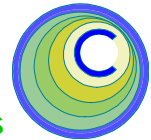


The CEDRA Corporation's COMMAND OF THE MONTH

A monthly information bulletin

June 2012

FEATURED COMMAND
Change Feature's
Keynode Coordinates




Application Description

A question recently came up regarding if it was possible to change the shape of a point feature by editing its coordinates in the layer's attribute table.

The intent was not so much to be able to explicitly type coordinates but more to be able to update the shape of the point by using the X and Y coordinates in the layer's attribute table. Specifically, the coordinates in the table would be updated through some external means, after which it was desired to have the shape of the feature updated.

After a short review of the application it was determined that a tool could be developed which could change the shape of a point feature by using coordinate values that were stored in the layer's attribute table.

The CEDRA Solution

To address the application described above, the CEDRA-Polygon-Tools-2 toolbar, see Figure 1, can be employed. Specifically, the fourth tool from the left in the toolbar, **Change Coordinates** tool,  can be used. This tool enables the user to alter the shape of point and polyline features by allowing the user to edit the feature's keynode coordinates.

Change Coordinates Overview


With the  Change Coordinates tool the user is able to change the shape of a selected point or polyline feature. De-



Figure 1
CEDRA-Polygon-Tools-2 Toolbar

pending upon which feature type is to be processed, the tool operates in one of two modes. The **first** mode involves the editing of a point feature, while the **second** mode involves the editing of a polyline feature.

Under the **first mode** of operation, where a point feature is to be edited, the user activates in the Table of Contents the point layer to be processed prior to activating the tool.

Command Of The Month bulletin

This month's issue discusses how to change the shape of a point or polyline feature by editing the feature's keynode coordinates.

Once the point layer has been activated, the tool can be selected. If more than one layer is active or if no layer is active, an appropriate warning message will be displayed. Additionally, if an unsupported layer is active, a warning message to this effect is displayed.

Upon activation of the tool, the attribute table for the active layer will be displayed, if it is not already displayed. The tool will then check if the X and Y coordinate fields have been defined. If not,

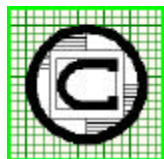
the tool will prompt the user to select the fields in the attribute table that contain the X and Y coordinates. This needs to be done only once. So that, if the tool is activated again, the tool remembers the last coordinate field names that were specified. So that, if these fields exist in the active layer, the user is not prompted to specify the X and Y coordinate fields.

At this point the tool checks for any selected features in the active point layer. If there are none, a warning message is displayed, at which point, the user clicks the OK button, to dismiss the warning message, after which, the user is able to select a point feature or group of features to be processed. Note it is possible for have more than one point feature selected.

If the tool determines there are selected point features, the tool processes all of the selected features, changing the shape of the selected features using the coordinate values extracted from the attribute table. The coordinate field names specified by the user are used in the coordinate extraction.

The tool remains active so that the user can select another feature or group of features. Native ArcMap functionality can be used to edit the coordinate values in the attribute table. Once the edits have been accomplished, the tool can be selected to update the shape of the selected features.

Under the **second mode** of operation, where a polyline feature is to be edited, the user activates in the Table of Contents the polyline layer to be processed



TM The CEDRA Corporation

Total CADD for EngineersTM
Bridging Engineering and GISTM

Phone: 585-232-6998
Fax: 585-262-2042

151 Sully's Trail - Suite 6
Pittsford, New York 14534

E-mail: cedra@cedra.com
URL: <http://www.cedra.com>

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Figure 2
No Active Layer
Warning Message

prior to activating the tool. Afterwards, the user makes a pick in the map area to identify the feature to be processed. The traditional feature selection confirmation message box will be displayed.

Upon confirmation of the feature to be processed, a multi-input dialog box is displayed. In this dialog box will appear the keynode coordinates associated with the feature.

A polyline feature can represent a two-point line or a circular arc. The dialog box offers the following curve parameters: center point coordinates, radius and curve direction.

By specifying the appropriate values for the parameters, the user is able to:

- change a line into a curve and vice-versa,
- change the direction of a curve,
- change the radius of a curve computing a new curve center,
- change the radius of a curve maintaining the curve center,
- change the center point coordinates of a curve computing a new radius,
- change the start and/or end point coordinates of a line or curve.

Once the appropriate values have been specified, the user clicks the OK button. The tool will then display a graphic element in the color red representing the new shape of the selected feature.

At this point the shape of the selected feature has not been altered. As such, various values can be entered by the user until the desired shape has been achieved.

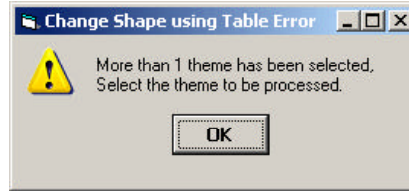


Figure 3
More than 1 Active Layer
Warning Message

Once the desired shape has been determined, the user can select the option Change Shape from the Action parameter drop-down list to have the tool change the shape of the selected feature.

In addition to explicitly entering coordinate values for the feature's keynodes, the Action parameter offers options for allowing the user to pick the location of the various keynodes, if so desired.

Change Coordinates Operation

To use this tool for editing Point features, the user should:

- 1 **Activate** in the Table of Contents the point layer that contains the point feature(s) to be processed.
- 2 **Select** the point feature(s) with the *Select Features from Active Layers* tool, to be processed.
- 3 **Click** at the *Change Coordinates* tool to activate it.

If the X and Y coordinate field names have been defined proceed to Step 8, otherwise continue with the following:

- 4 **Scroll** down in the Item List: choice list data field and select the field name containing the X coordinate values, see Figure 5.
- 5 **Click** at the OK button in Figure 5 to confirm the name of the X



Figure 4
Unsupported Active Layer
Warning Message

coordinate field name
or
click at the **Cancel** button to abort the command.

- 6 **Scroll** down in the Item List: choice list data field and select the field name containing the Y coordinate values, see Figure 5.
- 7 **Click** at the OK button in Figure 5 to confirm the name of the Y coordinate field name
or
click at the **Cancel** button to abort the command.

- 8 The attribute table for the active layer will appear, see Figure 6.

At this point, if **there are no** selected features the warning message shown in Figure 7 will appear. Click the OK button to dismiss the warning message. The user is now able to continue with the tool commencing with Step 2 or select another command altogether.

If **there are** selected features, the tool will update the shape of the selected features using the coordinates in the attribute table under the user-specified coordinate

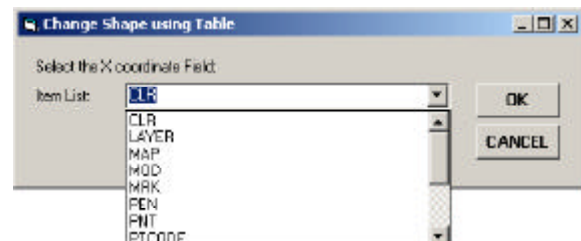


Figure 5
Coordinate Field Name Specification

FID	Shape*	PNT	X	Y
0	Point	1	2117728.419963	261690.300064
1	Point	2	2112787.689974	263617.430005
2	Point	3	2114487.682423	263683.053986
3	Point	4	2114395.792247	263628.449314
4	Point	5	85761.507066	892759.031153
5	Point	6	85441.46177	892356.215522
6	Point	7	86649.908663	893156.328762
7	Point	8	88150.810739	892703.85093
8	Point	9	86429.187769	891219.50292
9	Point	10	85916.011691	893277.725253
10	Point	11	2132872.718186	251311.065239

Figure 6 - ArcMap Attribute Table



Figure 7
No Feature(s) Selected
Warning Message

field names. The user is now able to continue with the tool commencing with Step 2 or select another command altogether.

To use this tool for editing a **Polyline** feature, the user should:

- **1 Activate** in the Table of Contents the polyline layer that contains the polyline feature to be processed.
- **2 Click** at the *Change Coordinates* tool to activate it.
- **3 Click** in the *ArcMap* map area on top of the polyline feature to be processed.
- **4 Confirm, or not** the selection using the conventional feature selection confirmation message box, see Figure 8.

At this point, a multi-input dialog box similar to that shown in Figure 9 will appear. As the user

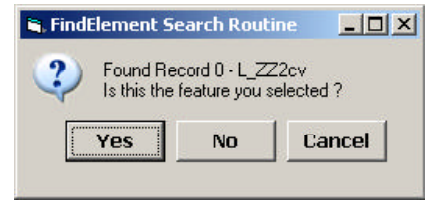


Figure 8
Feature Selection Confirmation
Message Box

- **5 Enter** in the *Start X coordinate*: data field the desired X coordinate for the start point of the selected feature.
- **6 Enter** in the *Start Y coordinate*: data field the desired Y coordinate for the start point of the selected feature.
- **7 Enter** in the *End X coordinate*: data field the desired X coordinate for the end point of the selected feature.
- **8 Enter** in the *End Y coordinate*: data field the desired Y coordinate for the end point of the selected feature.
- **9 Enter** in the *Center X coordinate*: data field the desired X coordinate for the center point of a circular arc.

clicks the OK button, the tool processes the keynode coordinate values as they appear in the dialog box and depending upon the setting of the Action parameter, the tool will:

- a. draw a graphic element in the color red denoting the proposed feature shape,
- b. prompt the user to make a pick in the map area denoting a specific keynode, or
- c. update the shape of the selected feature.

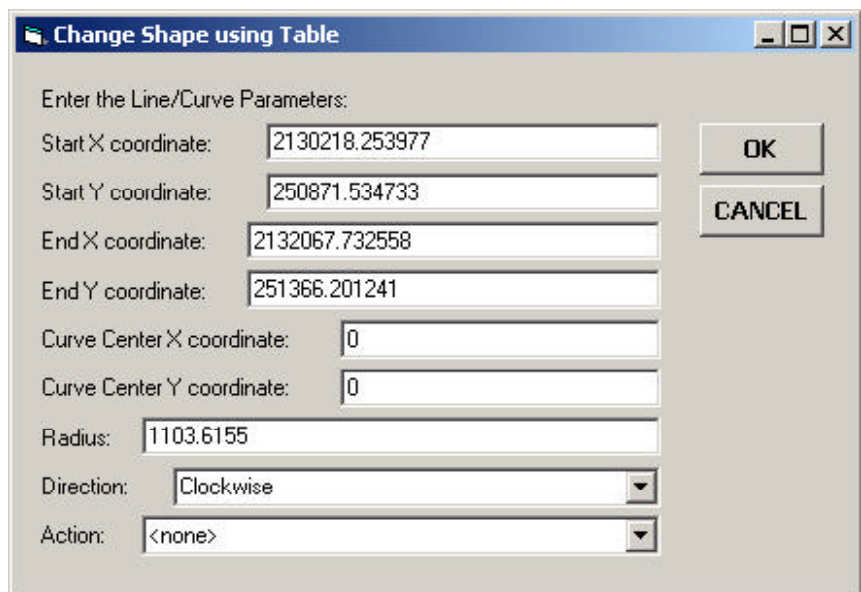


Figure 9
Change Coordinates Multi-Input Dialog Box

- **10 Enter** in the *Center Y coordinate*: data field the desired Y coordinate for the center point of a circular arc.
- **11 Enter** in the *Radius*: data field the desired radius for a circular arc.
- **12 Scroll** down in the *Direction*: data field, and **select** the appropriate of the following options:
 - **Clockwise**, to indicate that the circular arc is to be drawn in a clockwise direction.
 - **Counter-Clockwise**, to indicate that the circular arc is to be drawn in a counterclockwise direction.
- **13 Scroll** down in the *Action*: data field, and **select** the appropriate of the following options:
 - **<none>**, to generate a graphic element in the color red which represents the proposed new geometry for the selected feature.
 - **Pick Start Point**, to indicate that the start point is to be defined by making a pick in the map area.
 - **Pick End Point**, to indicate that the end point is to be defined by making a pick in the map area.
 - **Pick Center Point**, to indicate that the center point of a circular arc is to be defined by making a pick in the map area.
 - **Change Shape**, to indicate that the geometry of the selected feature is to be changed using the keynode coordinate values shown in the dialog box.
- **14 Click** at the **OK** button in Figure 9 to perform the action as specified by the setting of the Action parameter or **click** at the **Cancel** button to abort the command.

If the OK button is selected, the tool processes the keynode coordinate values as they appear in

the dialog box and depending upon the setting of the Action parameter, the tool will: (a) draw a graphic element in the color red denoting the proposed feature shape, (b) prompt the user to make a pick in the map area denoting a specific keynode, or (c) update the shape of the selected feature.

If the Action parameter has been set to <none>, return to Step 5.

If the Action parameter has been set to Change Shape, the geometry of the selected feature is altered and the command remains active for the user to select another feature or another command altogether.

If the Action parameter has been set to Pick Start Point, Pick End Point or Pick Center Point, perform the following step.

- **15 Click** in the *ArcMap* map area to denote the location of the start, end or center point, depending upon the setting of the Action parameter.

Following the pick in the map area, the tool re-displays the dialog box using the coordinates of the user's pick and updates the display of the proposed shape by drawing a graphic element in the color red. The user can then continue with the operation of the tool commencing with Step 5.

Notes

- a. The names of the X and Y coordinate fields can be anything the user wishes. That is to say, the name of the X coordinate field could X_COORD or any other name the user wishes, likewise for the Y coordinate field.
- b. The user can change the radius of the circular arc or the coordinates of the center. Both can not be changed at the same time.

- c. When editing point features, it is possible for the point layer to have joins. That is to say, the tool will process point layers with joins.
- d. When editing point features, if it is desired to change the coordinates in the attribute table, the user can either: (a) edit the coordinate values first, select the record(s) and then select the Change Coordinate tool, or (b) select the record(s) first, edit the coordinate values and then select the Change Coordinate tool. Either approach will work.
- e. Entering zero (0.0) for the Center X and Center Y coordinates results in the tool computing a curve center when a curve is to be created.

Summary

The Change Coordinate tool at first may not seem like a useful command, however, those involved in mapping and coordinate geometry applications will know that there are times when this tool would come in handy. For example, changing the direction of a curve or changing a line into a curve. The tool may not be used on a daily basis but there will be times when the tool is needed.

The implementation of the Change Coordinates tool is a recent enhancement to the CEDRA-Polygon-Tools-2 toolbar. Users with a software support agreement should check with The CEDRA Corporation on how to obtain a software update so as to be able to utilize this new functionality.

As always, users who have a need for functionality that is not presently available in CEDRA software should feel free to forward these requests to CEDRA, as well as, any other comments or suggestion you may have.

If you have a request for Command Of The Month, feel free to phone, fax or e-mail your request to The CEDRA Corporation.