	9	12	4		N	July through June. Use the last two digits of the calendar year for July and June. For example, July 2000 – June 2001 would be represented by "0001".
Reporting Period	13	14	2		N	Monthly (July = "01", August = "02", . . . , June = "12") Quarterly (July –Sept. = "13", Oct-Dec = "14", Jan-Mar = "15", April-June = "16") Semi-annually (July-Dec = "17", Jan-June = "18")
Fertilizer Code	15	17	3		N	Use UFTRS fertilizer code. A fertilizer code must be provided for all fertilizer materials. For mixed fertilizers, use fertilizer code = zero(0) and provide the NPK analysis (grade). For data to be accepted, UFTRS codes must be used.
Units	18	18	1		N	1=tons, 2=pounds (default=1)
	19	19	1			Leave Blank
N	20	22	3	1	N	% Total Nitrogen (N)
	23	23	1			Leave Blank
P ₂ O ₅	24	26	3	1	N	% Available Phosphate (P ₂ O ₅)
	27	27	1			Leave Blank
K ₂ O	28	30	3	1	N	% Soluble Potash (K ₂ O)
Quantity	31	39	9	3	N	Amount shipped in tons or pounds (use correct units code, column 18)
Container	40	40	1		N	1=bag, 2=bulk, 3=liquid
Use	41	41	1		N	1=farm, 2=nonfarm, (default=1)
Pesticide	42	42	1		N	1=none added, 2=some added (default=1)
County	43	45	3		N	County FIPS code or other county code provided by regulatory office which represents the county where the product was applied if known, if not, the county where the purchaser is located. Contact regulatory office for a list. Use "999" for unknown.
Tax Code	46	46	1		N	1=taxable (dealer/manufacturer whose shipper code appears in the shipper code field is responsible for tonnage tax) 2=nontaxable (another dealer/manufacturer is responsible for tonnage tax)
Firm's Name	47	76	30		A	Party responsible for tonnage tax if tonnage is nontaxable (tax code=2)
Firm's Address	77	106	30		A	
Firm's City	107	126	20		A	
Firm's State	127	128	2		A	
Firm's Zip	129	137	9		A	
Custom Mixture	138	138	1		N	1=not a custom mix product, 2=custom mix product (default=1)
Secondary/Micro Nutrients	139	139	1		N	1=none added, 2=some added (default=1)
Ca	140	142	3	1	N	% Calcium (Ca)
Mg	143	145	3	1	N	% Magnesium (Mg)

"How to Format the UFTRS Text File" continued

Field Name	Start	End	Width	Implied Decimal	Type	Description
S	146	148	3	1	N	% Sulfur (S)
Cl	149	151	3	1	N	% Chlorine (Cl)
B	152	155	4	2	N	% Boron (B)
Cu	156	159	4	2	N	% Copper (Cu)
Fe	160	163	4	2	N	% Iron (Fe)
Mn	164	167	4	2	N	% Manganese (Mn)
Zn	168	171	4	2	N	% Zinc (Zn)
Mo	172	175	4	3	N	% Molybdenum (Mo)

* __ The file must be a DOS 'text' file where only ASCII characters are allowed and each line ends with a carriage return/line feed.

Other Information:

Send the data to the State regulatory office as a text file. For uniformity, name the files as follows: SSPPYY.txt where SS = state abbreviation, PP = reporting period, YY = fertilizer year, txt = extension. For example, AL0101.txt represents data reported to Alabama for reporting period July 2000 and fertilizer year 00-01 (2000-2001). Also for uniformity, label each diskette with the following: date sent, month, year, shipper name, shipper code, and filename(s).

Periods defined in UFTRS program

PNAME	ABBREV	NUMBER	TYPE	BEGM
JULY	JUL	1	1	JULY
AUGUST	AUG	2	1	AUGUST
SEPTEMBER	SEP	3	1	SEPTEMBER
OCTOBER	OCT	4	1	OCTOBER
NOVEMBER	NOV	5	1	NOVEMBER
DECEMBER	DEC	6	1	DECEMBER
JANUARY	JAN	7	1	JANUARY
FEBRUARY	FEB	8	1	FEBRUARY
MARCH	MAR	9	1	MARCH
APRIL	APR	10	1	APRIL
MAY	MAY	11	1	MAY
JUNE	JUN	12	1	JUNE
JULY- SEPTEMBER	JLSE	13	2	JULY
OCTOBER- DECEMBER	OCDE	14	2	OCTOBER
JANUARY- MARCH	JAMA	15	2	JANUARY
APRIL-JUNE	APJN	16	2	APRIL
JULY-DECEMBER	JLDE	17	3	JULY
JANUARY-JUNE	JAJN	18	3	JANUARY
JULY-JUNE	JLJU	19	4	JULY
JANUARY- DECEMBER	JADE	20	5	JANUARY

This table assumes the beginning month is JULY. Texas begins with September and Ohio begins with November. Other changes could come in the future. uDeal lets the user specify the beginning month.

uDeal design criteria

uDeal considers the above published format the UFTRS standard. The first 15 data items (col 1-46) have been the standard for almost 30 years. uDeal refers to them as **Required** fields. These are the fields accepted by the Florida web portal. The Florida IT manager stated the state would never use user submitted names and addresses for billing purposes, only information from registrants. The field for custom mixture is redundant since this is the same as a code of zero (000). Secondary/Micro fields are not used since that information falls under a labeling category. For example, what does the chlorine (Cl) mean. In labeling terminology it is a maximum guarantee. Few companies even know its value and don't care since it is not normally guaranteed as a minimum. The fields after **Tax Code** were added in anticipation of an auditing system that never materialized. Therefore uDeal calls them **Optional** fields. There are states that use these fields, but for apparently other purposes.

The important thing is that uDeal honors the published standard and translates new formats such as the AgGateway XML into the UFTRS standard. Standards are important and should not be changed arbitrarily. uDeal is careful to honor this.

A New Standard Format (CSV)

A complaint about the UFTRS format is the amount of "white space" in the fixed width columns. This makes the record 175 characters (Bytes) long. **Character Separated Value (CSV)** compresses this length by using an ASCII character to separate fields so a 30 character field like **Firm's Name** is reduced to 1 character. The **C** is sometimes confused with "comma" since this is the common character used in most spreadsheets. It is the character used by uDeal. The problem is if the enclosed field has a comma in it an extra (unintended) field would be generated. If the field has one or more commas the field is surrounded by quotation characters ("..."). Some spreadsheets surround all fields with quotation marks, which is safe but unnecessary for uDeal. uDeal only does this where necessary but can accept either.

A second feature of uDeal's CSV file is that values in the first 4 fields are all the same and their values are given in the filename:

SSPPYY#####.csv

- 1) License code #####
- 2) State SS
- 3) Fertilizer Year YYYY
- 4) Reporting Period PP

When the UFTRS program checks data validity it checks that these fields are valid and are the same.

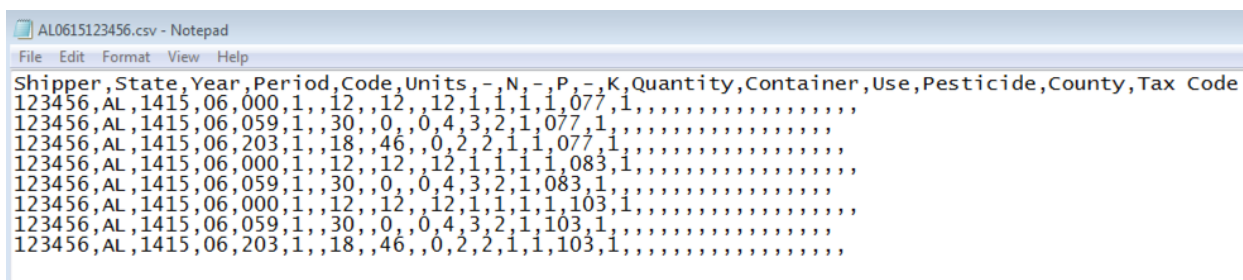
uDeal checks these 4 fields and if null, supplies the correct default values.

The other thing that is confusing is the way number fields are required, right justified zero filled with an implied decimal point. uDeal converts these fields to the standard, but the data can be any real number:

,,,,203,1,,12,,12,,12,2,2,1,1,077,1
instead of

123456AL1415062031 120 120 120000025002110771

The actual CSV file in the manual is:



```

AL0615123456.csv - Notepad
File Edit Format View Help
Shipper,State,Year,Period,Code,Units,-,N,-,P,-,K,Quantity,Container,Use,Pesticide,County,Tax Code
123456,AL,1415,06,000,1,,12,,12,,12,1,1,1,1,077,1,,,,,,,,,,,,,
123456,AL,1415,06,059,1,,30,,0,,0,4,3,2,1,077,1,,,,,,,,,,,,,
123456,AL,1415,06,203,1,,18,,46,,0,2,2,1,1,077,1,,,,,,,,,,,,,
123456,AL,1415,06,000,1,,12,,12,,12,1,1,1,1,083,1,,,,,,,,,,,,,
123456,AL,1415,06,059,1,,30,,0,,0,4,3,2,1,083,1,,,,,,,,,,,,,
123456,AL,1415,06,000,1,,12,,12,,12,1,1,1,1,103,1,,,,,,,,,,,,,
123456,AL,1415,06,059,1,,30,,0,,0,4,3,2,1,103,1,,,,,,,,,,,,,
123456,AL,1415,06,203,1,,18,,46,,0,2,2,1,1,103,1,,,,,,,,,,,,,

```

The real advantage of **CSV** is that it can be opened in most spreadsheet programs. Below is seen how it appears in Apple's Numbers program. It will be similar in MS Office Excel. Again if the correct file name is used the first 4 fields can be left blank (,,,,) and they will be filled in automatically. It is recommended uDeal be used but companies may have reasons to generate and manage spreadsheets.

AL0615123456.csv viewed in Mac's Numbers

Shipper	State	Year	Period	Code	Units	-	N	-	P	-	K	Quantity	Container	Use	Pesticide	County	Tax Code
123456	AL	1415	6	0	1		12		12		12	1	1	1	1	77	1
123456	AL	1415	6	59	1		30		0		0	4	3	2	1	77	1
123456	AL	1415	6	203	1		18		46		0	2	2	1	1	77	1
123456	AL	1415	6	0	1		12		12		12	1	1	1	1	83	1
123456	AL	1415	6	59	1		30		0		0	4	3	2	1	83	1
123456	AL	1415	6	0	1		12		12		12	1	1	1	1	103	1
123456	AL	1415	6	59	1		30		0		0	4	3	2	1	103	1
123456	AL	1415	6	203	1		18		46		0	2	2	1	1	103	1

Which ever file is sent to uDeal it will be converted to the standard UFTRS format. If uDeal is used as a front end processor for the UFTRS program then all 3 formats plus **Required** versions could be sent to states using the UFTRS program.

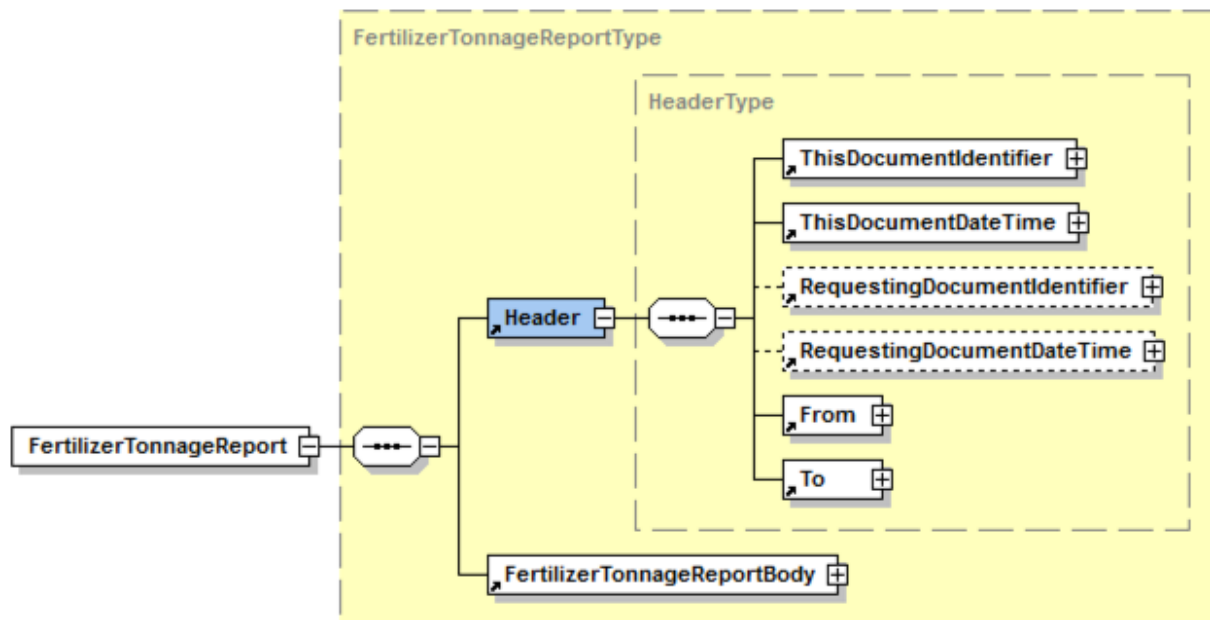
Appendix B

XML Schema Developed by AgGateway

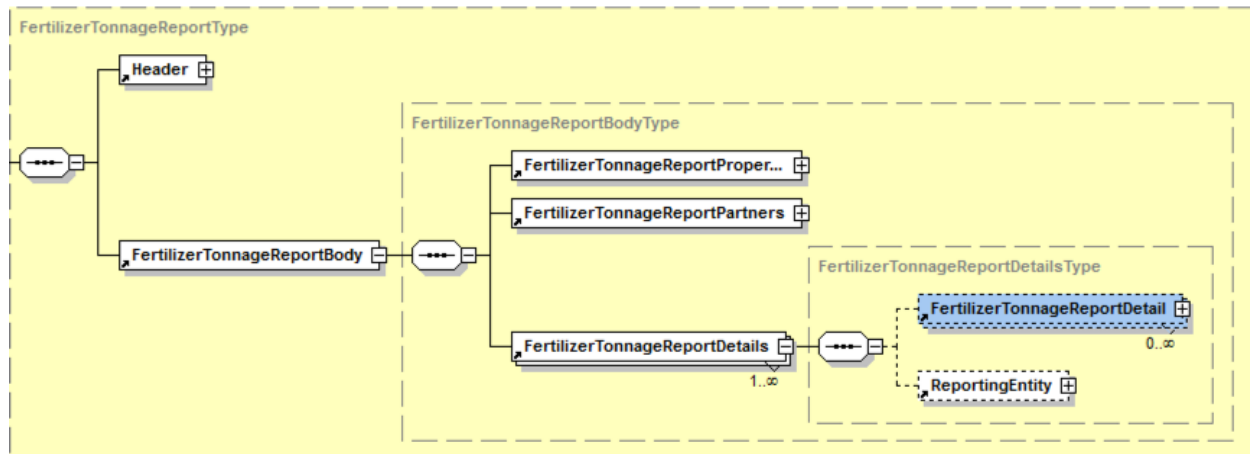
A number of large fertilizer companies have entered into a paperless world called eBusiness. Most are members of AgGateway, an eBusiness standards organization. They found that while orders and invoices and most of their business processes were paperless each state had a different set of forms and procedures to be filed manually.

XML is a markup language they use to create standards that are so important for all trade partners to follow to achieve paperless processes. The heart of this language is an XML file, called a schema which is an extremely interesting way to enforce these standards. We use a tool, XMLSpy, from Altova. This section is not intended to explain the XML language or explain the AgGateway schema but to give a pictorial overview of key parts. What uDeal has accomplished is to encapsulate the complexity of this schema into an Object Pascal Class with the public properties and methods needed to use modern programming methodology.

As seen below the schema starts with the node **FertilizerTonnageReport** which has 2 child nodes **Header** and **FertilizerTonnageReportBody**. Spelling of names is case sensitive as opposed to Object Pascal. Once an XML file is generated it can be validated against the schema, which uDeal files have been. This is an extremely powerful tool.



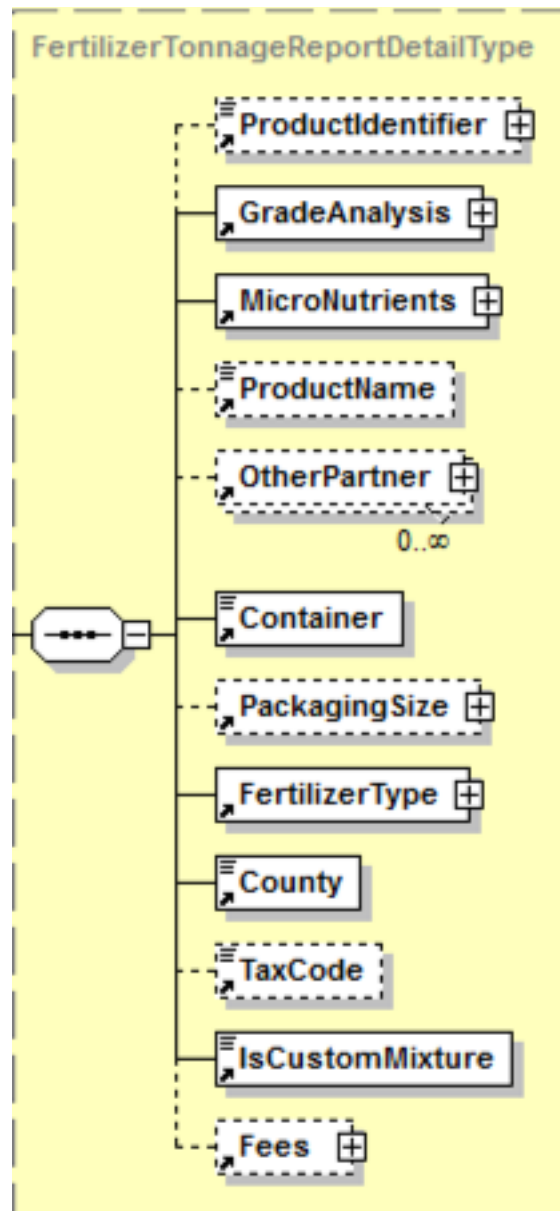
The diagram below shows the **FertilizerTonnageReportBody** node is further descended with the **FertilizerTonnageReportDetails** node showing that 1 is required but any number can be added. The **FertilizerTonnageReportDetail** node is optional but there can be any number of them.



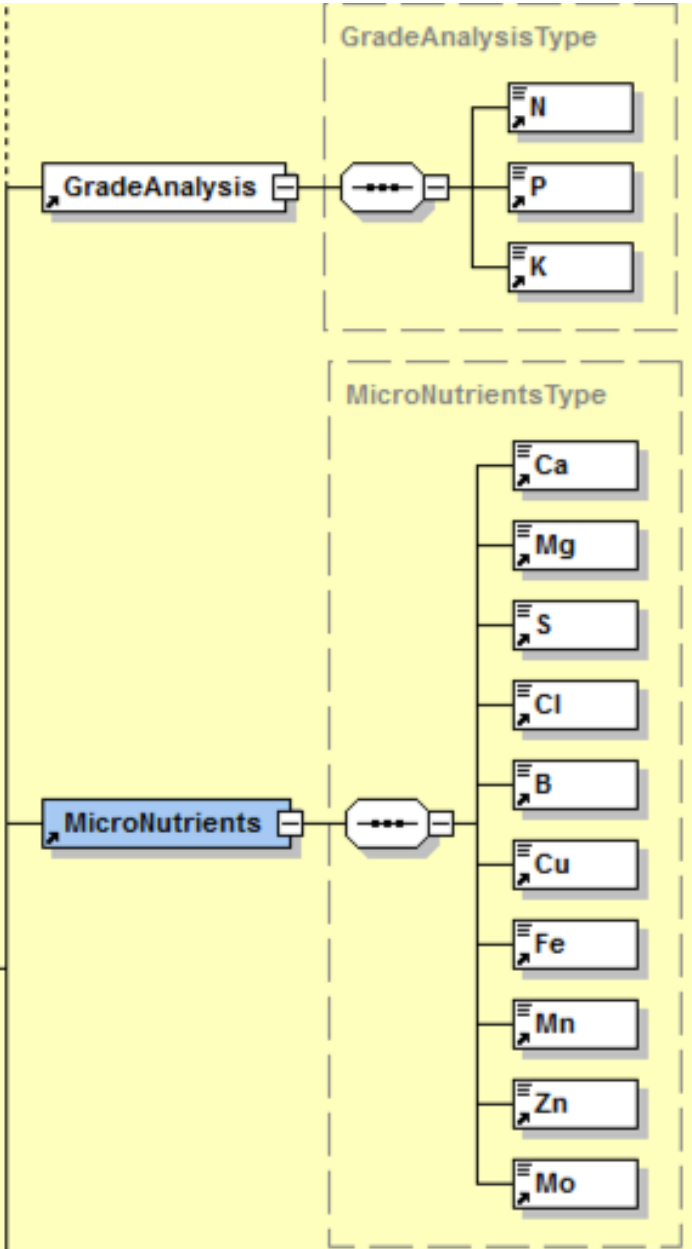
The diagrams on the following 2 pages show how further nodes get into the real detail of the data we need for tonnage reporting.

Again the purpose of this section is not to explain the XML language or AgGateway schema but to impart a feel for the eloquence and complexity of this technique. Following the next 2 pages of diagrams is the full listing for the 9 simple orders generated earlier. It might be argued that for smaller companies or even major Ag Accounting software companies the **CSV** format involving 9 simple lines might be superior than the 6 pages of **XML** shown on the pages below. Going forward Paperless Fertilizer Tonnage Reporting using UFTRS needs to have alternative formats.

FertilizerTonnageReportDetail



GradeAnalysis and MicroNutrients



Report XML e-mail attachment

AL06150S1001123456.xml

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<ns1:FertilizerTonnageReport
xmlns:ns1="urn:cidx:names:specification:ces:schema:all:5:3"
xmlns:xsi="http://www.w3.org/2001/XMLSchema-instance">
  <ns1:Header>
    <ns1:ThisDocumentIdentifier>
      <ns1:DocumentIdentifier>AL0615123456</ns1:DocumentIdentifier>
    </ns1:ThisDocumentIdentifier>
    <ns1:ThisDocumentDateTime>
      <ns1:DateTime
DateTimeQualifier="On">2015-01-11T21:44:27.740-06:00</ns1:DateTime>
      </ns1:ThisDocumentDateTime>
    <ns1:From>
      <ns1:PartnerInformation>
        <ns1:PartnerName>Store 1001 Name</ns1:PartnerName>
        <ns1:PartnerIdentifier Agency="Other">123456</
ns1:PartnerIdentifier>
      </ns1:PartnerInformation>
    </ns1:From>
    <ns1:To>
      <ns1:PartnerInformation>
        <ns1:PartnerName>Alabama Dept of Ag</ns1:PartnerName>
        <ns1:PartnerIdentifier Agency="Other">123456</
ns1:PartnerIdentifier>
      </ns1:PartnerInformation>
    </ns1:To>
  </ns1:Header>
  <ns1:FertilizerTonnageReportBody>
    <ns1:FertilizerTonnageReportProperties>
      <ns1:ReportingYear>2014</ns1:ReportingYear>
      <ns1:ReportingPeriod>
        <ns1:FromYearMonth>2014-12</ns1:FromYearMonth>
        <ns1:ThruYearMonth>2014-12</ns1:ThruYearMonth>
      </ns1:ReportingPeriod>
      <ns1:SubmissionDateTime>2015-01-11T21:44:27.734-06:00</
ns1:SubmissionDateTime>
    <ns1:Fees>
      <ns1:Fee>
        <ns1:FeeType>Tonnage Tax</ns1:FeeType>
        <ns1:MonetaryAmount>
          <ns1:MonetaryValue>14.25</ns1:MonetaryValue>
          <ns1:CurrencyCode>USD</ns1:CurrencyCode>
        </ns1:MonetaryAmount>
      </ns1:Fee>
    </ns1:Fees>
  </ns1:FertilizerTonnageReportBody>
</ns1:FertilizerTonnageReport>
```

```

        </ns1:Fees>
        <ns1:FertilizerMaterialReportingType>Ingredient Material</
ns1:FertilizerMaterialReportingType>
        <ns1:PaymentMethodCode>CHK</ns1:PaymentMethodCode>
    </ns1:FertilizerTonnageReportProperties>
    <ns1:FertilizerTonnageReportPartners>
        <ns1:OtherPartner PartnerRole="Reporter">
            <ns1:PartnerInformation>
                <ns1:PartnerName>Store 1001 Name</ns1:PartnerName>
                <ns1:PartnerIdentifier Agency="Other">123456</
ns1:PartnerIdentifier>
            </ns1:PartnerInformation>
        </ns1:OtherPartner>
    </ns1:FertilizerTonnageReportPartners>
    <ns1:FertilizerTonnageReportDetails>
        <ns1:FertilizerTonnageReportDetail>
            <ns1:ProductIdentifier Agency="UFTRSCode">0</
ns1:ProductIdentifier>
            <ns1:GradeAnalysis>
                <ns1:N>12</ns1:N>
                <ns1:P>12</ns1:P>
                <ns1:K>12</ns1:K>
            </ns1:GradeAnalysis>
            <ns1:MicroNutrients>
                <ns1:Ca>0</ns1:Ca>
                <ns1:Mg>0</ns1:Mg>
                <ns1:S>0</ns1:S>
                <ns1:Cl>0</ns1:Cl>
                <ns1:B>0</ns1:B>
                <ns1:Cu>0</ns1:Cu>
                <ns1:Fe>0</ns1:Fe>
                <ns1:Mn>0</ns1:Mn>
                <ns1:Zn>0</ns1:Zn>
                <ns1:Mo>0</ns1:Mo>
            </ns1:MicroNutrients>
            <ns1:ProductName>12-12-12</ns1:ProductName>
            <ns1:Container>1</ns1:Container>
            <ns1:FertilizerType>
                <ns1:FarmUse>
                    <ns1:Measurement>
                        <ns1:MeasurementValue>1</ns1:MeasurementValue>
                        <ns1:UnitOfMeasureCode>STN</ns1:UnitOfMeasureCode>
                    </ns1:Measurement>
                </ns1:FarmUse>
                <ns1:NonFarmUse>
                    <ns1:Measurement>
                        <ns1:MeasurementValue>0</ns1:MeasurementValue>
                        <ns1:UnitOfMeasureCode>STN</ns1:UnitOfMeasureCode>
                    </ns1:Measurement>
                </ns1:NonFarmUse>
            </ns1:FertilizerType>
        </ns1:FertilizerTonnageReportDetail>
    </ns1:FertilizerTonnageReportDetails>
</ns1:FertilizerTonnageReport>

```

```

        </ns1:NonFarmUse>
    </ns1:FertilizerType>
    <ns1:County>077</ns1:County>
    <ns1:IsCustomMixture>1</ns1:IsCustomMixture>
</ns1:FertilizerTonnageReportDetail>
<ns1:FertilizerTonnageReportDetail>
    <ns1:ProductIdentifier Agency="UFTRSCode">59</
ns1:ProductIdentifier>
    <ns1:GradeAnalysis>
        <ns1:N>30</ns1:N>
        <ns1:P>0</ns1:P>
        <ns1:K>0</ns1:K>
    </ns1:GradeAnalysis>
    <ns1:MicroNutrients>
        <ns1:Ca>0</ns1:Ca>
        <ns1:Mg>0</ns1:Mg>
        <ns1:S>0</ns1:S>
        <ns1:Cl>0</ns1:Cl>
        <ns1:B>0</ns1:B>
        <ns1:Cu>0</ns1:Cu>
        <ns1:Fe>0</ns1:Fe>
        <ns1:Mn>0</ns1:Mn>
        <ns1:Zn>0</ns1:Zn>
        <ns1:Mo>0</ns1:Mo>
    </ns1:MicroNutrients>
    <ns1:ProductName>30-0-0</ns1:ProductName>
    <ns1:Container>3</ns1:Container>
    <ns1:FertilizerType>
        <ns1:FarmUse>
            <ns1:Measurement>
                <ns1:MeasurementValue>0</ns1:MeasurementValue>
                <ns1:UnitOfMeasureCode>STN</ns1:UnitOfMeasureCode>
            </ns1:Measurement>
        </ns1:FarmUse>
        <ns1:NonFarmUse>
            <ns1:Measurement>
                <ns1:MeasurementValue>4</ns1:MeasurementValue>
                <ns1:UnitOfMeasureCode>STN</ns1:UnitOfMeasureCode>
            </ns1:Measurement>
        </ns1:NonFarmUse>
    </ns1:FertilizerType>
    <ns1:County>077</ns1:County>
    <ns1:IsCustomMixture>0</ns1:IsCustomMixture>
</ns1:FertilizerTonnageReportDetail>
<ns1:FertilizerTonnageReportDetail>
    <ns1:ProductIdentifier Agency="UFTRSCode">203</
ns1:ProductIdentifier>
    <ns1:GradeAnalysis>
        <ns1:N>18</ns1:N>

```

```

        <ns1:P>46</ns1:P>
        <ns1:K>0</ns1:K>
    </ns1:GradeAnalysis>
    <ns1:MicroNutrients>
        <ns1:Ca>0</ns1:Ca>
        <ns1:Mg>0</ns1:Mg>
        <ns1:S>0</ns1:S>
        <ns1:Cl>0</ns1:Cl>
        <ns1:B>0</ns1:B>
        <ns1:Cu>0</ns1:Cu>
        <ns1:Fe>0</ns1:Fe>
        <ns1:Mn>0</ns1:Mn>
        <ns1:Zn>0</ns1:Zn>
        <ns1:Mo>0</ns1:Mo>
    </ns1:MicroNutrients>
    <ns1:ProductName>18-46-0</ns1:ProductName>
    <ns1:Container>2</ns1:Container>
    <ns1:FertilizerType>
        <ns1:FarmUse>
            <ns1:Measurement>
                <ns1:MeasurementValue>2</ns1:MeasurementValue>
                <ns1:UnitOfMeasureCode>STN</ns1:UnitOfMeasureCode>
            </ns1:Measurement>
        </ns1:FarmUse>
        <ns1:NonFarmUse>
            <ns1:Measurement>
                <ns1:MeasurementValue>0</ns1:MeasurementValue>
                <ns1:UnitOfMeasureCode>STN</ns1:UnitOfMeasureCode>
            </ns1:Measurement>
        </ns1:NonFarmUse>
    </ns1:FertilizerType>
    <ns1:County>077</ns1:County>
    <ns1:IsCustomMixture>0</ns1:IsCustomMixture>
</ns1:FertilizerTonnageReportDetail>
<ns1:FertilizerTonnageReportDetail>
    <ns1:ProductIdentifier Agency="UFTRSCode">0</
ns1:ProductIdentifier>
    <ns1:GradeAnalysis>
        <ns1:N>12</ns1:N>
        <ns1:P>12</ns1:P>
        <ns1:K>12</ns1:K>
    </ns1:GradeAnalysis>
    <ns1:MicroNutrients>
        <ns1:Ca>0</ns1:Ca>
        <ns1:Mg>0</ns1:Mg>
        <ns1:S>0</ns1:S>
        <ns1:Cl>0</ns1:Cl>
        <ns1:B>0</ns1:B>
        <ns1:Cu>0</ns1:Cu>

```

```

        <ns1:Fe>0</ns1:Fe>
        <ns1:Mn>0</ns1:Mn>
        <ns1:Zn>0</ns1:Zn>
        <ns1:Mo>0</ns1:Mo>
    </ns1:MicroNutrients>
    <ns1:ProductName>12-12-12</ns1:ProductName>
    <ns1:Container>1</ns1:Container>
    <ns1:FertilizerType>
        <ns1:FarmUse>
            <ns1:Measurement>
                <ns1:MeasurementValue>1</ns1:MeasurementValue>
                <ns1:UnitOfMeasureCode>STN</ns1:UnitOfMeasureCode>
            </ns1:Measurement>
        </ns1:FarmUse>
        <ns1:NonFarmUse>
            <ns1:Measurement>
                <ns1:MeasurementValue>0</ns1:MeasurementValue>
                <ns1:UnitOfMeasureCode>STN</ns1:UnitOfMeasureCode>
            </ns1:Measurement>
        </ns1:NonFarmUse>
    </ns1:FertilizerType>
    <ns1:County>083</ns1:County>
    <ns1:IsCustomMixture>1</ns1:IsCustomMixture>
</ns1:FertilizerTonnageReportDetail>
<ns1:FertilizerTonnageReportDetail>
    <ns1:ProductIdentifier Agency="UFTRSCode">59</
ns1:ProductIdentifier>
    <ns1:GradeAnalysis>
        <ns1:N>30</ns1:N>
        <ns1:P>0</ns1:P>
        <ns1:K>0</ns1:K>
    </ns1:GradeAnalysis>
    <ns1:MicroNutrients>
        <ns1:Ca>0</ns1:Ca>
        <ns1:Mg>0</ns1:Mg>
        <ns1:S>0</ns1:S>
        <ns1:Cl>0</ns1:Cl>
        <ns1:B>0</ns1:B>
        <ns1:Cu>0</ns1:Cu>
        <ns1:Fe>0</ns1:Fe>
        <ns1:Mn>0</ns1:Mn>
        <ns1:Zn>0</ns1:Zn>
        <ns1:Mo>0</ns1:Mo>
    </ns1:MicroNutrients>
    <ns1:ProductName>30-0-0</ns1:ProductName>
    <ns1:Container>3</ns1:Container>
    <ns1:FertilizerType>
        <ns1:FarmUse>
            <ns1:Measurement>

```

```

        <ns1:MeasurementValue>0</ns1:MeasurementValue>
        <ns1:UnitOfMeasureCode>STN</ns1:UnitOfMeasureCode>
    </ns1:Measurement>
</ns1:FarmUse>
<ns1:NonFarmUse>
    <ns1:Measurement>
        <ns1:MeasurementValue>4</ns1:MeasurementValue>
        <ns1:UnitOfMeasureCode>STN</ns1:UnitOfMeasureCode>
    </ns1:Measurement>
</ns1:NonFarmUse>
</ns1:FertilizerType>
<ns1:County>083</ns1:County>
<ns1:IsCustomMixture>0</ns1:IsCustomMixture>
</ns1:FertilizerTonnageReportDetail>
<ns1:FertilizerTonnageReportDetail>
    <ns1:ProductIdentifier Agency="UFTRSCode">0</
ns1:ProductIdentifier>
    <ns1:GradeAnalysis>
        <ns1:N>12</ns1:N>
        <ns1:P>12</ns1:P>
        <ns1:K>12</ns1:K>
    </ns1:GradeAnalysis>
    <ns1:MicroNutrients>
        <ns1:Ca>0</ns1:Ca>
        <ns1:Mg>0</ns1:Mg>
        <ns1:S>0</ns1:S>
        <ns1:Cl>0</ns1:Cl>
        <ns1:B>0</ns1:B>
        <ns1:Cu>0</ns1:Cu>
        <ns1:Fe>0</ns1:Fe>
        <ns1:Mn>0</ns1:Mn>
        <ns1:Zn>0</ns1:Zn>
        <ns1:Mo>0</ns1:Mo>
    </ns1:MicroNutrients>
    <ns1:ProductName>12-12-12</ns1:ProductName>
    <ns1:Container>1</ns1:Container>
    <ns1:FertilizerType>
        <ns1:FarmUse>
            <ns1:Measurement>
                <ns1:MeasurementValue>1</ns1:MeasurementValue>
                <ns1:UnitOfMeasureCode>STN</ns1:UnitOfMeasureCode>
            </ns1:Measurement>
        </ns1:FarmUse>
        <ns1:NonFarmUse>
            <ns1:Measurement>
                <ns1:MeasurementValue>0</ns1:MeasurementValue>
                <ns1:UnitOfMeasureCode>STN</ns1:UnitOfMeasureCode>
            </ns1:Measurement>
        </ns1:NonFarmUse>
    </ns1:FertilizerType>

```

```

        </ns1:FertilizerType>
        <ns1:County>103</ns1:County>
        <ns1:IsCustomMixture>1</ns1:IsCustomMixture>
    </ns1:FertilizerTonnageReportDetail>
    <ns1:FertilizerTonnageReportDetail>
        <ns1:ProductIdentifier Agency="UFTRSCode">59</
ns1:ProductIdentifier>
        <ns1:GradeAnalysis>
            <ns1:N>30</ns1:N>
            <ns1:P>0</ns1:P>
            <ns1:K>0</ns1:K>
        </ns1:GradeAnalysis>
        <ns1:MicroNutrients>
            <ns1:Ca>0</ns1:Ca>
            <ns1:Mg>0</ns1:Mg>
            <ns1:S>0</ns1:S>
            <ns1:Cl>0</ns1:Cl>
            <ns1:B>0</ns1:B>
            <ns1:Cu>0</ns1:Cu>
            <ns1:Fe>0</ns1:Fe>
            <ns1:Mn>0</ns1:Mn>
            <ns1:Zn>0</ns1:Zn>
            <ns1:Mo>0</ns1:Mo>
        </ns1:MicroNutrients>
        <ns1:ProductName>30-0-0</ns1:ProductName>
        <ns1:Container>3</ns1:Container>
        <ns1:FertilizerType>
            <ns1:FarmUse>
                <ns1:Measurement>
                    <ns1:MeasurementValue>0</ns1:MeasurementValue>
                    <ns1:UnitOfMeasureCode>STN</ns1:UnitOfMeasureCode>
                </ns1:Measurement>
            </ns1:FarmUse>
            <ns1:NonFarmUse>
                <ns1:Measurement>
                    <ns1:MeasurementValue>4</ns1:MeasurementValue>
                    <ns1:UnitOfMeasureCode>STN</ns1:UnitOfMeasureCode>
                </ns1:Measurement>
            </ns1:NonFarmUse>
        </ns1:FertilizerType>
        <ns1:County>103</ns1:County>
        <ns1:IsCustomMixture>0</ns1:IsCustomMixture>
    </ns1:FertilizerTonnageReportDetail>
    <ns1:FertilizerTonnageReportDetail>
        <ns1:ProductIdentifier Agency="UFTRSCode">203</
ns1:ProductIdentifier>
        <ns1:GradeAnalysis>
            <ns1:N>18</ns1:N>
            <ns1:P>46</ns1:P>

```

```

    <ns1:K>0</ns1:K>
  </ns1:GradeAnalysis>
  <ns1:MicroNutrients>
    <ns1:Ca>0</ns1:Ca>
    <ns1:Mg>0</ns1:Mg>
    <ns1:S>0</ns1:S>
    <ns1:Cl>0</ns1:Cl>
    <ns1:B>0</ns1:B>
    <ns1:Cu>0</ns1:Cu>
    <ns1:Fe>0</ns1:Fe>
    <ns1:Mn>0</ns1:Mn>
    <ns1:Zn>0</ns1:Zn>
    <ns1:Mo>0</ns1:Mo>
  </ns1:MicroNutrients>
  <ns1:ProductName>18-46-0</ns1:ProductName>
  <ns1:Container>2</ns1:Container>
  <ns1:FertilizerType>
    <ns1:FarmUse>
      <ns1:Measurement>
        <ns1:MeasurementValue>2</ns1:MeasurementValue>
        <ns1:UnitOfMeasureCode>STN</ns1:UnitOfMeasureCode>
      </ns1:Measurement>
    </ns1:FarmUse>
    <ns1:NonFarmUse>
      <ns1:Measurement>
        <ns1:MeasurementValue>0</ns1:MeasurementValue>
        <ns1:UnitOfMeasureCode>STN</ns1:UnitOfMeasureCode>
      </ns1:Measurement>
    </ns1:NonFarmUse>
  </ns1:FertilizerType>
  <ns1:County>103</ns1:County>
  <ns1:IsCustomMixture>0</ns1:IsCustomMixture>
</ns1:FertilizerTonnageReportDetail>
</ns1:FertilizerTonnageReportDetails>
</ns1:FertilizerTonnageReportBody>
</ns1:FertilizerTonnageReport>

```


Appendix C

uDeal MIT License

The MIT License (MIT)

Copyright (c) [2015] [Lion Software, Inc.]

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NON-INFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

Requirements for Project Participation

Participants must be committed to building computer applications (Apps) that will help states meet their Fertilizer Tonnage Reporting requirements Paperless (PFTR) as negotiated through their represented in AAPFCO in such a way that sellers of fertilizer small and large can reduce their cost of reporting. This project focuses on large organizations engaged in eBusiness through AgGateway as well as smaller organizations with limited computer support. Moderate size companies using commercial agricultural accounting systems could also benefit. Participants must also buy into the concept of Community Development as outlined on the Lion Software web site which can be reached at www.pftr.net.

Technical Participation

Technical requirements for participation include development of a single code base that runs on all major platforms including Windows, Macintosh, iOS and most Android devices. The software must also support a wide variety of database servers including standalone XML files as well as most enterprises servers including major Cloud based systems. Currently this requirement can be met by using RAD Studio Enterprise or higher editions. Less expensive editions are available for participants that want to specialize in only iOS or Android development. Recommended computer is Mac Book Pro with Yosemite or higher running a virtual Windows 7 or 10 machine like vm-ware FUSION or Parallels. Also iPad with iOS 8 or higher or Nexus 7 with Android. Required language is Object Pascal (Delphi XE7 or higher). Knowledge of RAD Studio, XML, AAPFCO Official Publication are desirable.

Support Participation

It is hoped that if the project is successful there will be many users who may need support in installation, orientation, training and problem solving. States can probably not provide all of this. Hopefully organizations, companies or individuals will emerge to provide paid support. Participants are free to charge any amount for their services or to sell derivative products under the above MIT License.

The openness of the software makes it feasible to integrate it with private company or commercial software. The main limitation is the maintenance of the Copyright notice and the limitation of the copyright owner liability.

Appendix D

History of UFTRS Project

The release of uDeal Beta 1.7 is an interesting milestone for this open source project. The product is essentially complete though not completed. The goal we as a community development project are pursuing is massive “Paperless Fertilizer Tonnage Reporting by 2016” (PFTR). In brief, how can 47 states who require by law that companies who sell fertilizer (over 10,000 of them) report to them fertilizer tonnage, nutrient and use information for tax or fee collection purposes and then consolidate this basic information and forward it to our major trade association, The Fertilizer Institute (TFI), and do it electronically (using as little paper and person power as possible).

We as a fertilizer industry should be proud of the fact that this process has been going on for over 40 years and though each company is a competitor, the value of shared data benefits us all. I know of no other industry which can claim this kind of collaboration. Much of it stems from an interesting and unique history where we chose not to have a federal fertilizer law but 50 individual state laws. Each state has very different agricultural, environmental and political situations. Association of American Plant Food Control Officials (AAPFCO) has been the main driving force behind this unique process. There have to be standards when interstate commerce is involved. Fertilizer produced and guaranteed by label in one state must be recognized in all states. Uniformity by Consensus where AAPFCO involves all stakeholders (State regulators, Companies, Universities, Trade associations and Federal Agencies) in developing a “model State Fertilizer Bill” that no one state can implement completely but all pledge to support.

Over 30 years ago AAPFCO approached TVA’s National Fertilizer Development Center (NFDC) about helping them develop a computer program named Uniform Fertilizer Tonnage Reporting System (UFTRS) and helping in the process of getting states to use it. This involved programming UFTRS in the Fox Pro language and creating the UFTRS database in the SAS database. This involved training states and in some case helping states buy PC’s with funds from our ongoing test demonstration budgets. NFDC also helped in collecting data from states and adding tonnage information to the SAS database, which is still being used. When NFDC lost their funding for fertilizer research, the University of Kentucky rewrote UFTRS in Microsoft Access (1998) which is essentially the program used by states today. With the retirement of David Terry, a valued AAPFCO member, the task of coordinating UFTRS and the SAS database was picked up by Joe Slater of the University of Missouri even though the state does not use the UFTRS program.

While UFTRS was being developed by Norman Hargett and Janice Berry at NFDC , Jon Nevins was manager of the Form-U-Share (FUS) project. This was a technology transfer computer program that helped cooperators use new TVA products and processes developed by NFDC research and manufactured in NFDC plants. The UFTRS functionality was also incorporated in the UDEAL program (UFTRS for dealers) which is still available for download on the AAPFCO web site. This same functionality was incorporated in Form-U-Share with integration into inventory and latter Quickbooks accounting.

With the loss of NFDC federal funding, TVA helped Jon create Lion Software which later continued FUS development from a DOS program to a multi platform program including Mac, Unix, AS400, Windows, Apple and PC based computers. With the TVA contract to continue

support and development of FUS, the company was renamed FUS Support, Inc. and operated 16 years before the sale of FUS to Software Solutions Integrated (SSI) in 2010. FUS was very successful and well loved by more than 1,000 users over its lifetime. SSI has just announced the availability of FUS, rebranded Form-U-NET as a Web Browser based program. This represents to Dr. Nevins the ultimate in transfer of technology from Publicly Funded research and development to the private sector and the prospect that this outstanding technology will live on.

But to Dr. Nevins the technology transfer process is not complete. The UFTRS program has gone unsupported for years. When Microsoft dropped support of Windows XP the lack of support became clear. UFTRS could no longer import the published format much less the new XML format. The problem seems to be related to writing files directly to the C:\ drive which has never been recommended and was finally made impossible without administrative approval.

However, the standard created by UFTRS is important and has influenced the creation of most state fertilizer regulations and procedures. Standards are important and should not be changed arbitrarily. The AgGateway XML standard is important for companies who engage in eBusiness but must remain subject to the 30 year UFTRS standard. uDeal was created to further this important objective. uDeal imports and exports both formats as well as a new important variation of the UFTRS published standard, maintaining the data definitions but eliminating “white space” and duplicate data by using CSV format. The CSV format is standard in all spread sheets such as Microsoft Office Excel or Apple’s Numbers.

Maintaining standards is important. For example Florida has long been a UFTRS user. For years their UFTRS usage was done under contract by AAPFCO. They finally built a web portal accepting paperless tonnage data from the UFTRS format. Other states have developed systems based on this format. Since uDeal inputs and outputs all formats it can serve as a translator.

Appendix E

An experiment with a direct interface to UFTRS

An interesting aspect of the development tool used to create uDeal, RAD Studio, is not only the ability to have one program that runs on multiple platforms

(Win,Mac,iOS,Android)

but the ability to run on many databases

(MS-Access,MS-SQL,DB2,Oracle,MySQL,Advantage,...).

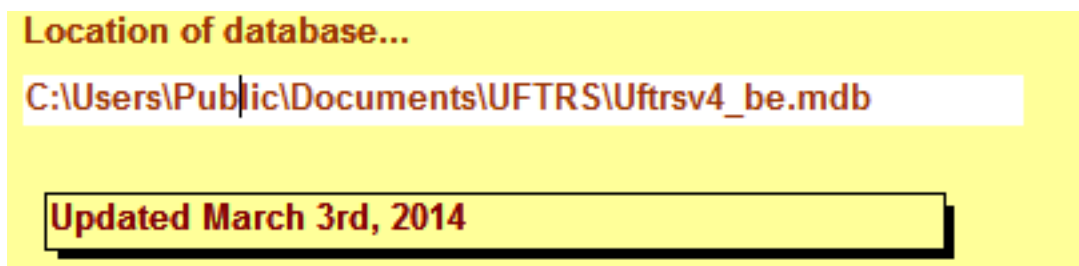
As an experiment, Beta 1.7 has the ability to enter data directly into the MS-Access database currently used by the UFTRS program. This procedure and results are shown below. If an Access programmer can figure out the undocumented code UFTRS was written in then the current UFTRS program can be used without actually importing files. If a way can be found to import these files then current programs can still be used with uDeal.

An alternative is to add report generation and replace the current UFTRS program with an open source version build with well documented modern code open to public access. This would preserve current data history for states using UFTRS.

An example

In the UFTRS program there is a Basic procedure CheckImported() which reads records from the access table, tblImportedSTDTemp, and performs various validity checks. uDeal has the same data verification except for the ShipperID's, which are proprietary. If the records are sent from uDeal, they will be verified realtime as the user enters the data. Of course users know their ShipperID assigned by the state. So in theory there should not be any validation errors. If XML files are sent directly from other systems it is possible errors could exist, but would be caught in the traditional way. Of course uDeal would catch XML validation errors but companies sending XML would have validation with schema tools to guarantee correctness. Schemas are a really nice feature of the new AgGateway Standard.

In the UFTRS home screen the link to the Access database is shown. Make sure UFTRS is installed and running properly. Then copy the path in the "Location of database... box and then past it into the Firm / State page shown below .



Location of database...

C:\Users\Public\Documents\UFTRS\Uftrsv4_be.mdb

Updated March 3rd, 2014

uDeal States Beta 1.7

☒ State
 ☐ Retail
 ☐ Wholesale
 ☐ Stores
 ☐ All

ID:

Name:

Address:

City:

State:

Zip Code:

Phone:

eMail:

Shipper ID: Store ID:

⏮ ⏪ ⏩ ⏭ + - 📄 ✓ ✕ ()

Firm Filter [StoreID] = '051001' and [FirmType] = 0

Setup State Information ☒

Create Example - This Resets All Data

Restore from Example Data

State Reporting and Tax Information

Reporting Period:

Beginning Month:

Report By County: ☒

Ton Tax:
 Ton Fee:
 N Ton Tax:
 P Ton Tax:
 N Tax:
 Lime Fee:
 Value Tax:

⏮ ⏪ ⏩ ⏭ + - 📄 ✓ ✕ ()

Save State Information

Start Orders Report Firms

At this point the UFTRS Access database is linked to uDeal. Notice the share button now reads UFTRS which says the link was successful.

The next thing to note is how files can be imported. When **XML** is clicked a list of all XML files that have been received are shown. The one seen is one of the files AgGateway sent for testing. If this is one the state wants to import they click **Import**

uDealMobile Beta 1.7

Copyright (c) 2015 Lion Software

Fertilizer Tonnage Report Backups

Import Reports from backup

STD CSV XML

Show Import Clear

```
<?xml version="1.0" encoding="UTF-8" standalone="yes"?>
<ns1:FertilizerTonnageReport xmlns:ns1="urn:cidx:names:specification:ces:schema:all:5:3" xmlns:
  <ns1:Header>
    <ns1:ThisDocumentIdentifier>
      <ns1:DocumentIdentifier>456</ns1:DocumentIdentifier>
    </ns1:ThisDocumentIdentifier>
    <ns1:ThisDocumentDateTime>
      <ns1:DateTime>2013-06-06T00:00:00.000</ns1:DateTime>
    </ns1:ThisDocumentDateTime>
    <ns1:From>
```

Col# >1234567890123456789012345678901234567890123456
 =====10=====20=====30=====40=====50=====

UFTRS>0S1001PA1213170021 820 000 0000000014742110011

Shipper	State	Year	Period	Code	Units	N	P	K	Qty	Contai...	Use	Pesticide	County	Tax
0S1001	PA	1213	17	000	1	112	287	225	000004700	1	1	1	001	1
0S1001	PA	1213	17	002	1	820	000	000	000001474	2	1	1	001	1
0S1001	PA	1213	17	428	1	000	000	600	000002450	1	1	1	001	1

After this they press **UFTRS** as explained above. If the state wants to manually enter data for a registrant they could use uDeal standard data input, covered in another tutorial. When **UFTRS** is clicked the translated contents of the XML file is translated to UFTRS format as seen above by column number, but since it is directly injected in the Access database the actual generation of the card is not necessary. The table below shows a portion of the Access database resulting from this action.

State	Reporting Period	Fertilizer Code	Units	N	P205	K20	Quantity	Container	Use
FL	12	0	1	170	60	140	1000	1	6
FL	12	0	1	120	60	60	1000	1	6
FL	12	0	1	150	90	110	1000	1	6
FL	12	0	1	130	60	60	1000	1	6
FL	12	0	1	160	40	80	1000	1	2
PA	17	0	1	112	287	225	4700	1	1
PA	17	0	1	112	287	225	4700	1	1
PA	17	2	1	820	0	0	1474	2	1
PA	17	2	1	820	0	0	1474	2	1
PA	17	428	1	0	0	600	2450	1	1
PA	17	428	1	0	0	600	2450	1	1
PA	17	428	1	0	0	600	2450	1	1
PA	17	428	1	0	0	600	2450	1	1

Thursday, July 23, 2015 2:33:02 P

TAXABLE TONNAGE SUMMARY
ALABAMA DEPARTMENT OF AGRICULTURE

TEXT FILE NAME: Z:\AL0116123456.TXT

REPORTING PERIOD: July 2015

Page 1 of 1

CODE	NAME	GRADE	CONT	USE	PEST	CUST	SECM	TOTAL
(123456) Jon Nevins								
LAUDERDALE COUNTY(77)								
0	IDENTIFIED BY GRADE	12-12-12	1	1	1			1.00
59	NITROGEN SOLUTION 30%	30-0-0	3	2	1			4.00
203	DIAMMONIUM PHOSPHATE	18-46-0	2	1	1			2.00
COUNTY TOTAL:								7.00
LIMESTONE COUNTY(83)								
0	IDENTIFIED BY GRADE	12-12-12	1	1	1			1.00
59	NITROGEN SOLUTION 30%	30-0-0	3	2	1			4.00
203	DIAMMONIUM PHOSPHATE	18-46-0	2	1	1			2.00
COUNTY TOTAL:								7.00
MORGAN COUNTY(103)								
0	IDENTIFIED BY GRADE	12-12-12	1	1	1			1.00
59	NITROGEN SOLUTION 30%	30-0-0	3	2	1			4.00
203	DIAMMONIUM PHOSPHATE	18-46-0	2	1	1			2.00
COUNTY TOTAL:								7.00
TOTAL TAXABLE TONS:								21.00
TAX PER TON:								0.25
TOTAL AMOUNT DUE:								\$5.25

So we believe beta 1.7 will give us a very good start in making current UFTRS users able to directly process the new AgGateway XML standard as well as the current and the possible new CSV standard formats.

The original programmer, Kellye Gaither, made 2 small changes to the UFTRSV10 on www.AAPFCO.org to test importing the standard TXT files. UFTRSV10b no longer uses the strip.exe file and requires the user have a C:\UFTRS folder to hold a temporary file which is later deleted. Also files to be imported must be in the root of some drive (A: ... Z:). With Windows XP becoming unsupported you can no longer put files on the root of the C: drive. I had a network Z: drive which worked fine and apparently gave the same results as the direct import discussed above. The tables below were the result of importing the example TXT files shown above. More testing is required to insure that UFTRSV10b works well with newer versions of Access and that uDeal direct import works as well. The committee might consider a contract with Kellye to maintain the program but it seems to work for now.

DATA LISTING OF IMPORTED TEXT FILE
ALABAMA DEPARTMENT OF AGRICULTURE

Text File Name: Z:\AL0116123456.TXT

Reporting Period: July 2015

State: AL

Fertilizer Year: 2015

Reporting Period: 1

Rec#	Shipper	Cty	Fert	N	P205	K20	QTY	Unit	Cntr	Use	Pest	Cust	SecM	Tax
1	123456	77	0	12.0	12.0	12.0	1.000	1	1	1	1			1
2	123456	83	0	12.0	12.0	12.0	1.000	1	1	1	1			1
3	123456	103	0	12.0	12.0	12.0	1.000	1	1	1	1			1
4	123456	77	59	30.0	0.0	0.0	4.000	1	3	2	1			1
5	123456	83	59	30.0	0.0	0.0	4.000	1	3	2	1			1
6	123456	103	59	30.0	0.0	0.0	4.000	1	3	2	1			1
7	123456	77	203	18.0	46.0	0.0	2.000	1	2	1	1			1
8	123456	83	203	18.0	46.0	0.0	2.000	1	2	1	1			1
9	123456	103	203	18.0	46.0	0.0	2.000	1	2	1	1			1

UFTRS Import Error Codes in uftrsv10

When files are imported validation is checked and corrections can be made manually. uDeal performs this validation as data is entered realtime except for Shipper Number since this is proprietary to each state. With uDeal direct import this check is made and the import is aborted until the Shipper file is updated. Note that Tax Code must be 1 so that Non Taxable data can not be imported. This brings into question if the Optional portion of the standard is needed. If our goal is to feed our national fertilizer database and support the information in The Fertilizer Institute - AAPCO "Commercial Fertilizers" report then there is no need to require more than fields up to and including Tax Code (Column 46). In the current CSV implementation these are the only required fields:

(Fertilizer Code,Units,N,P,K,Quantity,Container,Use,Pesticide,County,Tax Code).

The first 4 fields:

(Shipper Code,State,Fertilizer Year,Reporting Period)

are required to have the same value within the same import file and hence are derived from the file name:

SSPPYY#####.csv

- 1) License code #####
- 2) State SS
- 3) Fertilizer Year YYYY
- 4) Reporting Period PP

When the UFTRS program checks data validity it checks that these fields are valid and are the same. Number fields (N,P,K,Quantity) can be any real number #####.###, which are converted to the required fixed length right justified, zero filled, implied decimal point format for importing. Other checks made by the current UFTRS program are:

- 1) Invalid Shipper Number
- 2) Invalid Tax Code, Must Be 1
- 3) Invalid County Code
- 4) Invalid Fertilizer Code
- 5) Container Code Invalid for Fertilizer Code
- 6) Zero Quantity Found
- 7) Pesticide Code is Not 1 or 2
- 8) Use Code is Not 1 or 2
- 9) Container is Not 1 or 2
- 10) Units Code
- 11) Code and Analysis are Both Zero

AgGateway Agiis Database

AgGateway is the eStandards origination for US agriculture, soon to become global. One goal is to establish unique identifiers for trading partners including but not limited to bar codes. A major tool for accomplishing this goal is the Agiis database. I first brought this to the attention of the AAPFCO Uniform Products Committee at the 2010 mid year meeting in Charleston, SC and noted that their unique fertilizer codes were
UUU.##

where UUU is the three digit UFTRS fertilizer Code and ## is a 2 digit serial number that makes the code unique. Agiis supports trading partners there are multiple forms of commodes such as Urea (Green's grade, Forestry grade, Off grade, ...). For tonnage reporting it is all consolidated as Urea. Currently AgGateway is in the process of sharing their unique identifiers with non-members. The Agiis database is proprietary to members who are given permission. The exception is TFI which actually has a series of bar codes and unique identifiers. At the 2014 AgGateway Annual meeting in Phoenix, AZ they gave AAPFCO the TFI subset for the PFTR project. The following screen shows how this data is accessed. Therefore a user does not have to guess a correct Code to use when a trading name is queried.

uDealMobile Beta 1.7

Copyright (c) 2015 Lion Software

Select a Product

Find Code

Show Form ☒ All ☐ Dry ☐ Liquid

Show NPK ☒ All ☐ N ☐ P ☐ K

Code AgGateway ☒

Ammonium Nitrate Prills 34-0-0

In the process of cross matching Agiis codes with those in the UFTRS program the following mismatches were found. The Uniform Reports Committee needs to either add these codes or inform AgGateway of the problem. Some guesses are shown but more experienced members need input. As a case in point, Potassium Thiosulfate might be considered proprietary by TKI for public reporting but not for trading. In general there is a very good match in the Agiis database.

Agiis Fertilizer Codes not Found in UFTRS FertDef Table

Code	Fertilizer Name	Guess
030--UAN Solution Sulfur 25-0-0 3.0		056
069--UREA 46-0-0 FINES		066
070--Urea Feed Grade 0-0-0		066
070--Urea Micro Granular Feed Grade 0-0-0		066
070--Urea Prills Feed Grade 0-0-0		066
210--Monoammonium Phosphate 11-40-0-12		209
277--Monocalcium Phosphate Granular 0-21-0		???
278--Monocalcium Phosphate Coarse 0-21-0		???
266--Superphosphate Triple Granular 0-45-0		267
280--Dical Feed Grade 18.5% 0-0-0		
285--Tricalcium Phosphate 18% Granular		
286--Tricalcium Phosphate 18% Coarse		
460--Potassium Thiosulfate 0-0-25-17		
465--Potassium Hydroxide 0-0-31		
465--Potassium Hydroxide 2 0-0-34		
541--Urea Sulphuric Acid Solution 15/49 15-0-0		
545--BLEND DRY CUSTOM		
545--BLEND LIQUID CUSTOM		
707--Boron Liquid 0-0-0		
709--Solubor 0-0-0		
729--Fluoro Acid (FSA) 0-0-0		
760--Manganese 32% 0-0-0		
785--Foliar Zinc 0-0-0		
786--Zinc 9% Foliar 0-0-0		

Summary and Recommendations

The Official Publication of AAPFCO (#68) shows 32 states using the UFTRS system for Tonnage Reporting (Pages 358). Importing of standard text files has been broken since the demise of Windows XP. There is now a version, ufrsv10b, which can import these files. uDeal runs on Windows 7-10, Mac OS X, iOS and Android and can generate and import not only our standard formats but also the new XML and CSV formats. uDeal is user friendly, open source and can run on most every desktop and mobile computer on the market today and likely in the future. It is now time for the Uniform Reports Committee to get behind the implementation of this system to move the fertilizer industry to **Paperless Fertilizer Tonnage Reporting by 2016**.

If we wish to continue using UFTRS we need to have it upgraded to current Windows and Microsoft standards. As seen in the Table below the last year for importing is 2015. Also Windows 10 has launch and further testing may be required. Possible options are:

- 1) Contract with Kellye Gaither who wrote the current UFTRSV10
- 2) Add to uDeal the ability to use current Backend data and export it to Joe for inclusion in the National Fertilizer Database (NFDB).
- 3) Rewrite UFTRS as part of the open source project using modern programming tools and databases. Contract with a major agricultural software company to supply on going support.

UFTRS

Import Text File

Import Text File Into The Selected Period and Year.

Month	Quarter	Year
January	January - March	2008
February	April - June	2009
March	July - September	2010
April	October - December	2011
May		2012
June		2013
July		2014
August		2015
September		
October		
November		
December		

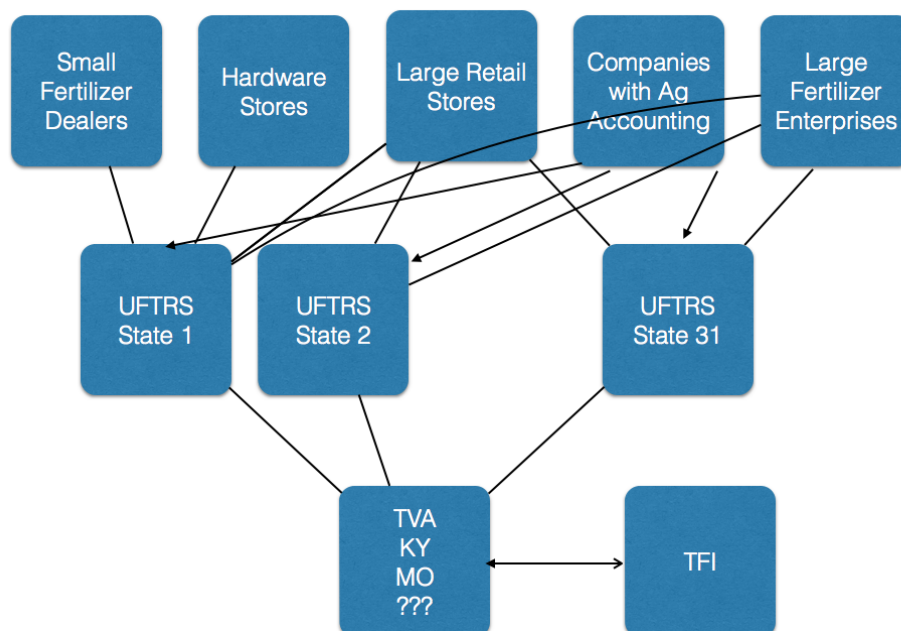
Select Text File
Import Text File
Append Text File
Cancel

About 47 states have laws requiring sellers of fertilizers in their states to report the tons and kinds of fertilizer they sold. Some by county, some by month, quarter, semiannual or yearly. AAPFCO contracted with TVA to develop the UFTRS system for capturing this data and consolidating it into a National Fertilizer Database. When TVA lost funding for the NFDC the University of Kentucky, through David Terry picked up the consolidation task. On Terry's early retirement, Joe Slater, University of Missouri, picked up this task. The data is used by TFI to publish "Commercial Fertilizers", a valuable resource tracking over many years sales information for better market and even environmental evaluation and planning.

While paperless reporting was part of original UFTRS plan, over the years advances in computer and eBusiness technology have outstripped the UFTRS system just at a time it is needed most. The industry has gone paperless and we have not.

The uDeal project is hopefully a major step in making this data submission and consolidation a cost effective, multi-platform process using Windows, Macintosh, iPhone, iPod, iPad and Android devices sending emails with printed Tonnage reports with standardized data files attached.

The UFTRS program is broken and needs maintenance or a replacement. It will take ongoing commitment by each state and the fertilizer industry to make PFTR a reality.



Jon L. Nevins, PhD.

**President Lion Software, Inc
1855 Ford St.
Florence, AL 35630**

**Phone: (256) 766-6293
Cell: (256) 394-8400**

jon@LionSoftware.net

**www.LionSoftware.net
www.UFTRS.com
www.PFTR.net**

Copyright (c) 2015 Lion Software, Inc.