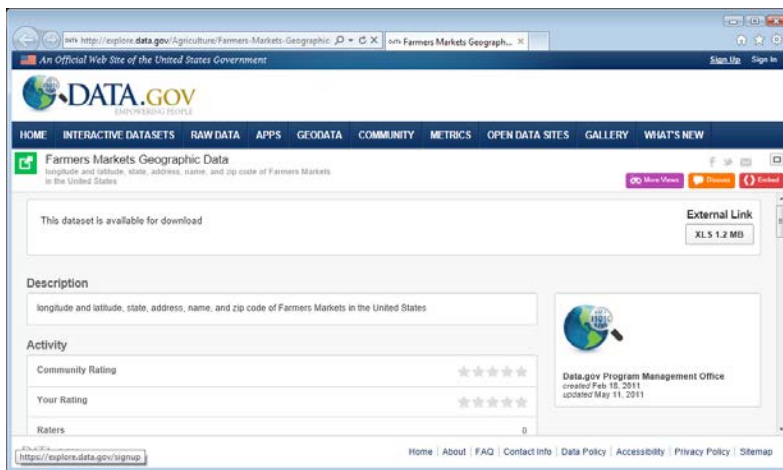


Mapping Farmer Markets into Google Earth using XSLT

In the last few years, governments around the world have started investing significant resources to bring a tremendous amount of data online and to make it available to the public, not only to improve transparency but also to enable third parties to build very interesting applications. In the US, the government runs <http://datagov.gov>, a large collection of data sets that include information on climate, biology, ecology, economy and human health, just to mention a few.

This fascinating archive includes an interesting document entitled “Farmers’ Markets Geographic Data”. While our society is maturing, we have come to realize the importance of buying fruit and vegetables locally to reduce carbon emissions and to help the local economy.



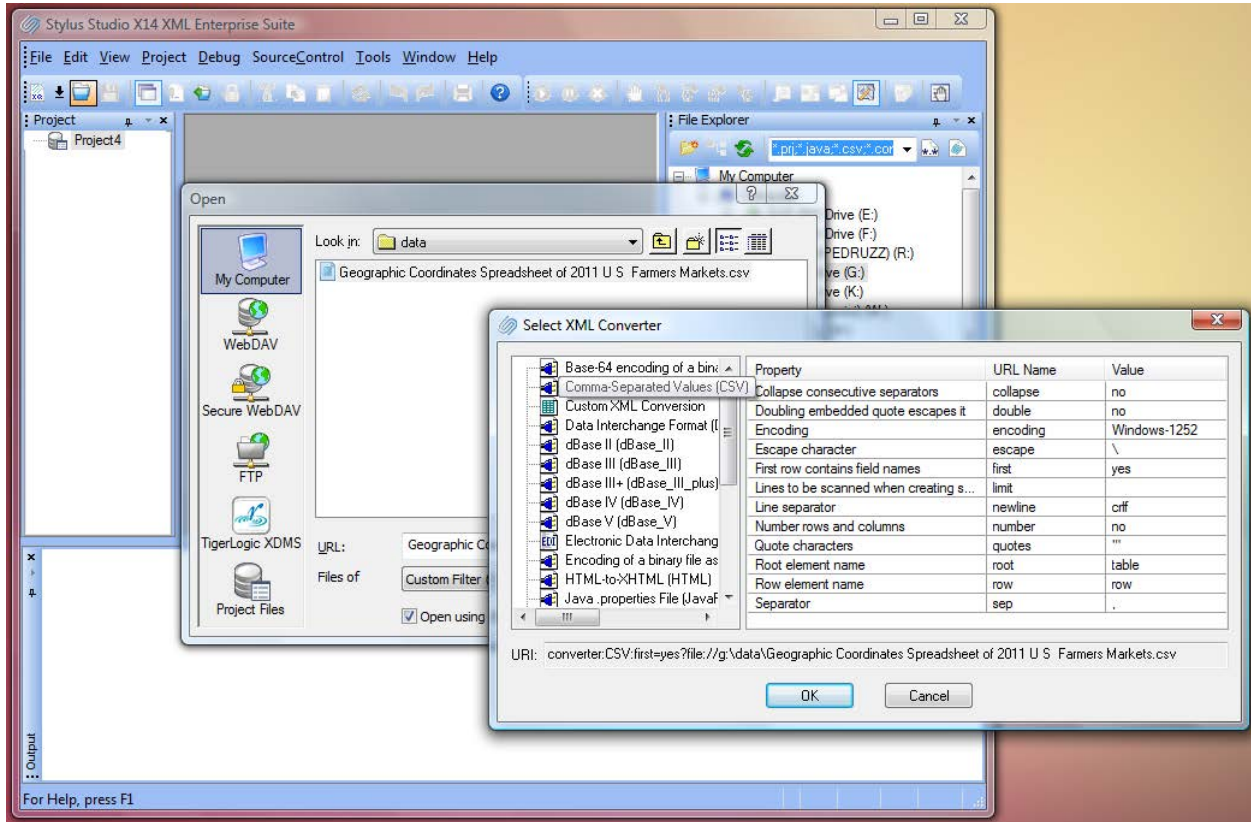
I thought it would be useful to be able to convert the report to a format that can be rendered on a map to easily determine which markets are located near me.

The screenshot shows a Microsoft Excel spreadsheet titled 'Geographic Coordinates for U.S. Farmers Markets'. The spreadsheet contains a list of farmer markets across various states, with columns for location name, address, city, and coordinates. The data is organized in a table format with columns labeled 'Loc', 'State', 'LocName', 'LocAddress', 'LocCity', 'LocAddress2', 'Lat', and 'Lon'. The spreadsheet includes a note at the top: 'This Excel spreadsheet lists over 6272 U.S. farmer markets' locations and geographic coordinates, based on data from the USDA National Farmers Market Directory. As with the USDA National Farmers Market Directory, this information is collected on a voluntary basis via self-reporting from farmers market managers across the country. If you are a farmers market manager, and would like to add or update information about your market, please contact Velma Luban, Agricultural Marketing Specialist at velma.luban@ams.usda.gov.

Loc	State	LocName	LocAddress	LocCity	LocAddress2	Lat	Lon
Alabama	Alabama	Aberdeen Farmers Market	116 Main Street	Aberdeen	32950	-89.2092	34.2879
Alabama	Alabama	Alexander City Farmers Market	Broad Street	Alexander City	35010	0	0
Alabama	Alabama	Andalusia Power Plant Farmers Market	256 Historic Central Street	Andalusia	36420	-86.4924	31.2999
Alabama	Alabama	Anniston Farmers Market	148 & Gurnea	Anniston	36201	-85.832	33.8425
Alabama	Alabama	Arden Farmers Market	409 Green Street, West	Arden	35612	-86.9733	34.8013
Alabama	Alabama	Attmore Farmers Market	201 East Louisville Avenue	Attmore	36504	-87.4928	31.0243
Alabama	Alabama	Aurora Farmers Market	378 Avenue S.W.	Aurora	36954	-86.0927	34.056
Alabama	Alabama	ATM Farmers Market	7400 East Drive	Montgomery	36117	-86.1743	32.3874
Alabama	Alabama	Baker County Farmers Market	241 Broad Street	Dallas	36072	-83.4411	31.3928
Alabama	Alabama	Bibb County Farmers Market	133 Birmingham Highway	Centerville	35042	0	0
Alabama	Alabama	Blount County Farmers Market	500 Lee Street	Chowchee	35721	-86.4701	33.8443
Alabama	Alabama	Blount County Farmers Market	108 Lee Street	Blount	35957	-86.1421	34.136
Alabama	Alabama	Brewton Farmers Market	Between Midland & Lee Streets	Brewton	36427	-87.0275	31.1499
Alabama	Alabama	Brydges Farm Farmers Market	340 The Bridge Street, #206	Birmingham	35204	-86.6742	34.7174
Alabama	Alabama	Dalhousie County Farmers Market	Union Springs Recreation Site	Union Springs	36089	-85.7124	32.1432
Alabama	Alabama	Dorchester County Farmers Market	Conestoga and Cedar	Georgia	36033	-86.7438	31.6371
Alabama	Alabama	Dorchester County Farmers Market	400 West Piedmonta Avenue	Burke	36904	0	0
Alabama	Alabama	Calera Farmers Market	9758 Hwy 25, Calera, AL 35040	Calera	35046	-86.168	33.664
Alabama	Alabama	Calhoun County Farmers Market	1702 Noble Street	Anniston	36202	-85.8299	33.6664
Alabama	Alabama	Candler Farmers Market	Highway 10 Bryan	Candler	36728	-87.3034	32.0021
Alabama	Alabama	Carroll County Farmers Market	2209 Center Street Parkway	Center Point	35212	-86.6837	33.8422
Alabama	Alabama	Cherokee County Farmers Market	651 Amory Road	Centra	32960	0	0
Alabama	Alabama	Chicago Street Farmers Market	125 East Laurel Area	Prichard	36155	-87.4819	30.4064
Alabama	Alabama	City of Albertville Farmers Market	Main Street, downtown	Albertville	35950	-86.2993	34.288
Alabama	Alabama	Clarke County Farmers Market	3100 Highway 43	Madison	36545	-87.5922	31.5128
Alabama	Alabama	Clay County Farmers Market	Highway 9	Jackson	36251	-85.8493	33.2472
Alabama	Alabama	Clayton County Farmers Market	Heflin Recreational Center	Heflin	36284	-85.5512	33.3822

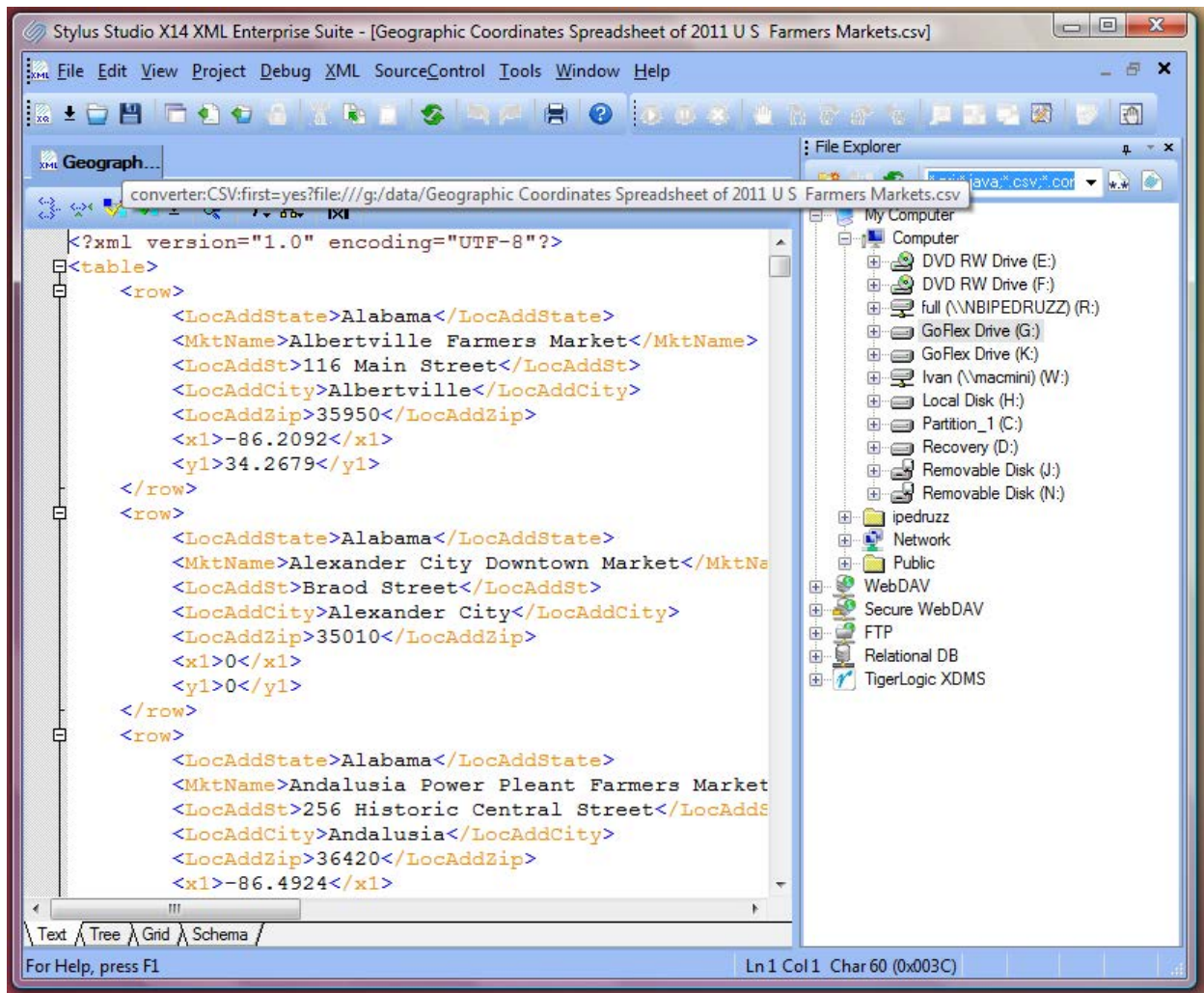
This particular report is in Microsoft Excel format and can be easily loaded into Stylus Studio using the built-in CSV to XML converter.

Notice that the property named “first” is set to yes, in order to instruct Stylus Studio to interpret the first line of the CSV as a column header.



After we commit the dialog, the data appears as XML. The tooltip reveals that we are still pointing to the underlying CSV file while looking through an “XML View”. This approach allows us to manipulate the data using standard XML transformation languages, such as XSLT, to reshape, to transform and to query our input documents.

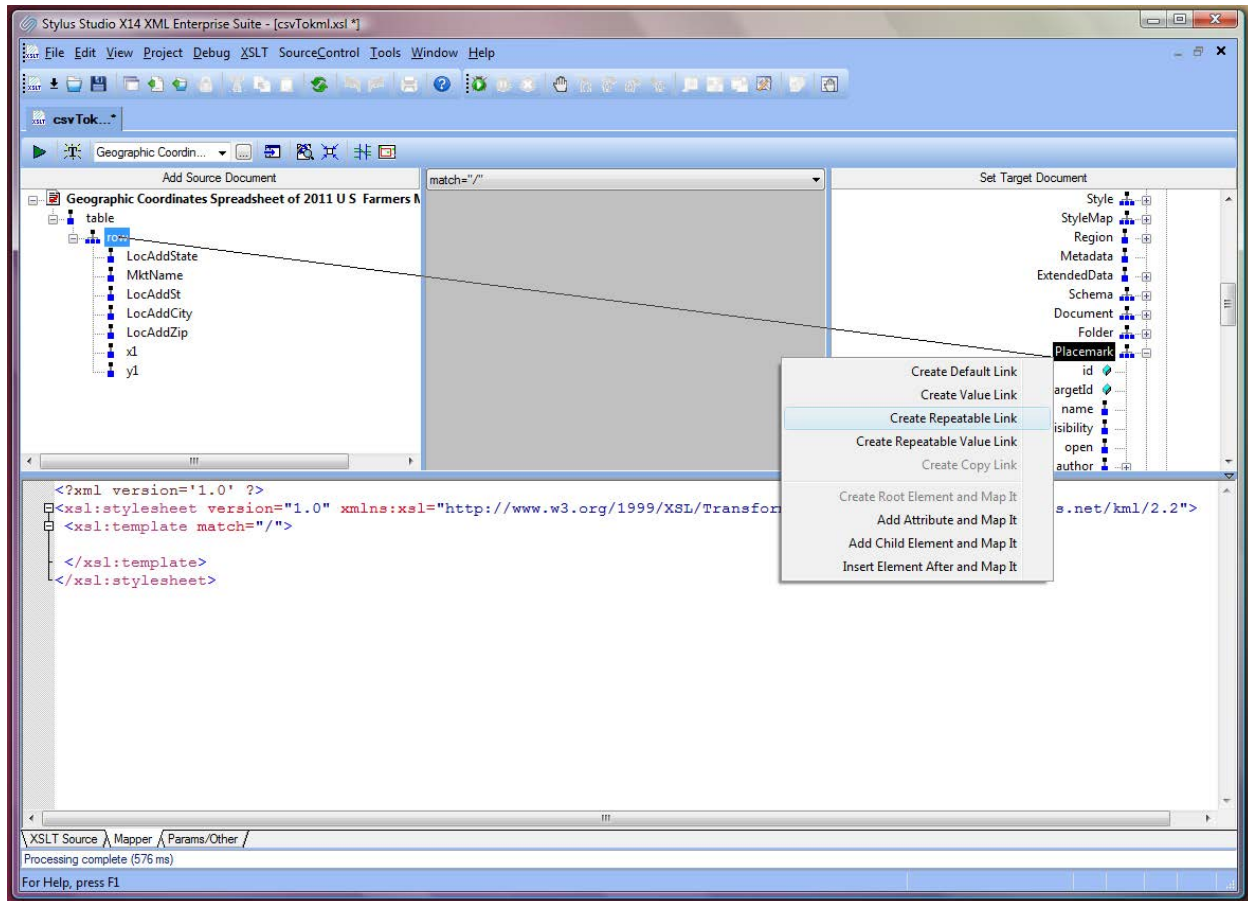
Stylus Studio provides a large variety of XML converters including a very rich support for Electronic Data Interchange (EDIFACT, X12, IATA, HIPPA, etc.)



Google Earth, a popular geographical mapping tool, allows the importing of data overlay using an XML based format called KML <http://code.google.com/apis/kml/>. The schema for KML can be found at <http://schemas.opengis.net/kml/2.2.0/ogckml22.xsd>.

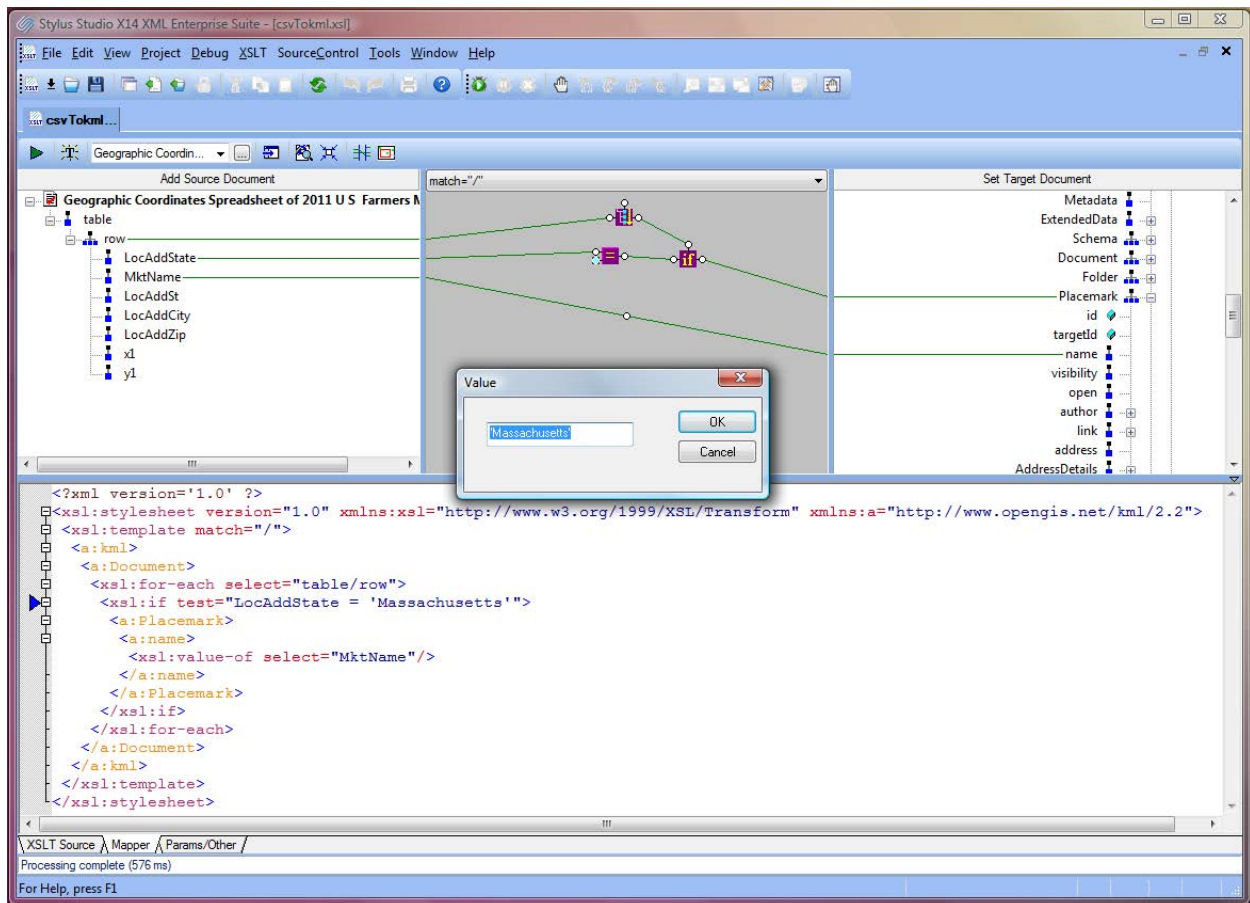
This seems to be a great target for our project. We will use Stylus Studio to transform CSV data into KLM using XSLT.

The first step is to iterate through each element "row" in our input document and output a sequence of Placemark elements. We accomplish this in Stylus Studio by drawing a line from left to right using the mouse right button. When we release the button, we can select which link to create. In our case we need a repeatable link. In response Stylus Studio creates a xsl:for-each instruction.

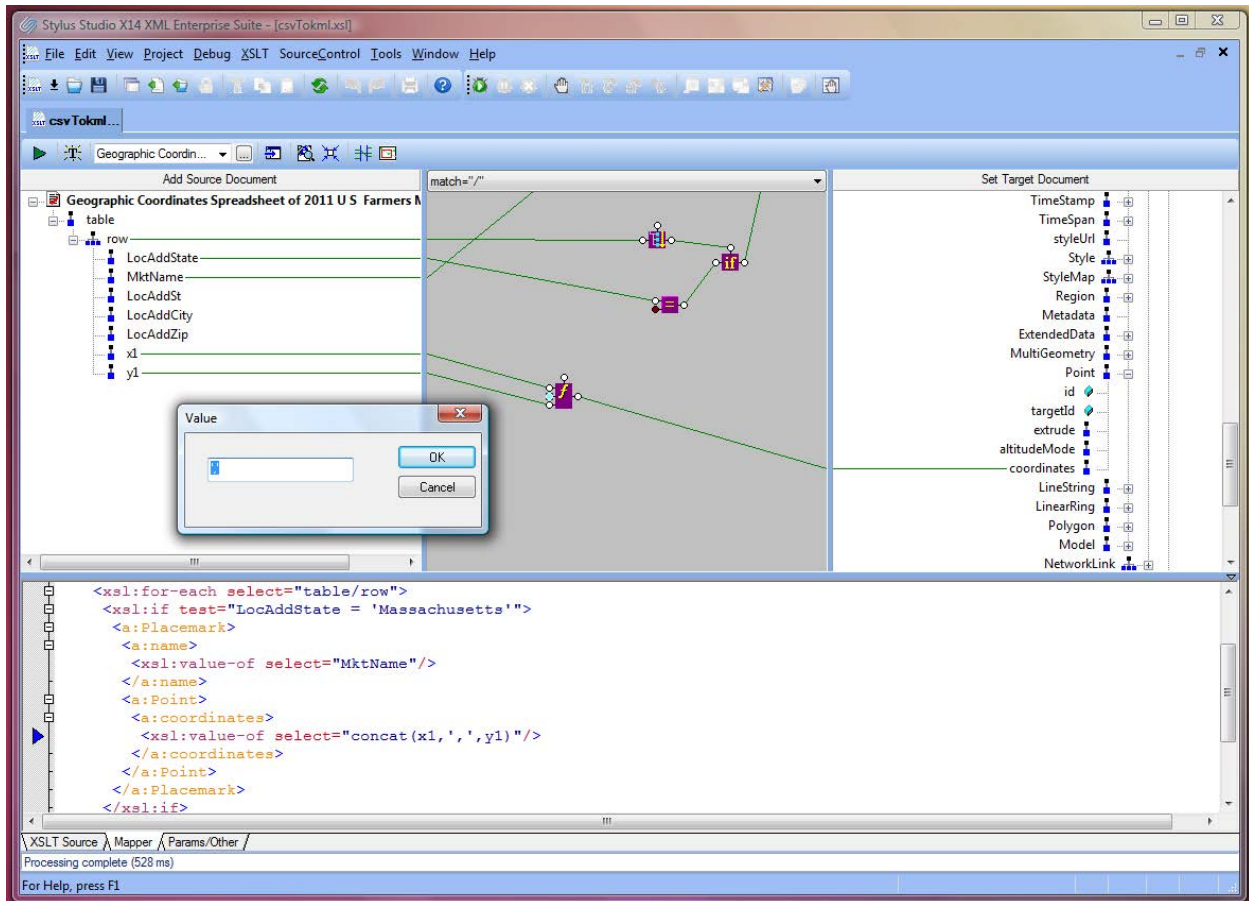


We now link the farmers' market's name to the PlaceMark name. In this example, we want to focus on markets that are in Massachusetts only. To accomplish this, we will add an `xsl:if` instruction. We must change the link routing from the `xsl:for-each` on each output port to a `xsl:if` control port. Then we can map the `xsl:if` output port to `Placemark` in the target tree. We then use the operator "=" to test if the state is equal to Massachusetts.

The Stylus Studio XSLT mapping feature allows the developer to have multiple input schemas in case joining multiple data sources into a single output schema is needed.

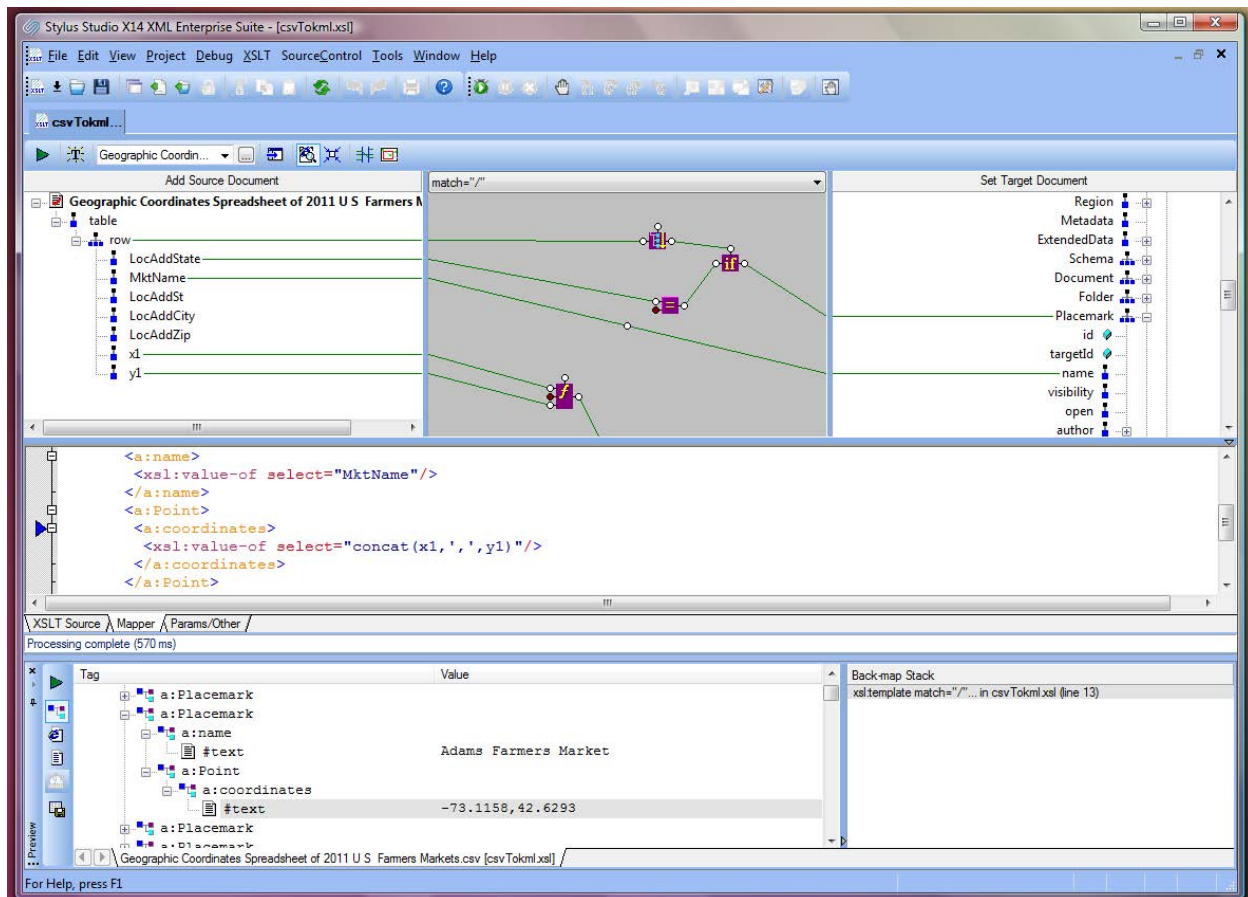


The next step is to output the coordinates into the element “coordinates” so Google Earth can place the markets in the appropriate geographical location. KML represents coordinates as single value with longitude and latitude separated by the character comma. To merge element “x1” and “y1” into element “coordinates”, we use the standard XPath function concat.



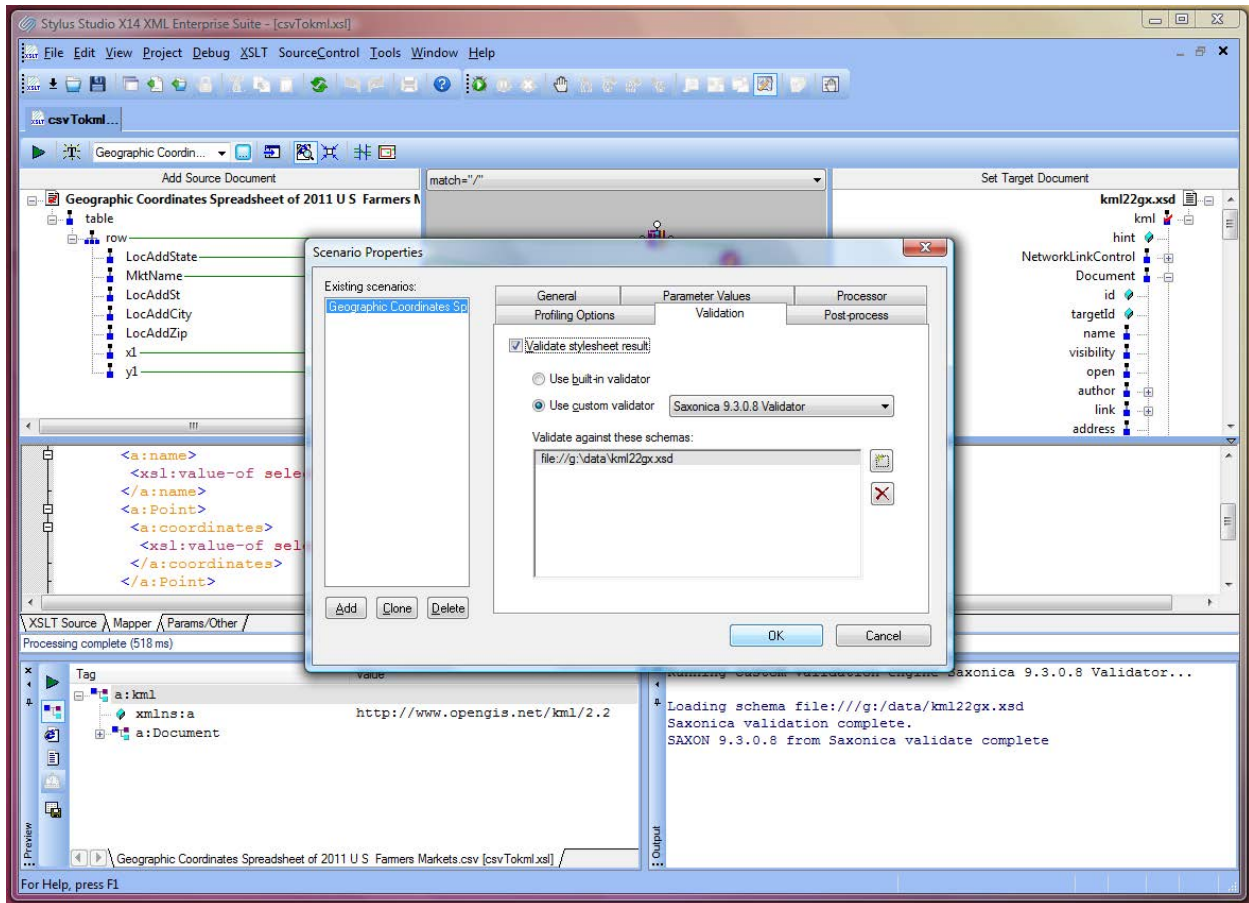
Our transformation is completed. We can click on the green play button in the toolbar and see the result in the preview window.

The result is a KML document. If we click on any element in the output window, Stylus Studio shows the stack trace and the location of the XSLT instruction that originated it.

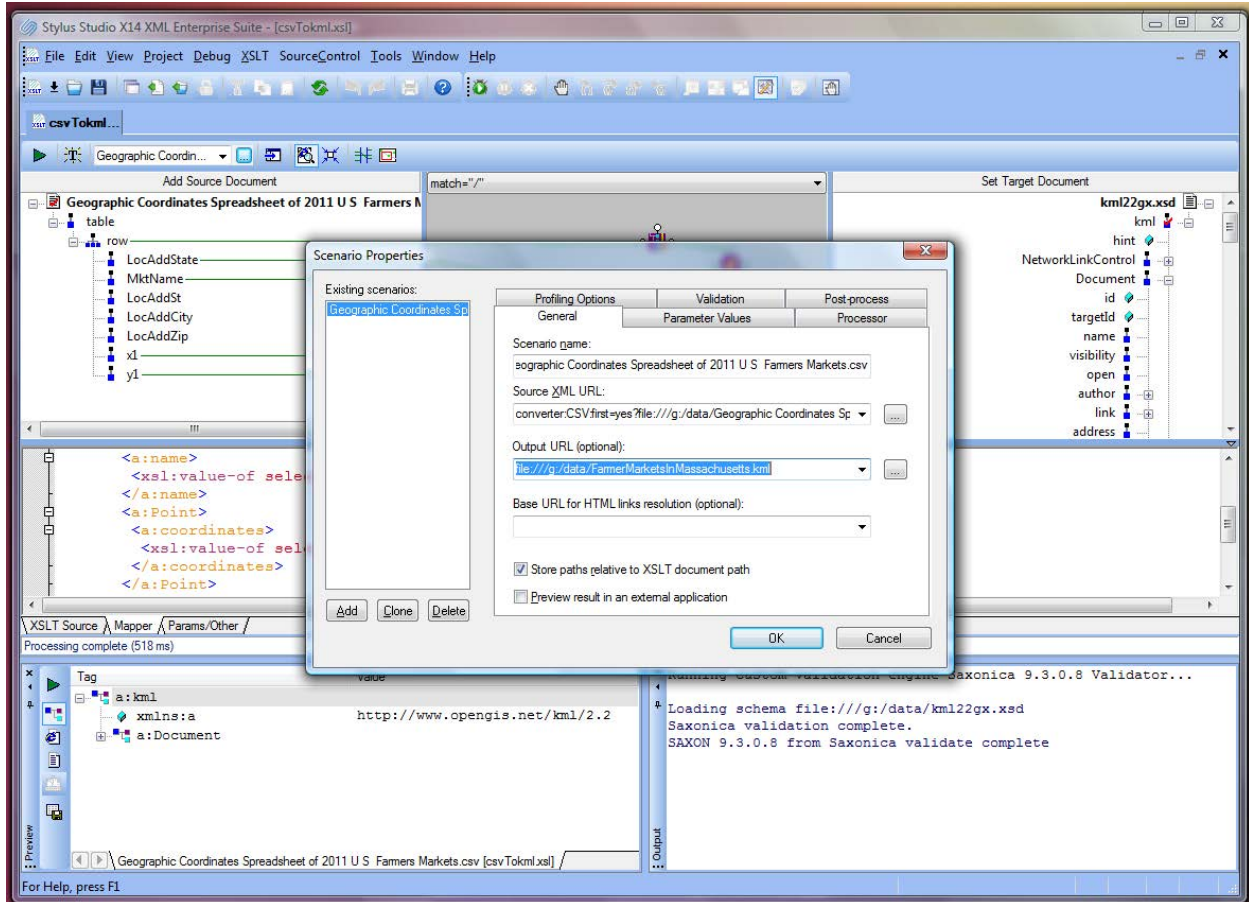


We want to be sure that, our XML output conforms to the KML schema, therefore, we need to set a validation step in the scenario dialog. Stylus Studio supports a variety of schema processors including Saxon, MSXML, .Net and Java built schema processors.

When we execute the transformation again, Stylus Studio runs the schema processor on the transformation result and shows the validation output in the Output window. Our output document is valid; we can continue.

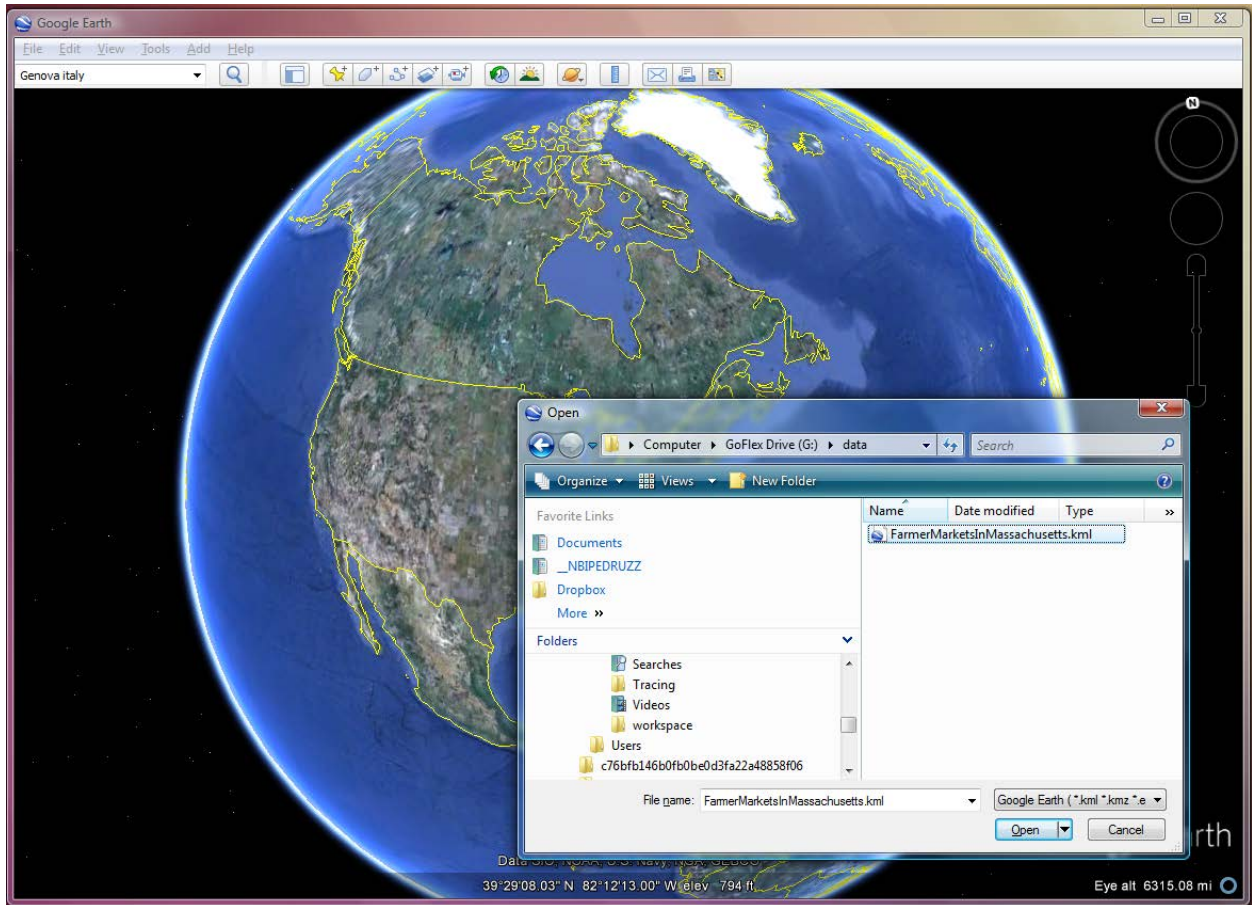


We also want to save the output on disk every time we run the transformation. This is done by setting the output URL in the scenario dialog.



It is time to launch Google Earth and have a look at our beautiful planet from space.

We can load the KML overlay into the map using the document we have generated with the Stylus Studio XSLT mapping tool.



In the following screenshot, we have zoomed into the Boston north west area where we can clearly see a large number of farmers' markets.

Mission accomplished, thanks to the Stylus Studio powerful XML to XML mapping tool and its CSV converter technology.

