Map Symbolization

Chapter 4 Symbolization

1-1. Preference setting of Illustrator

Before starting, set the units in "Preference" window.

- 1. Select from Edit / Preferences / Units.
- 2. Select from each pop-up menu as following then click OK. General: Millimeters, Stroke: Millimeters, Type: Points.

General	Units
Selection & Anchor Display Type Units Guides & Grid Smart Guides Slices Dictionary & Hyphenation Plug-ins & Scratch Disks User Interface File Handling & Clipboard Appearance of Black	General: Millimeters Stroke: Millimeters Type: Points Asian Type: Points Identify Objects By: Object Name XML ID
	OK Cancel

1-2. Import of CAD file

1. Import DXF/DWG file

- ① Select from File / Open.
- ② Select target (working file) DWG file from your directory then click OK.
- ③ When open DWG file which have been scaling for symbolization put check mark "Original Size", then it should enter "Scale 1, 1 Unit(s) =1 Millimeters", then click OK.

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Scale: 1	Unit(s) =	1	Millimeters
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✓ Center Artw ☐ Merge Layer	s		

④ In case of the DWG file which has not been scaled yet, it put check mark "Original Size", then it should entere "Scale 1, 1 Unit(s) =0.02 (scale value of 1/50,000) Millimeters", then click OK.

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Or put check mark "Scale by" and enter the scale value 2% (scale value of 1/50,000). Then scale window should enter "Scale 1, 1 Unit(s) =1 Millimeters", then click OK.

- Artwork Scale		_		
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- Options Layout: Model ☑ Genter Artwork ☑ Merge Layers	17			
		-		

2. Ungroup the objects

① Select all (Ctrl+A).



② Select from Object / Ungroup. It might be repeated several times until group will be released.

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				4

3. Copy all objects

- Show rulers. Select from View / Rulers / Show Rulers.
 When the Global ruler is setting, should change to the Artboard rulers.
 Select View / Rulers / Change to Artboard Rulers.
- ② Turn on only neat line layer.

Upper right button on the Layers panel > Pull down > select Hide Others, or Click (Alt+click) on the "eye mark" it will be isolated layer at once.

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Layers	▼ ≣	<u>N</u> ew Layer
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S201	0	Options for "50k_map_north"…
	0	Make Glipping Mask
	0	Enter Isolation Mode
💿 🕨 💽 50k_map_n	○ ■ 🖣	E <u>x</u> it Isolation Mode
43 Layers 🔎 🖻 🐂 🖷		Locat <u>e</u> Object
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Alt+click turn off o	ther	<u>T</u> emplate
layer.		<u>H</u> ide Others
It will be displayed ac	tive	O <u>u</u> tline Others <u>L</u> ock Others
layer.		Paste <u>R</u> emembers Layers
		<u>P</u> anel Options

③ Select neat line.

<u>Select all (Ctrl+A) or click on a neatline layer in Layers.</u>





④ Show "Smart Guide (Ctrl+U)", then it should be coincided with the "center of neat line" with ruler's original point.



Drag the ruler origin to the center of the neatline.

⑤ Upper right button on the Layers panel > Pull down > Show All Layers, or click (Alt+click) on the "eye mark" it will be display all layers at once Then Select all (Ctrl+A) and copy (Ctrl+C).

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	5201	0	Options for Selection		
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43 Layers	P	.	Locat <u>e</u> Object		
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			Lock Others		
			Paste <u>R</u> emembers Layers		
			Panel Options		

4. Pastes into the LEGEND file

① Open the "LEGEND" file (LEGEND file which is arranged all layers order should be made before symbolization working.)



From Layers pull down menu, check mark to "Paste Remembers Layers". 2

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<u>Merge</u> Selected <u>F</u> latten Artwork Collect in Ne <u>w</u> Layer
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<u>T</u> emplate S <u>h</u> ow All Layers O <u>u</u> tline Others <u>L</u> ock Others
• Paste <u>R</u> emembers Layers
Panel Options

3 Paste in Front (Ctrl+F).



5. Saves as

- () Select from File > Save As.
- 2 Enter file name, then click "Save".
- 3 Cancel the check mark of Illustrator Option dialog window, then OK. Illustrator Options

Fonts				
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Options			_	
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/amings				

1-3. Basic symbolization

- Liner symbol 1 (liner features, DATA TYPE: Line, ex.: Single line road, Stream, Contour, such like single line representation symbols etc.)
- 1. Locks all layers except the target layer. Layer panel > $\mathbf{\nabla}$ > lock Others, or Alt+click on "eye mark".



2. Round corners

The path (liner symbol) is made into "a curve line" in order to be smooth appearance.

Select all paths in the target layer. Ctrl+A or Alt+click on target layer in Layers panel.



Effect / Stylize / Round Corners.

Input "Radius" value, then click OK. (A radius value is specified according to a line condition. symbols items which are contour, river, road and other required objects are should be smoothness appearance.)



3. After round corner, it might be done "Expand appearance". Object / Expand Appearance.



4. The path might be simplified as need. The anchor point in the path will be reduced. The data volume might be smaller than before.



Select Path / Simplify.

"Curve Precision" value should be set exactly 100%, then OK .

Curve Precision:		
 Angle Threshold:		
Original: 59645 pts	Current: 13010 pts	The number of points will be becoming fewer.
Options		
🗌 Straight Lines	Show Original	

Path's anchor points will be reduced with almost keeping the previous path shape.



- 5. Copy a target map symbol from the "Symbolization Specification" file. And then paste into current file at the "temporary layer".
- ① Copy the target map symbol.



② Back to the current working file, and make new layer such as the "temporary layer" for the target symbol.

Layers panel / ▼ / New Layer, or Click "Create New Layer" button.

Layers			10	New Layer
0 8	1	5205	0	New Sublayer
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۲		5103	0.	Exit Isolation Mode
79 Lay	ers	,Ø ∰ ™3	5 6 3	Locat <u>e</u> Object

③ Lock all layers other than "temporary layer". Release check mark to "Paste Remembers Layers" then Paste (Ctrl+V).

			44 X	
ayers	5		*=	New Layer
		**hold_oum, 5001 5101 50k_map_no 5001_f 5101_f 5102 Laver 180		New Sublayer Duplicate "Layer 180" Delete "Layer 180" Options for "Layer 180" Make/Release Chipping Magly Enter Isolation Mode
		5103	0.	Exit Isolation Mode
80 Lay	ers	C 5 40	Locate Object	
 Clic	k an	d lock.		Merge Selected Elatten Artwork Collect in Ne <u>w</u> Layer
				Release to Layers (Seguence) Release to Layers (Build) Reverse Order
				Template Hide Others Outline Others Unlock All Layers
			ſ	
				Paste <u>R</u> emembers Layers

- 6. Color, line width, dash line intervals attributes can be transferred by using "Eye dropper tool"
- ① Lock all layers except target layer. Select all paths in the target layer (Ctrl+A) or Alt+click on target layer in Layers panel.

Layers			-		
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· ·		Layer 180	0		
		5103	0.		
180 Layer	5				
180 Layer:	5				



Select target symbol line, then transferring attributes from the "Symbolization (2)Specification" by using "Eye dropper tool".

The plane line will be changed to same as copied symbol.



③ After changing, the "temporary layer" should delete. Layers panel / ▼ / Delete, or Click "Delete Selection" button.

	_	-		44 X	
Lay	ers			New Layer	
1	6	1		0	New Su <u>b</u> layer
۲	8		**hold_oum	0	Duplicate "Laver 180"
۲	8		5001	0	Delete "Laver 190"
۲	8		5101	0	Delete Layer 100
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۲	8	1	5001_f	0	
۲	8	0	5101_f	0 -	Make Clipping Mask
۲	8	11	5102	0 -	France on ppints magic
	8		Layer 180	0	criter isolation mode
۲			5103	0	Exit Legistion Wode
180 L	.ayer	2	् <u>जि</u> भव	5	Locale Object

- Liner symbol 2 (DATA TYPE: Line, ex.: double line Road) The Path (line symbol) is made into a curve in order to be smooth appearance. The Path (line symbol) is simplified a curve in order to reduce the anchor point what for the data might be to smaller.
- 1. Copy a target map symbol from the "Symbolization Specification" file. And then paste into the "temporary layer".
- ① Copy the target symbol.



- ② Back to the current working file, and make new layer as "temporary layer" on the target symbol layer.
- ③ Lock all layers other than "temporary layer".
 Release check mark to "Paste Remembers Layers" then Paste (Ctrl+V).

-		44 Q
Layers		*=
. 8	2002_F	0
B B	2003_F	0
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B B	2005_f	0
. 81	2006_f	0
1 B	**Hold_oum	0
. 81	2001	0
	Layer 181	00
. 811	2002	0
O A III	2003.	0
181 Layers	,o +u	5 6

- 2. At first, apply an attribute to the objects of "2002" layer by using "Eyedropper tool". Then, apply an attribute to the objects of "2002_f" layer in the same way.
- Select target symbol line "layer 2002", then transferring attributes from the copied symbol in the "temporary layer" by using "Eye dropper tool". The plane line can change to same as copied symbol.



- ② Select all paths in "2002" layer. Then copy.
- 3 Lock all layers except for "2002_f" layer.
 Release check mark to "Paste Remembers Layers".
 Then "Past in front (Ctrl+F)" in "2002_f" layer.



④ Select target symbol line, then transferring attributes from the copied symbol by using "Eye dropper tool".

The plane line can become same as copied symbol.



(5) After that, the "temporary layer" should delete.

- Point symbol (DATA TYPE: Point, ex.: School)
- 1. Import "Brush" file which is registered as the brush library from "Brushes" panel. This material file such as "Brushes" should be made before symbolization working.
- ① Open the brush library.

Brushes panel > Open Brush Library > Other Library.



② Select target "Brush" file in your directory, then click "Open"



- 2. Apply brush to the points.
- ① Select all paths in the target layer.

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		3106	0
06		3107	.0
0 6		3108	0
• E	3	3109	0
1	416	3110	0
1		3112	0
0 6		3113	0
1	4	3114	0
1		3115	00
100 F		3116	0.1

② Click target brush in the "Brushes" panel.



- 3. After Appling the brushes should make sure to be "Expand appearance"
- ① Select all brush objects in the target layer.



② Select from Object / Expand Appearance. After Appling the brushes, these symbols are treating as points. They should be done to be "Expand appearance" in order to change them to normal objects which can rotate, move and scale.

Layers	-			Appearance	-+=
1	T 3	115	00		
۲		«Group»	0	Group	-
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®.		⊲Group⊳	00		
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		«Group»		1	

- Polygon symbol 1 (DATA TYPE: Polygon, ex. : Cemetery)
- 1. Copy a target map symbol from the "Symbolization Specification" file. And then paste into the same layer name of the current working file.
- ① Copy a target map symbols from the "Symbolization Specification" file.



② Back to the current working file, and check mark to "Paste Remembers Layers".



③ Paste (Ctrl+V). The symbol will be pasted into the same layer cause "Paste Remembers Layers" function.



 3107_f

- 2. Adjust the map symbols.
- ① Adjust the position, number of the map symbols with the "Selection tool".



② Select unnecessary map symbols then delete them.



③ The polygon stroke color is not necessary.
 To bring "stroke color" to the front, click "stroke color" bottom in "Color panel".
 It will turn on front. Next, click "None box" bottom.



Click button for "None" of stork's color.

4-19

- Polygon symbol 2 (DATA TYPE : Polygon, ex. : Forest, Savanna)
- **1. Import "Symbolization Specification" file by "Swatches" panel.** This material file such as "Swatches" should be made before symbolization working.
- ① Open the swatch library.

Swatches panel / Open Swatch Library / Other Library.



② Select target file, click "Open"



- 2. Apply filling color to objects by Color panel, Swatches panel.
- ① Select all objects in the target layer.



② Storks color to "none" and Fill color turn to active.



③ Choose target color in Swatches panel.





(5) As for the savanna filling, choose target pattern from Swatches panel.





3. Making Compound Path.



1 Select outer polygon and enclosed inner polygon with hold "Shift" key or "Ctrl"



2 Object / Compound Path / Make.



③ When inner polygon could not hollow out outer, it might change direction of path by Attributes panel.



Select the inner failed polygon with "Direct selection tool" then choose either "On or OFF" button in "Reverse Path Direction".



Click on either one

1-4. Other symbolization

1-4-1 Adjust bridge to road

Bridges are longer than 50m in length which are Brick, Metal.





The Study on Establishment of Topographic Database in Togo

1-4-2 Align annotation along the liner features which are for river name, mountain name, road and others

Pointedourou

① Cut or Copy (Ctrl+X, Ctrl+C) a text.

Pointedourou

② Draw a path to accommodate annotation along the liner feature with the "Pen tool".



③ Click on the path by the "Type on a Path tool".



④ After "Paste" (Ctrl+V) In case of copy the text, the original text should be deleted.



(5) When characters do not fit within along a path, draw the path with the "Pen tool", or drag the "bracket" at the end of the path as all characters fit.



1-4-3 Create with the Offset Path command

Steep slope 0.15mm 0.5mm _// 0.1mm 0.5mm Steep slope; (DATA TYPE: Line) Viya 44 MONT DE KORÉ 6 Upper line ; from CAD data т Nip line which is Offseted object

Offset object; making nip lkine

① Select the objects

	Togo	
Object Type Select E Transform Image Image Image	Effe <u>c</u> t <u>Vi</u> ew <u>Wi</u> ndow <u>H</u> e	② Choose Object > Path > Offset Path.
Group Ctri+G Ungroup Shift+Ctri+G Lock ↓ Unlock All Alt+Ctri+2 Hide ↓ Show All Alt+Ctri+8	view) 🛛 CS4_symbol.ar	
Expand Expand Appearance Elatten Transparency Rasterize Create Gra <u>d</u> ient Mesh Create Object Mosaic <u>C</u> reate Trim Marks		
Path ▶ Blend ▶	<u>J</u> oin Ctrl+J A <u>v</u> erage Alt+Ctrl+J	
Envelope Distort <u>P</u> erspective Live Paint	O <u>u</u> tline Stroke <u>O</u> ffset Path	

Offset Path	
Offset: 0.25	ОК
joins: Miter 💌	Cancel
Miter limit: 4	Preview

③ Enter the length of half of the nip line in the Offset text box. Then Click "OK".

* After offsetting the paths, it might be accommodated into created the certain "temporary layer" because of convenient for next work.

> ④ Select the objects The unnecessary path side must be deleted by using Scissors Tool



1-4-4 Other symbolization

(1) The overlappong lines with other line features should be deleted.

A limits of certain lot area



(2) The overlapping lines with neat line must be deleted.



(3) Extend under shoot line to neat line

It is showing space between the neat line and road symbol.





Using the "Pen tool". Draw line to the outside of the neat line.

Or, select as enclosing only end points of objects by Direct selection tool", then pulling selected anchor point to out of neat line with keeping right direction.



(4) Displacement of overlapping symbols.



① In the stereo plotting data, symbol appearances are in simple geometries which are point, line and polygon.



2 After converting simple geometries to appropriate symbols however each symbols are overlapping.



③ Overlapping symbols should be displaced with considering the relationship position of a map scale and features.

When overlapping with road should be masked as interrupted appearance in order to clarify symbols. When symbols are displaced, it should be considered "cartographic judgment" to transfer from a true position as less as possible.

Commonly, in 1/50,000 scale map, accumulated displacement distance might be maximum 2.4 - 2.6 mm on the map.

- * The point symbols might be scaled down 20% of itself.
- * Each point symbol should be spaced at the interval of at least 0.2mm.
- * When the color of annotation is same as that of map features or symbols they should be spaced at the interval of at least 0.2mm.
- * Horizontal position might be transferred as less as 1.0mm at most 2.4mm
 - (5) When the same color line, polygon symbols and same color annotation are overlapped, line, polygon symbols should be masked by so-called the "hold out mask".


(6) When draw the "hold out mask" in order to avoid overlapping each the symbols, should considered to respect priority of symbols and layering order.



Front; High priority The annotations must be more priority than any other else. Symbols Road "*** f " Hold out mask Road Site (ground color)

Back; it should be almost filled features which are come as polygon features from cad data.



To draw the "hold out mask" which is following as the background Fill Color or pattern.

(7) To set the Fill color to "hold out mask" this should be same as background color.

It might use "Eyedropper tool" or Color panel.



1-5. Adjoin neighboring sheets

① For example, adjoining left and right sheet, Open left side sheet (Ctrl+O), Select right side of adjoining with "direct selection tool" as dragging top right to bottom left then "Copy" (Ctrl+C).



② Open right sheet then Make new layer for "pasting adjoining sheet" cancel Check mark ☑ to □ at "Paste Remembers Layers" and turn activate this layer.



3 "Paste" in the new layer which has been made at right sheet file (Ctrl+V).



④ Set "smart guide" it is from view menu bar pull down menu or (Ctrl+U).

Put "Selection Tool" **1** at the corner of the right side, then move and snap to left side of current map sheet's the left corner.



Move with dragging to corner, when it snapped, the arrow mark will turn white.

⁽⁵⁾ Move with dragging to corner, when it snapped, the arrow mark will turn white.

When move and snap to another sheet corner, it should zoom in at the each corner in order to check the matching.



(6) Turn on all layers, check sheets adjoining





⑦ Change display with Outline view (Ctrl+Y) or zoom in, as need.

8 After adjoining working, the "new layer for map adjoining "should be deleted.



Select Layers panel menu > ▼ > Delete "Layer ***" Or click Delete Selection.

1-6. Create the Hold out mask

- The outside of neat line should be hidden with a mask object is called "sheet MASK" or "Hold out mask for neat line" etc.
- ① Copy the neat line (Ctrl+C).

Uncheck "Paste Remembers Layers" in the "Layers panel"



menu.

- ② Select neat line then Copy the neat line (Ctrl+C).
- ③ Paste in Front (Ctrl+F).
- ④ Drag right side highlight small tip to the sheet mask layer. It will move pasted object to the target layer.



Alt+Click; Lock all layers at once other than the target one



5 Scale duplicate neat line to certain percentage such as 105% to 110%



After scaling of the duplicated neat line should be appropriate size.



6 Create compound path, and Fill color CMYK=0 in the Color panel.

Create compound path. Select the objects and choose Object > Compound Path > Make.

<u>Object</u> Type <u>S</u> elect	<u>Effect View Window H</u> elp
Transform	
<u>A</u> rrange	▶ m ▼ Uniform ▼ ■
Group Ctrl+G	(CMYK/Preview)
Ungroup Shift+Ctrl+G	
<u>L</u> ock	•
Unlock All Alt+Otrl+2	
<u>H</u> ide	•
Show All Alt+Ctrl+3	
Expand	
Expand Appearance	
<u>F</u> latten Transparency	
Rasterize	
Greate Gra <u>d</u> ient Mesh	
Oreate Object Mosaic	
<u>O</u> reate Trim Marks	
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Compound Path	▶ <u>M</u> ake Ctrl+8
<u>A</u> rtboards	Belease Alt+Shift+Ctrl+8
Graph	

Color panel Fill: CMYK=0, Stroke: None



1-7. Legend and Marginal information

 Open "013_04_08_LEGEND_TOGO.ai" (Ctrl+O) then Select and Copy (Ctrl+C) it. Legend file which has layering, dimension of marginal items should be prepared before starting symbolization



② In current working file, Check ☑ "Paste Remembers Layers " in Layer panel



③ Paste in Front (Ctrl+F).

After pasting, the legend objects should be adjusted appropriate position as need.



Outline view



Preview

1-8. The outlook of checking before Offset Printing

 Show All Layers and Unlock All Layers Choose from the Layers panel menu.



LAYER panel > $\mathbf{\nabla}$ >" Show all layers"

LAYER panel > $\mathbf{\nabla}$ >" Unlock all layers"

2 Unlock All, and Show All of the objects

Select all the objects (Ctrl+A) and choose from Object pull-down menu.

Object	Туре	<u>S</u> elect	E
Transf	orm		- (F)
<u>A</u> rrang	е		- P-
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Show #	All A	lt+Ctrl+3	
LAYER pan	$el > \mathbf{\nabla} >$	>"Show a	ll layers

LAYER panel > \checkmark >" Unlock all layers"

③ Expand Appearance

For the brush objects which are as point data, "Expend Appearance" should be done.

Select all the objects (Ctrl+A) and choose Object > Expand Appearance.



It is unnecessary to expand when turn off the "Expand Appearance"

④ Ungroup

The group which nested unnecessarily should be released. Select the objects and Choose Object > Ungroup.



Arrange Group Ctrl+G Uneroup Shift+Ctrl+G Look	Arranse Group Ctrl+G Ungroup Shift+Ctrl+G Look Unlook All Alt+Ctrl+2 Use
Laroup Ctri+G Lack Lack	Uneroup Chift+Ctrl+G Lock Unlock All Alt+Ctrl+2
Lock	Lock Unlock All Alt+Otri+2
	Unlock All Alt+Strl+2



5 Delete empty text paths



1. Choose Object > Path > Clean Up.

<u>Object Type S</u> elect	Effe <u>c</u> t <u>V</u> iew <u>Wi</u> ndow <u>H</u> i
· <u>T</u> ransform <u>A</u> rrange	Uniform V
Group Ctrl+G Uneroup Shift+Ctrl+G Lock Unlock Unlock All Hide Show All	MYK/Preview) 🗵 3947-1
Expand Expand Appearance Flatten Transparency Rasterize Greate Gra <u>d</u> ient Mesh Greate Object Mosaic <u>G</u> reate Trim Marks	
Slice	▶
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Clipping <u>M</u> ask Compound Path	<u>Divide Objects Below</u>
<u>A</u> rtboards	Split Into Grid
G <u>r</u> aph	Clean Up

2. Select Empty Text Paths, and click OK.]

Clean Up	
Delete <u>S</u> tray Points <u>Unpainted Objects</u> <u>Empty Text Paths</u>	OK Cancel

6 Delete stray points



1. Find stray anchor points. Choose Select > Object > Stray Points.

<u>Select</u> Effect <u>View</u> <u>Window</u> <u>Hi</u> <u>All</u> Ctrl+A All on Active Artboard Alt+Ctrl+A Deselect Shift+Otrl+A Reselect Otrl+6 Inverse	elp Br Character: 5 pt. Flat Character: Guinsiliban.ai* @ 800% (CM)		
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<u>O</u> bject ▶	All on Same Layers		
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	Bristle Brush Strokes Brush Strokes <u>Clipping</u> Masks		
	<u>T</u> ext Objects Flash Dynamic Text Flash Input Text		

2. Delete stray anchor points.

*The brush objects are expanded before run the Stray Points. *It may be also select isolated points other than the stray points, before deleting should check it can delete or not.

- \bigcirc Checking all texts in the document
 - 1. Check whether you used the fonts that are not specified in the document. Choose Type > Find Font.

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2. Select the name of a font from the lists, and click "Find", then the selected font will be automatically searched in your current file.

Select a replacement font from the following list of the "Replace With" Font From pop-up menu "Document ", in which case only these fonts in the document are displayed, or in the list that appears when you choose "System ", in which case all the fonts in your computer will be displayed.. Click on Change All(any change). "Click Done" to close the dialogue box.

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- (8) Set up overprinting
 - 1. To be overprinting all black objects in your artwork, select the Overprint Black. Select all the objects (Ctrl+A) and choose Edit > Edit Colors > Overprint Black.

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2. Choose "Add Black" from pop-up menu.

Enter "100" in the Percentage text box. Select Fill and Stroke to specify how to apply the overprinting. Click OK.

Overprint Black	
Add Black Percentage: % Apply to: Fill Stroke	OK Cancel
Options Include <u>B</u> lacks with CMY Include Spot Blacks	

[case at Storke]

3. 100% of spot colors should be applied overprint in the Attribute panel. Color setting should be done according to the symbol specification.

44 | X *ATTRIBUTES* **\$ ATTRIBUTES** .= 🔍 Overprint Fill Overprint Fill 🔽 Overprint Stroke 11 50 1 1 -2 52 Image Maps None Browser Image Map: None Browser * * URLI URLI Y 4 * \mathbf{v} Υ.

4. For the White objects (CMYK 0%) and the fill color less than 100%, the overprint should not be applied. Uncheck the Overprint Fill and stork.



[case at Fill]

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9 Delete Guides

Before printing, unnecessary guides should delete. It can clear at once.

Choose View > Guides > Clear Guides.

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If guides are locked, uncheck it.

Then select the Clear Guides, all guides will be deleted at once.

Structuration

Chapter 5-1-1 Basic Manipulation of ArcGIS

1-1 The work flow



1-2 Open ArcMAP

(1) Open new "ArcMAP10" file

Click shortcut icon of "ArcMAP10" on the Disktop

(2) Opened Window



1-3 Add Data

(1) Add Data



(2) Select Files

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(3) Selected Data are shown in the window



1-4 Symbol Setting

(1) Select Layer for setting and open property window



(2) Go to "Symbology_tag" and Click setting button

how:	Source	Selection	Display	Symbology	rields	Definition Guery	Lapels	Joins & Relates	Ime	HIML Popup
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(3) Set "Color", "Width", etc... and Click OK

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-			
River	Boundary, National	Boundary, State	
-			Style References

(4) After Return to "Symbology_tag", Click OK in that Tag

1-5 Label Setting

- (1) Select Layer for setting and open property window
- (2) Go to "Labels_tag" and Check " Label features in this layer"



	-		-
General	Source	Selection	Disp
V labe	el features	in this laver	

(3) Select "Label Filed" to be displayed and set text symbols (Color, Size etc)(4) If necessary, Set duplication control by clicking "Placement Properties"

lacement	Conflict Detection		
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1-6 Raster Image Setting

(1) Add Raster Image

Select Image files and Click "Add"

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(2) If there is no pyramid file, following window comes.

Click "Yes" to create pyramid files



(3) Select added image and open property window

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(4) Go to "General_tag" and check "Don't show layer when zoomed" and set Out byeond scale



1-7 Save Setting

Chose proper folder and save as proper name into "mxd" format

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Chapter 5-1-2 Basic manipulation of ArcCatalog

2-1 Open ArcCatalog



(2) Opened Window

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2-2 Copy, Rename, Delete of Shape File

Select file and right click to "Copy", "Rename", "Delete" file

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2-3 Create new shape file

(1) Select folder to be created new shape file from the Catalog tree



(2) Click right and select "New" -> "Shape file" inside "Contents_tag"

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(3) Input Name and choose "Feature type" then click "Edit" button

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eature Type:	Point	
Spatial Reference		
Description:		
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(4) Click "Select" button

Y Coordinate	System
Name:	Unknown
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Select	Select a predefined coordinate system.
	Import a coordinate system and X/Y, Z and M
Import	domains from an existing geodataset (e.g., feature dataset, feature dass, raster).
New	Create a new coordinate system.
Modify	Edit the properties of the currently selected
() (gen) (i)	coordinate system.
Clear	Sets the coordinate system to Unknown.
1	Save the coordinate system to a
Save As	

(5) Select Coordinate System

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Name:	WGS 1984 UTM Zone	31N.prj			Add)
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2-4 Projection setting (In case to add Projection into existing file)

(1) Click right on target shape file "Property" and go to "XY coordinate_system tag" then set Projection.

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	*
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Glear Set the coordinate system to Unknown.	
Save As Save the coordinate system to a file.	

Practice(l)

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Create New Shapefile



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- 1. Input Name.
- 2. Select "Feature Type".
- 3. Choose "Edit".



4.	Set	"Coordinate	Syste	em".		
5.	Choos	e "Apply"	and	"OK"		

New Shapefile Created in the ArcCatalog window.



Drop Shapefile from ArcCatalog window to ArcMap Window



Chapter 5-1-3 Data acquisition in ArcGIS

3-1 Data acquisition of "Polygon", "Polyline", "Point"

(1) Open ArcMAP (If necessary, add reference file)

Table Of Contents	Ψ×
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🗉 🍠 Layers	
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-	

(2) Open shape file for input(acquisition) into ArcMAP(ex:new_pol)



(3) Choose "Start Editing" from "Edit" menu

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	More Editing Tools	•		
	Editing Windows	•	About Editing and Workspaces	OK Cancel

5-1-3-1
(4) Go to "Create features" and select feature to create



(5) Select data type for input and start acquisition



(6) Save edit from "Edit" menu



(7) Then End Edit



3-2 Data acquisition with "SNAP" mode

If the data acquisition needs to snap into reference data, Open "Snap toolbar" from "Edit"

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Snapping

Point snapping

End snapping

Vertex snapping

Edge snapping

3-3 Notice for data acquisition in SNAP mode

(1) Polygon Acquisition

All points(end point, vertex) must be snapped to neigbouring polygon

In case of doughnut type polygon, acquire inner polygon first and outer polygon next, then crop inner polygon.

(2) Polyline Acquisition

In case of acquiring duplicatively, all points must be snapped, and in case no snap point, create end point.

(3) Point Acquisition

In case acquire on a line or a polygon, point must be snapped to the point on the line or the polygon.

Chapter 5-1-4 Attribute management in ArcGIS

4-1 Add Field

(1) Click right on the target shape and choose "Open attribute table" then open "Attribute

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	Selection		
	Label Features		
	Edd Features		
	Convert Features to Graphics		
	Convert Symbology to Representation		
	Diés ,		
	Save As Layer File_		
	Create Layer Package	New Shapefile	
	Properties		

(2) Choose "Add field" from table option

10-1		-		125
M	Find & Replace	_	1	×
-	Select By Attributes			
	Switch Selection Select All			
	Add Field	-		
~	Turn All Fields On Show Field Aliases			
	Arrange Tables	•	nt of 0 Selected)	
	Restore Default Column Widths Restore Default Field Order			_
	Joins and Relates Related Tables.	*		
alla	Create Graph Add Table to Layout			
3	Reload Cache			
8	Print		1	
	Reports Export	•		
	Appearance			

(3) Input "Field name", Choose "Type (Integer, double, Text, etc)" and precision.

Name:	
Type: Short Inte	
Short into	eger 👻
Field Properties	
Precision	0

4-2 Delete Field

(1) Click right on the target shape and choose "Open attribute table" then open "Attribute

Constant and according to the second se		
-1.5.00.0000 e (a) (600 a)		
American and a second second second		
1 * *		
0 (0 E) (1)	Table	×
EL P Care		
2.8 femal	New_Shapefile	×
- Sheet Among Table-	FID Shape * Id sample	
New Yospiel Tull James		
And the second second		
mana hasa Tarupi d		
the Control Lange		
-		
halter frakures:		
Astriforment +		
AL Conservation for the		
Der wit besondig is higheriteten		
2400 .		
Der Seiner All Lager Faller		
S Continer trade	New_Shapefile	
the Arrange		

(2) Click right on the target field then choose "Delete Field"

New_Shaperile		-
_] FID Shape* Id sa	E	Sort Ascending Sort Descending Advanced Sorting Summarize Statistics Field Calculator
I4 ← 0 → FI 📄 🗉 (0 out New_Shapefile)	×	Turn Field Off Freeze/Unfreeze Column Delete Field
	-	

4-3 Input Attribute

(1) Click right on the Field name and Choose "Field" in the attribute table



(2) Input formula or value into bottom window then "OK"



4-4 Find Data by attribute

(1) Click "Select By Attributes" button in the attribute table

FID	Shape *	Id	sample	
	0 Polygon	0	1	
	1 Polygon	0	2	
	2 Polygon	0	1	
	3 Polygon	0	2	

(2) Input formula or value into bottom window then "Apply".

w selection	-	Method :	Create a new selection
		"FID" "Id" "sample"	
			Like 1 2 And c = Or
Get Unique <u>V</u> alues <u>G</u> o To:			() Not Get Unique Values Go To:
Get Unique <u>V</u> alues <u>G</u> o To: apefile <u>W</u> HERE:		_%	() Not Get Unique Values Go To:
	select records in the table window. v selection	select records in the table window.	select records in the table window. v selection Fild Fild Fild Sample Constraints Sample Constraints Sample Constraints Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sample Sa

(3) The number of record found is displayed in the bottom of window.



Chapter 5-1-5 Spacial Analysis / Basic Analysis

5-1 Spacial Analysis

(1) Click "Select By Location" from "Selection" in the menu.

Sele	ction	Geoprocessing (Customiz		
6	Select	By Attributes			
B	Selec	t By Location			
SI.	Selec	By Graphics			
I.I.	Zoom To Selected Fairures				
100	Pan T	o Selected Features			
14	States	DCS-c			
衙	Clear	Selected Features			
	Intera	ctive Selection Meth	nod 🕨		
	Select	tion Options			

(2) Input find condition

Input "Selection method", "Target layer(s)", "Source layer", "Spatial selection

method", etc then "Apply".

Calact frash was from one or more target laures	inneed on their leastion in
relation to the features in the source layer.	based on their location in
Selection method:	
select features from	-
Target layer(s):	
☑ building_pnt ○ New_Shapefile	
Qnly show selectable layers in this list	
Qnly show selectable layers in this list Source layer:	
□ Only show selectable layers in this list Source layer: � New_Shapefile	<u>.</u>
© Qrily show selectable layers in this list Source layer:	
☐ Only show selectable layers in this list Source layer:	selected)
Only show selectable layers in this list Source layer: New, Shapefile Use selected features (0 features Sgatial selection method: Target layer(0) features intersect the Source la	selected) yer feature
Only show selectable layers in this list Source layer: More selected features Que selected features Que selected features Que selection method: Target layer(s) features intersect the Source la Apply a search gistance	selected) yer feature
Orily show selectable layers in this list Source layer: New Selected features Spatial selection method: Target layer(s) features intersect the Source la Apply a search gistance 3000.00000 Meters	selected)

(3) The number of record found is displayed in the lower_bottom of window.

5-2 Basic Analysis

Selection	Geoprocessing Customize Windows	Hel
1 - 1	S Buffer	
	Clip	P
	🔨 Intersect	121
Network	🔨 Union	140
11 14 -	🔨 Merge	
	 Dissolve 	
	Search For Tools	1
	ArcToolbox	
	🛠 Environments	
	Results	
	😓 ModelBuilder	
	Python	
	Geoprocessing Resource Center	
	Geoprocessing Options	

(1) Buffer

Create polygon data outside target layer with the input Buffer. Buffer

(2) Clip

Create polygon data inside Clip_layer from target layer.

(3) Intersect

Create Polygon data inside Intersect_Layer from target layers.

(4) Union

Create a layer from selected layers(Incase of duplication, Attribute shall be one).

Period

Chapter 5-2-1 Basic Technique of ArcGIS (Part 1)

1-1 Open ArcMAP

(1) Open new "ArcMAP10" file

Click shortcut icon of "ArcMAP10" on the Disktop

(2) Opened Window



1-2 Add XY Data

- (1) Check "Coordinate System" of the XY Data (Excel Data).
- (2) Apply "Coordinate System".

From "View" menu, Choose "Data Frame Properties", then the "Data Frame Properties" window will be opened. And next Select "Coordinate System" tag.

Feature Cache	Annotation Groups	Extent Indicators	Frame Size a	nd Positio
General	Data Frame	Coordinate System	Illumination	Grids
Current coordinat	e system:			
GCS_WGS_1984 Datum: D_WGS_	1984	~	Qlear	
Select a coordinat	e system: 1718F 1993		rensformations	
	ITRF 1994 ITRF 1996 ITRF 1997 ITRF 2000 ITRF 2005 NSWC 92-2		Import	
e-E-Proje	WGS 1966 WGS 1972 WGS 1972 TBE WGS 1972 TBE	E Ren	Add To Favorites	

Select "Coordinate System"
 (In this case, coordinate system is "WGS 1984")

2. Select "OK"

(3) Add "XY Data"

From "File" menu, Choose "Add Data", "Add XY Data", and then the following window will be opened.

Add XY Data	 Select "XY Data File". (In this case, select Excel file.)
Specify the fields for the X, Y and Z coordinates:	2. Select "X Field" and "Y Field" (In this case, need not to change.)
Description:	
oriki ovin Coordinate System	3. (Option) Select "Z Field"
Show Details	4. Select "OK"
Warn me if the resulting layer will have restricted functionality	

The points will be shown as following.



(4) Save files as Shape format.

Select Point Data layer, and Right-click, and choose "Data"→ "Export Data".



Then the following window will open.

Export Data	
Export: All features	1. Select "the data frame".
Use the same coordinate system as:	
the data frame	
His feature detabet (of export the data into (only applies if you export to a feature dataset in a geodatabase) Output feature dats:	2. Designate "Output feature class".
Z.¥11A-D056062_Togo_Work#016.技術移転¥04_構造化+GIS¥GIS技術科 🦲	
	3. Select "OK".
OK Cancel	

The Shape file Data will be exported.

1-3 Coordinate Transformation

 Open New ArcGIS project. From "View" menu, Choose "Data Frame Properties". And Apply "Coordinate System".

Layout View General Data Frame Coordinate System Illumination G Graphs Current coordinate system: WGS 1984 UTM Zone 31N Projection: Transverse Mercator Projection: Transverse Mercator Y Scroll Bars Scroll Bars Scroll Bars General General General Y Status Bar Courdinate System General General General Y Status Bar Courdinate System General General Y Status Bar Courdinate System General Y Status Bar Status Bar General Y Status Bar General General Select a coordinate system: General General Y Data Frame Properties Modify Y WGS 1984 UTM Zone 30N M	tent Indicators Frame Size and Positio	otation Groups Extent Indicati	Annotation Gro	Feature Cache	-	Data View	
Current coordinate system: Graphs Reports Scroll Bars Scroll Bars Status Bar Rulera Guides Guides Graphs Wides 1984 UTM Zone 31N Guides	nate System Illumination Grids	Frame Coordinate System	Data Frame	General		A DOLLAR A POINT	
Graphs WCS 1984 UTM Zone 31N Reports Projectorin Transverse (Mercator Transverse) Scroll Bars Cathad Meridani 3,000000 Status Bar Cathad Meridani 3,000000 Scleptanting: 0,000000 Cathad Meridani 3,000000 Scleptantine: Meter CS, WGS 1984 UTM Zone 32N Guidess Select a coordinate system: Select a coordinate system: Mised Structure 32N WGS 1984 UTM Zone 32N Mised True		13	system:	Current coordinate	4	Layout view	
Reports Importor: Scroll Bars Scroll Bars Status Bar Contring::00000000000000000000000000000000000	Glear	31N -	Zone_31N	WGS_1984_UTM	• -	Graphs	
Scroll Bars False_Northing:0.00000 Status Bar Central Previous: 3.00000 Status Bar Status Bar Rulers Goldses Goldses Goldses Goldses Select a coordinate system: Wicks 1984 UTM Zone 2N Modify Wicks 1984 UTM Zone 2N Modify Wicks 1984 UTM Zone 3N Modify Wi		00000	0000.000000	False_Easting: 5		Reports	
V Scholl Bars V Status Bar V Status Bar Rulera Goldes Goldes Goldes Select a coordinate system: Modify Viss 1984 UTM Zone 2NN Modify Wiss 1984 UTM Zone 2NN Mex Wiss 1984 UTM Zone 3NN Mex Wiss 1984 UTM Zone 3NN Mex Wiss 1984 UTM Zone 3NN Mad To Favorites Wiss 1984 UTM Zone 3NN Wiss 1984 UTM Zone 3NN Wiss 1984 UTM Zone 3NN Mex Wiss 1984 UTM Zone 3N		0	3.000000	False_Northing: Central_Meridian		Coroll Dave	-
Status Bar Linear Unit: Meter GCS_WGS_1984 Guties Gut		0000	99600 in: 0.000000	Scale_Factor: 0.1 Latitude Of Orio		Scroll Bars	4
CS WGS 1984 Cutiess Concentrations Concentr			0.00000000	Linear Unit: Mete		Status Bar	4
Guides Jatum: D_WGS_1984 Irensformations Select a coordinate system: WGS 1984/UTM Zone 29N Modify WGS 1984/UTM Zone 20N WGS 1984/UTM Zone 20N Modify WGS 1984/UTM Zone 20N WGS 1984/UTM Zone 20N Modify WGS 1984/UTM Zone 20N WGS 1984/UTM Zone 20N Modify WGS 1984/UTM Zone 30N WGS 1984/UTM Zone 30N Modify WGS 1984/UTM Zone 30N WGS 1984/UTM Zone 30N Memory WGS 1984/UTM Zone 30N WGS 1984/UTM Zone 30N Memory WGS 1984/UTM Zone 30N WGS 1984/UTM Zone 30N Memory WGS 1984/UTM Zone 30N WGS 1984/UTM Zone 30N Memory WGS 1984/UTM Zone 30N WGS 1984/UTM Zone 30N Memory WGS 1984/UTM Zone 30N WGS 1984/UTM Zone 30N Memory WGS 1984/UTM Zone 30N WGS 1984/UTM Zone 30N Memory WGS 1984/UTM Zone 30N WGS 1984/UTM Zone 30N Memory WGS 1984/UTM Zone 30N WGS 1984/UTM Zone 30N Memory WGS 1984/UTM Zone 30N WGS 1984/UTM Zone 30N Memory				GCS_WGS_1984		Rulers	Etc.
Grin Tensformations Object Select a coordinate system: Select a coordinate system: WGS 1984 UTM Zone 29N WGS 1984 UTM Zone 2N WGS 1984 UTM Zone 2N WGS 1984 UTM Zone 3N WGS 1984 UTM Zone 3N WGS 1984 UTM Zone 3N WGS 1984 UTM Zone 3N WGS 1984 UTM Zone 3N WGS 1984 UTM Zone 3N WGS 1984 UTM Zone 3N WGS 1984 UTM Zone 3N WGS 1984 UTM Zone 3N WGS 1984 UTM Zone 3N WGS 1984 UTM Zone 3N WGS 1984 UTM Zone 3N WGS 1984 UTM Zone 3N WGS 1984 UTM Zone 3N	-	÷	1984	Datum: D_WG5_		College	JE I
Select a coordinate system: Select a coordin) Iransformations .	3				(adju-ca	
WGS 1984 UTM Zone 2N Modify WGS 1984 UTM Zone 2N WGS 1984 UTM Zone 2N WGS 1984 UTM Zone 2N WGS 1984 UTM Zone 2N WGS 1984 UTM Zone 2N WGS 1984 UTM Zone 2N WGS 1984 UTM Zone 2N WGS 1984 UTM Zone 2N WGS 1984 UTM Zone 2N WGS 1984 UTM Zone 2N WGS 1984 UTM Zone 2N WGS 1984 UTM Zone 3N WGS 1984 UTM Zone 3N Mew		n:	system:	Select a coordinat		GUL	1.10
WGS 1994UM Zone 3N Import WGS 1994UM Zone 3N Import WGS 1984UM Zone 3N WGS 1984UM Zone 3N WGS 1984UM Zone 3N Mew WGS 1984UM Zone 3N Meg Jobs Jobs Jobs Jobs Jobs Jobs Jobs Jobs	29N Modify	WGS 1984 UTM Zone 29N ·	WGS 198		operties	Data Frame Pro	the state
WGS 1984 UTM Zone 33N WGS 1984 UTM Zone 33N WGS 1984 UTM Zone 33N WGS 1984 UTM Zone 33N WGS 1984 UTM Zone 36N WGS 1984 UTM Zone 36N WGS 1984 UTM Zone 37N WGS 1984 UTM Zone 37N	2N 30N	WGS 1984 UTM Zone 2N WGS 1984 UTM Zone 30N	WGS 198				
WGS 1984 UTM Zone 33N WGS 1984 UTM Zone 33N WGS 1984 UTM Zone 34N WGS 1984 UTM Zone 36N WGS 1984 UTM Zone 36N WGS 1984 UTM Zone 37N WGS 1984 UTM Zone 37N	Tubo, c	WGS 1984 UTM Zone 31N	- @ Wgs 19				
WGS 1984 UTM Zone 34N WGS 1984 UTM Zone 35N WGS 1984 UTM Zone 35N WGS 1984 UTM Zone 37N WGS 1984 UTM Zone 37N Bernove From Favorites	32N New *	WGS 1984 UTM Zone 32N	WGS 198				
WGS 1984 UTM Zone 33N WGS 1984 UTM Zone 30N WGS 1984 UTM Zone 30N WGS 1984 UTM Zone 37N Edmove From Favorites	34N	WGS 1984 UTM Zone 34N	- WGS 198				
WGS 1984 UTM Zone 37N Remove From Favorites	35N Add To Favorites	WGS 1984 UTM Zone 35N	- WGS 198				
Rectioned From Payones	37N	WGS 1984 UTM Zone 37N	WGS 198				
WGS 1984 UTM Zone 38N	38N -	🕑 WGS 1984 UTM Zone 38N 🛛 👻	- 💮 WGS 198				
1 m F		m +	UI .	-			

(In this case, choose "WGS_1984_UTM_ZOON31N".)

(2) Add Data for Coordinate Transformation. (In this case, add the data before exported in this manual at "1-2(4)".)

(3) Select Point Data, Right-click, "Data", "Export Data", and then "Export Data" window will open.

Points_WGS	5 <u>1984</u>		7		
•	Ē	Сору			
	×	Remove			
		Open Attribute Table			
		Joins and Relates			
	\Diamond	Zoom To Layer			
	2	Zoom To Make Visible			
		Visible Scale Range			
		Use Symbol Levels			
		Selection			
		Label Features			
		Edit Features			
	5	Convert Labels to Annotation			
	\$⊡	Convert Features to Graphics			
		Convert Symbology to Representation	Repair Data Source		
		Data 🔸	😞 Export Data		
	\diamond	Save As Layer File	Export to CAD		
Export: All f Use the same c this layer's s this data fra	eatur oordi sourci me	es nate system as: e data		1. 2.S	elect "the data frame"
the feature (only applies Output feature	data: s if yo	set you export the data into w export to a feature dataset in a geodata :	base)	2.0	
1	-			3. I	nput "Output feature class".
		ок	Cancel	4. S	elect "OK".
			Cancel	4. S	elect "OK".

The transformed data will be exported.

1-4 Dissolve

- (1) Open New ArcGIS project. And Add data for merge.
- (2) Open "Arc Toolbox", And Select "Data Management Tools", "Generalization", "Dissolve".



nput Features	
Prefecture_Temp	- 6
output Feature Clas	35
Z:¥11A-0056062_To	ogo_Work¥016_技術移転¥04_構造化・GIS社
issolve_Field(s) (op	ptional)
FID	
Prefecture	
REGION	
Chefs_REGI	
SP	
C 1	TELESCONTRACT I WARE AN
Select All	Unselect All Ale field
itatistics Field(s) (d	optional)
itatistics Field(s) (d	optional)
Select All itatistics Field(s) (c	optional)
Select All itatistics Field(s) (Field	Unselect All Addressed optional) Statistic Type
Select All	Statistic Type
Select All [] itatistics Field(s) (c Field	Statistic Type
Select All [] Itatistics Field(s) (r Field	Statistic Type
Select All (tatistics Field(s) (c	Optional) Statistic Type
select All (tatistics Field(s) (r	Statistic Type
Select All	Statistic Type
Select All	Unselect All Addressed optional) Statistic Type
Field Create multipart	Interest All Address
Field Create multipart Lincolit lines (on	Inserect All Addressed optional)
Field Create multipart Unsplit lines (op	Inserect All Addressed optional) Statistic Type
select All [] tatistics Field(s) (c Field * Oreate multipart Unsplit lines (op	Inserect All Addressed optional)

- 1. Select "Input Features".
- 2. Designate "Output feature class".
- 3. Select "Dissolve Field".
- 4. Select "OK".

The Dissolved Data will be shown in the Map window.

1-5 Totalization

- (1) Add data for Overlay. (Polygon and Point Data)
- (2) Select Point Data, and Right-click, "Joins and Relates", "Join".



1. Select the layer to join to this layer.

- 2. Select "it falls inside".
- 3. Designate "Output feature class".

4. Select "OK".

(3) Open "Arc Toolbox", And Select "Analysis Tools", "Statistics", "Frequency".

nput Table		
Join_Output		-
Output Table		
Z:¥11A-0056062_Togo	Work¥016_技術移動	₹¥04_構造化・GIS社 📑
Frequency Field(s)		
Region		
Prefecture		
Canton		1
Libelle		
Xcoord		=
Ycoord		
FID_2		
REGION_1		
e	(III)	7.1
Xcoord Ycoord FID_2		
Select All	nselect All	Add Field

The new Table will be shown.

1. Select "Input Table".

2. Designate "Output Table".

3. Choose "Frequency Field".

4. Select "OK".



1-6 Visualization

- (1) Select "View", "Graphs", "Create", And then the "Create Graph Wizard" will be shown.
- (2) Follow the wizard, Create Graphs as you like.

Chapter 5-2-2 Basic Technique of ArcGIS (Part 2)

2-1 Editing Atrribute Table (Part 1)

(1) Open "ArcGIS", and Add data.

- (2) Open Attribute Table.
- (3) Add Field. Input "Name", Select "Type" and "Field Properties".
- (4) Select "Editor" toolbar, "Start Editing".

(5) You can edit the attribute table , and input new data.

2015	Ducput						
FIE	Shape *	Prefecture	Chefs_Pref	REGION	Chefs_REGI	SP	Population
	D Polygon	TANDJOARE	TANDJO ARE	SAVANES	DAPAONG	0	12345
1	Polygon	OTI	MANGO	SAVANES	DAPAONG	0	12334
1	2 Polygon	KPENDJAL	MANDOURI	SAVANES	DAPAONG	0	555556
	3 Polygon	TONE	DAPAONG	SAVANES	DAPAONG	0	66666
1	4 Polygon	CINKASSE	CINKASSE	SAVANES	DAPAONG	0	0
	5 Polygon	BINAH	PAGOUDA	KARA	KARA	0	0
1	6 Polygon	BASSAR	BASSAR	KARA	KARA	0	0
1	7 Polygon	KERAN	KERAN	KARA	KARA	0	0
1	8 Polygon	DANKPEN	GUERIN-KOUKA	KARA	KARA	0	0 D
	9 Polygon	DOUFELGOU	NIAMTOUGOU	KARA	KARA	0	0
1 11	0 Polygon	ASSOLI	BAFILO	KARA	KARA	0	0
1 1	Polygon	KOZAH	KARA	KARA	KARA	0	0
1 1	2 Polygon	MO	DJARKPANGA	CENTRAL	SOKODE	1	0
1 13	3 Polygon	TCHAMBA	TCHAMBA	CENTRAL	SOKODE	0	0
1 1.	4 Polyson	BLITTA	BLITTA-GARE	CENTRAL	SOKODE	0	0
1 1	5 Polygon	SOTOUBOUA	SOTOUBOUA	CENTRAL	SOKODE	0	0
1 1	6 Polygon	TCHAOUDJO	SOKODE	CENTRAL	SOKODE	0	0
1 1	7 Polygon	HAHO	NOTSE	PLATEAU	ATAKPAME	0	0
1 13	8 Polveon	MOYEN-MONO	TOHOUN	PLATEAU	ATAKPAME	10	0 D

(6) When you finish editing, Select "Editor" toolbar, "Stop Editing", and Save Data.

2-2 Editing Atrribute Table (Part 2)

(1) Open Attribute Table.

(2) Add Field. Input "Name", Select "Type" and "Field Properties".

(3) Select New Field, and Right-click, select "Calculate Geometry"



And then, the following window will be shown.

alculate Geometry	-			
Property: Area		•		
Coordinate System				
(Use coordinate system of	the <u>d</u> ata source:			
PCS: WGS 1984 UTM Zon	e 31N the data frame:		1. Check setting.	
PCS: WGS 1984 UTM Zar	ie 31N			
Units: Square Met	ters [sq m]	•]	2 Salact "OK"	
Calculate selected tecords o	inty.		2. Select OK .	
Help	OK	Cancel		

2-3 Editing Atrribute Table (Part 3)

- (1) Open Attribute Table.
- (2) Add Field. Input "Name", Select "Type" and "Field Properties".
- (3) Select New Field, and Right-click, select "Field calculator".

VB Script Python		
FID FID Shape Prefecture Chefs_Pref REGION Chefs_REGI S_P Population	Type: © Number © String E © Date	Functions: Abs () Abs () Cos () Exp () Fix () Int () Log () Sin () Sig () Tan ()
[Show Codeblock] op_Densit = [Population] / [Area]		
		•

- 1. Enter calculation formula.
- 2. Select "OK".

2-4 Visualization

(1) Changing Symbology Setting or Creating Graphs will be able you to visualize the result.

Chapter 5-2-3 Basic Technique of ArcGIS (Part 3) 3-1 Open ArcMAP

Open New ArcMAP window. And Set Coordinate system.

From "View" menu, select "Data Frame Properties...".

Select "Coordinate System" tag, set coordinate system "WGS_1984_UTM_ZOME_31N".

3-2 Add Data

Add prefecture data and national road data from data folder.



3-3 Intersect Data

From "Geoprocessing" menu, select "Intersect".



1. Enter Input Features.

(National_Road.shp and Prefecture.shp)

- 2. Enter Output Feature Class.
- 3. Click "OK".

5-2-3-1

New Line Layer will be created in the ArcMAP window.

And Open Attribute Table of new line layer.

sec	t_test		Canada			-	-	-	-
D	Shape *	FID_Nation	RN	FID_Prefec	Prefecture	Chefs_Pref	REGION	Chefs_REGI	SP
0	Polyline	0	02	30	LACS	ANEHO	MARITIME	LOME	0
1	Polyline) ŭ	02	35	GOLFE	LOME	MARITIME	LOME	0
2	Polyline	2	04	29	ZIO	TSEVIE	MARITIME	LOME	0
3	Polyline	2	04	30	LACS	ANEHO	MARITIME	LOME	0
4	Polyline	2	04	31	BAS-MONO	AFAGNAGAN	MARITIME	LOME	0
5	Polyline	2	04	32	VQ	VOGAN	MARITIME	LOME	0
б	Polyline	2	04	33	YOTO	TABLIGBO	MARITIME	LOME	0
7	Polyline	3	05	19	AGOU	AGOU-GADZEPE	PLATEAU	ATAKPAME	0
8	Polyline	3	05	22	AMOU	AMLAME	PLATEAU	ATAKPAME	0
9	Polyline	3	05	24	KPELE	KPELE-ADETA	PLATEAU	ATAKPAME	0
10	Polyline	3	05	25	KLOTO	KPALIME	PLATEAU	ATAKPAME	0
11	Polyline	3	05	28	OGOU	ATAKPAME	PLATEAU	ATAKPAME	0
12	Polyline	3	05	34	AVE	KEVE	MARITIME	LOME	0
13	Polyline	3	05	35	GOLFE	LOME	MARITIME	LOME	0
14	Polyline	4	06	17	HAHO	NOTSE	PLATEAU	ATAKPAME	0
15	Polyline	4	06	18	MOYEN-MONO	TOHOUN	PLATEAU	ATAKPAME	0
16	Polyline	5	07	29	210	TSEVIE	MARITIME	LOME	0
17	Polyline	5	07	34	AVE	KEVE	MARITIME	LOME	0
18	Polyline	6	08	18	MOYEN-MONO	TOHOUN	PLATEAU	ATAKPAME	0
19	Polyline	6	08	28	OGOU	ATAKPAME	PLATEAU	ATAKPAME	0
20	Polyline	7	09	17	HAHO	NOTSE	PLATEAU	ATAKPAME	0
21	Polyline	7	09	19	AGOU	AGOU-GADZEPE	PLATEAU	ATAKPAME	0
22	Polyline	8	10	14	BLITTA	BLITTA-GARE	CENTRAL	SOKODE	0
23	Polyline	8	10	26	EST-MONO	ELAVAGNON	PLATEAU	ATAKPAME	0
24	Polyline	9	11	25	KLOTO	KPALIME	PLATEAU	ATAKPAME	0
25	Polyline	10	11 A	25	KLOTO	KPALIME	PLATEAU	ATAKPAME	0
26	Polyline		12	13	TCHAMBA	TCHAMBA	CENTRAL	SOKODE	0
27	Polyline	11	12	15	SOTOUBOUA	SOTOUBOUA	CENTRAL	SOKODE	0
28	Polyline	12	13	25	KLOTO	KPALIME	PLATEAU	ATAKPAME	0
29	Polyline	13	14	13	TCHAMBA	TCHAMBA	CENTRAL	SOKODE	0
30	Polyline	13	14	16	TCHAOUDJO	SOKODE	CENTRAL	SOKODE	0
31	Polyline	14	15	21	WAWA	BADOU	PLATEAU	ATAKPAME	0
29	Dolution	14	15	0.0	3840511	1 48.0 48.00	DUATEALL	AT AK DANG	10

Prefecture data's attribute are imported.

Next, from "Table Option", select "Add Field".

Set as following picture. And click "OK".

Table	Add Field		? ×	
Image: Select By Attributes	Name:	Length	•	Name: Length Type: Double
Image: Clear Selection Switch Selection Select All	Field Prope Precision Scale	erties 10 3		Precision: 10
Add Field Turn All Fields On		ОК	Dancel	

Select New "Length" Field and right-click, select "Calculate Geometry".

Set as following picture. And click "OK".

[Le	ngth		
- 1	Sort Ascending	Calculate Geometry	
	Sort Descending Advanced Sorting	Property: Length	Property: Length
Σ	Summarize Statistics	Coordinate System O Use coordinate system of the data source: PCS: WGS 1984 UTM Zone 31N	Units: Meters [m]
	Field Calculator	Use coordinate system of the data frame:	
	Calculate Geometry	PCS: WGS 1984 UTM Zone 31N	
	Turn Field Off	Units: Meters [m] Calculate selected records only Help OK Cancel	

3-4 Summary Statistics

From "Arc Toolbox", select "Analysis Tools", "Statistics", "Summary Statistics".

ArcToolbox	X	
ArcToolbox 3 3D Analyst Tools 3 Analysis Tools 4 Sector 5 Cverlay 5 Proximity	Summary Statistics	 Enter Input Table. (Intersected Line Shape)
Frequency Summary Statistic Cartography Tools	Field Statistic Type	2. Enter Output Table.
	Case field (optional)	3. Select Statistics Field.(Length field)And select Statistics Type.(SUM)
		4. Select Case Field.(Prefecture field)
	OK Cancel Environments Show Help >>	5. Click "OK".

New table will be created, open a new table.

"Frequency" and "Sum_Length" fields will be created in each prefecture as follows.

eb	le4					
T	Rowid	FIC	PREFECTURE	FREQUENCY	SUM_LENGTH	
1	1	0	AGOU	4	99675.807	
ſ	2		AMOU	2	60224.227	
1	3	0	ANIE	2	36655.139	
T	4		ASSOLI	2	54116.619	
T	5	Q	AVE	4	103988.037	
1	6		BAS-MONO	3	43289.897	
1	7	9	BASSAR	4	179381.3	
1	8		BINAH	3	43705.729	
1	9		BLITTA	3	126186.302	
1	1.0	0	CINKASSE	2	25362.028	
1	13		DANKPEN	1	49495.875	
1	12	0	DANYI	4	45080.818	
1	13		DOUFELGOU	8	90380.712	
1	14	0	EST-MONO	3	85968.131	
1	1.5		GOLFE	4	63270.77	
1	1.6	0	HAHO	3	129732.808	
1	17		KERAN	3	78390.005	
T	1.8	n	KLOTO	6	68112601	

From this table, you will be able to create a graph.

3-5 Join attributes from a table

Select prefecture polygon layer. And right-click. Select "Joins and Relates" and "Join".



"Join Data" window will be open. And set as follows.



Some fields will be joined in the previous layer's table.

chi	ich.	1000						-		_	\
ID	Shape *	Prefesture.	Chets.Fref	REGION	Clevits REDA	5.1	Round	FID	PREFECTURE .	FREQUENCY	SUM LENGTH!
-0.	Polysion	TANGJOARE	Y AND JO AFE	TAVANES	DAFADING	0	- 57	-	TANE JO ARE		4035030
30	Pohyson	0.0	MAPATA3	SAVADES	DAFADHS.	a	.25		06	-d	22784435
2	Potenie	REPERDUAL	MAYEXCLES	EAVALE	DAPADING	0	21		AFBRUAL	1 1	31715254
-1	Polyton	TIPA	DAPACING	CAUADE 1	DAP ADRA	10	-268	- 1	1014	- 4	12201.907
-4	European	CONFLICE	OFFICASSE.	I AVANES	DAPAONG	1.0	.112		CHR, ASSE	3	01360.000
- 10	(Folgeon	ETHAN	PADOUDA	KARA	KARA	10			ERNAR)	42105.719
-6-	Fengeen	BASSAN	EASS AR	IAJABA	ARA.	0	.7		BASSAR	1	1793813
7	Polygon	KERAN	FERAN	ARK-11	KARA	-0.	3.7	- 1	FERAN	-1	10220.005
-4	Polymon	DANKAREN	IS FRIN-KOLKA	XARA	KARA	10	- 11		DARKPON	1	##446 e1t
- 1	Polyeon	DOURSI,00U	LICOUDIMANT	T.AHA.	KARA	10	53		EQUARE SOLU		NUMBER
101	Poweron	ASSOL	TieFn.0	IR ARA	HARA	18		- 1	ASSAULT	4	SalloAll
11	Polytoel	1052.44	HARA	IN APLA	RARA	0	13		- FOZAH	8	115556779
191	Polycon	140	13-3450-1726814	CONTRAL	6/2×018	1	174183	182-1	(144-10)	(that)	(Pault)
12	Folgoin	TISHAMBLA.	TEHANEA	CENTRAL	FUNDRE	12	24		JOHANEA.	7	8610 226
14	Poliebo	DUTTA	TOUTTA-GARE	TODATT P.AL	SONDES	0	- 9		BUTTA .	1	126106.302
w	Folisten	S070UEOUA	EQ10UEDUA.	CENTRAL	LONDLE	0	-24	-	SOTOLEGUA	2	76746748
16	Polyeon	TOHADUD.10	0004000	CENTICAL	5.0%000	0	25		TONADUDJO	1	117598-ALB
it'	Balance	(Married	inin the	THE ATEAN	ATAK D and	10	58.1	_	analari'		154133.000

3-6 Visualization

Select prefecture polygon layer. Choose "Properties" \rightarrow "Symbology" tag.

Change symbols as you like.

how:	aun Display On	Fields Detir	mon sidery rapels	Journs & rielates Th	ne I milar ropup
Features	Draw quantities	using color to show a	alues.	Import	
Categories	Fields		Glassification		
Quantities Conducted colour	Value: SU	M_LENGTH	▼ Natural B	sreaks (Jenks)	
Graduated colors	Normalization: nor	ne	➡ Blasses: 10		
Dot density	Color Ramp:				
Charts Multiple Attributes	Symbol Range		Label		
	25362.03	28000 - 36655139000	25362.028000 - 360	655.139000	
	36655.1 3	39001 - 45080,818000	36655139001 - 450	080.818000	
11 5 0 4495	45080.81	8001 - 55876.480000	45080.818001 - 551	875,480000	
hand	55876.48	80001 - 64133.057000	55876,480001 - 641	133.057000	
	(64133.Us	7001 - 73381 987000	54133U57001 - 73	381 387000	
TATAS /	73361.36	37001 - 78330,000000	73361 367001 - 765	390,005000 -	
and the second	Show class range	s using teature values		Advanced *	

Select prefecture polygon layer. Choose "Properties" \rightarrow "Labels" tag.

Change labels setting as you like.

eneral	Source	Selection	Display	Symbology	Fields [Definition Que	ry Labels	Joins & Re	elates Time	HTML Popup	
Labe	l features	in this layer									
lethod:	ę. 1	Label al	the featu	es the same w	ау.		*				
All fea	tures will t	e labeled usi	ns the opti	ons specified.							
Tex	t String						- 1				
Labe	l <u>F</u> ield:	SUN	1LENG7H	****			- 5	pression			
Tex	t Symbol			77							
		АавьҮу	72	(MSUIGo	u ⊑	10 ymbol.]			
Oth	er Options					Pre-de fin	ed Label Sty	le			
	Placeme	nt Propertie	5 i	Scale R	nise		Label Sty	les			

Chapter 5-2-4 3D Analyst

4-1 Create 3D Features

- (1) Open New ArcGIS Project, and Add 2D features (for conversion to 3d features)
- (2) Open "Arc Toolbox", And Select "3D Analyst Tools", "3D Features", "Feature To 3D By Attribute".

ArcToolbox	
ArcToolbox	
Difference 3D Pesture To 3D By Attribute Inside 3D Eesture to 3D By Attribute	1. Choose "Input Features".
Input Features contour	2. Designate "Output Features Class".
Height Field ELEVATION To Height Ejeld (optional)	3. Select "Height Field".
OK Cancel Environments << Hide Help	4. Select "OK".

(3) Open New ArcScene Project, and Add 3D features.



(4) Select "View", "Scene Properties", and then the following window will be shown.

ieneral Coordina	te System Ex	tent Illur	mination			
Description:						
1				-	-	
		-	1			
Vertical Exaggerat	on; 2	Υ.	Calculate	From Exte	nt	
Background color;		16	Resto	e Default		
	Use as	default in	all new doo	uments		
Enable Anir	nated Rotation					
When you use	the Navigation	tool to rota	te the scen	e, hold		
down the left r the scene to re scene is movin	nouse button, d otate, and relea: g.	rag in the c se the mou	firection you se button w	i want hile the		

1. Set "Vertical Exaggeration".

(Usually about"5" is better.)

2. Select "OK".

And You will be able to see 3D model in the Arc Scene Window.

4-2 Create TIN Data

- (1) Open New ArcGIS Project, and Add 3D Features.
- (2) Open "Arc Toolbox", And Select "3D Analyst Tools", "TIN Management", "Craete TIN".

ArcToolbox				
3D Analyst T	Tools			
🗄 🧞 3D Featu	res			
🗄 🇞 Conversio	on			
H S Functiona	al Surface			
🗄 🇞 Raster In	terpolation			
🕀 🇞 Raster M	ath			
🗄 🍓 Raster Re	eclass			
🕀 🍋 Raster Si	urface			
🗄 🚳 Terrain a	nd TIN Surfa	ace		
🕀 🏐 Terrain M	lanagement			
🗄 🗞 TIN Mana	agement			
- Copy	TIN			
Ereat	e TUN			
- Deline	ate TIN Dat	a Area		
Create TIN	-	-	000	
Output TIN				- 100
Output TIN C:¥Temp¥sss				6
Output TIN C¥Temp¥sss Spatial Referenc	e (optional)			
Output TIN C¥Temp¥sss Spatial Referenc	e (optional)			
Output TIN C¥Temp¥sss Spatial Referenc Input Feature Ck	e (optional) ass (optional)			
Output TIN C¥Temp¥sss Spatial Referenc Input Feature Ck	e (optional) ass (optional)		2	
Output TIN C¥Temp¥sss Spatial Referenc Input Feature Ck	e (optional) ass (optional) height_fie…	SF_type	z tag_field	
Output TIN C¥Temp¥sss Spatial Referenc Input Feature Ck	e (optional) ass (optional) height_fie ELEVATI	SF_type hardline	tag_field <none></none>	
Output TIN C¥Temp¥sss Spatial Referenc Input Feature Ck in_feature_cla contour	e (optional) ass (optional) height_fie ELEVATI	SF_type hardline	tag_field <none></none>	
Output TIN C#Temp¥sss Spatial Referenc Input Feature Ok	e (optional) ass (optional) height_fie ELEVATI	SF_type hardline	tag_field <none></none>	
Output TIN C#Temp¥sss Spatial Referenc Input Feature Clu in feature_cla contour	e (optional) ass (optional) height_fie ELEVATI	SF_type hardline	tag_field <none></none>	
Output TIN C#Temp¥sss Spatial Referenc Input Feature Ck in_feature_cla contour	e (optional) ass (optional) height_fie ELEVATI	SF_type hardline	tag_field <none></none>	
Output TIN C#Temp¥sss Spatial Referenc Input Feature Ck	e (optional) ass (optional) height fie ELEVATL	SF_type hardline	tag field 〈None〉	
Output TIN C#Temp¥sss Spatial Reference Input Feature Ck in feature_cla.	e (optional) ass (optional) height fie ELEVATL	SF_type hardline	tag field <none></none>	
Output TIN C#Temp¥sss Spatial Reference Input Feature Ok in feature_Cla Contour	e (optional) ass (optional) height_fie ELEVATL 111 Delaures (opt	SF_type hardline	tag_field <none></none>	
Output TIN C#Temp¥sss Spatial Referenc Input Feature Cla Contour	e (optional) ass (optional) height_fie ELEVATL III Delaunay (opt	SF_type hardline	Z tag_field ≺None> +	

1. Designate "Output TIN".

2. Choose "Input Feature Class".

3. Choose "Height Field".

4. Select "OK".

5-2-4-2

(3) Open New ArcScene Project, and Add TIN.



4-3 Drape Ortho Image Data

(1) Add Ortho Image Data.

Add Data	1-11		
Look in:	01 ortho		- -
MB-31-XII	I-2-d.tif	NB-31-XIV-1-d.tif	INB-31-XIV
NB-31-XII	I-4-a.tif	MB-31-XIV-2-c.tif	10 NB-31-XD
INB-31-XII	I-4-b.tif	MB-31-XIV-2-d.tif	100 NB-31-XD
NB-31-XII	Icatif	INB-31-XIV-3-a.tif	100 NB-31-XD
INB-31-XII	I-4-d.tif	INB-31-XIV-3-b.tif	100 NB-31-XD
INB-31-XIV	-1-a.tif	INB-31-XIV-3-c.tif	10 NB-31-XD
INB-31-XIV	-1-b.tif	IIII NB-31-XIV-3-d,tif	10 NB-31-XD
NB-31-XIV	-1-c.tif	MB-31-XIV-4-a.tif	100 NB-31-XI
* I III	1		
40.00		-	1

1. Add Data.

2. Open Add Data Window.

- 3. Choose Ortho Image Data.
- 4. Select "Add".
- (2) Select Image layer, And right-click, "Properties".





Image will be shown in 3D.

Period

Chapter 5-3-1 Data Structurization

1-1 Check "Definition Document of Topographic Database"

Check the database definition document, which defines the contents of the structured data to be created.

In particular, review the data type of shape data, the data code, attribute definition, and the contents of the attribute.

1-2 Data Structuring

(1) Limit (From line to polygon feature)

First open ArcMAP and Set Coordinate System.

From "View" menu, select Data Frame Properties, and go Coordinate System tag.

(In this case, choose "WGS_1984_UTM_Zone_31N" from Projected Coordinate Systems folder.) Add to ArcMAP line data of DWG data index and administrative boundaries are included.



Select the added data, and right-click, choose "Open Attribute Table".

Table Of Contents	4 ×		and the	ble	-								×
1			EV		B. + 1 🛼 🖟	One is		-				_	
E	utidwg Po ^{r da} r a n	Conv	10	_NC-3	1-I-4-c_fi_c	ut.dwg Polyl	line						×
	E	copy		FID	Shape	Entity	Layer	Color	Linetype	Elevation	LineWt	RefName	
	×	Remove			Polyline Z	LWPolyline	index	7	Continuous	0	25		101
	and a second		-	2	Polyline Z	LWPolyline	5103	163	Continuous	Ŭ	13		
		Open Attribute Table		3	Polyline Z	LWPolyline	5102	5	Continuous	0	13		
		Joing and Related	180	4	Polyline Z	LWPolyline	5102	5	Continuous	0	13		
		Joins and Relates		5	Polyline Z	LWPolyline	5102	5	Continuous	0	13		
	100	Zoom To Lawor		6	Polyline Z	LWPolyline	2003	7	Continuous	0	13		
	04	200m to Layer		7	Polyline Z	LWPolyline	2004	7	Continuous	0	13		
				8	Polyline Z	LWPolyline	2007	7	Continuous	0	13		
				9	Polyline Z	LWPolyline	2007	7	Continuous	0	13		
				10	Polyline 2	LWPolyline	2007	1	Bontinuous	U	13		
				1 11	Polyline 2	LWPolyline	5103	163	Continuous	U	13		
		V		12	Polyline 2	LWPolyline	5103	163	Continuous	0	13		
				1 14	Polyline 2	LWPolyline	0103	103	Continuous	0	13		
		~		14	Polyline 2	LWPolyline	2007	100	Continuous	0	13		
				10	Polyline Z	LWPolyline	5103	103	Continuous	0	13		
				1 17	Polyine Z	L WP orymne	5103	160	Centinuous	0	12	_	
				1 10	Polyine Z	L WP orymne	0007	103	Centinuous	0	12		
				1 19	Polyine Z	1 MPobline	51.02	162	Continuous	0	12		-
			E		1 81-I-4-c_fi_	tit.dwg Poly	(0 ou (line)	ut of 744	5 Selected)				

From "Table Option", Select "Select by Attributes".



- -Feature To Polygon Choose "Input Features". Input Features Designate The output polygon feature class. - 🛃 cl_NC-31-I-4-c_fi_cut.dwg Polyline + And click "OK". × 1 4 (In this case, The output feature name is as following.) Limit_poly_1.shp **Output Feature Class** C:¥Temp¥Limit_Temp.shp 1 XY Tolerance (optional) Unknown * Preserve attributes (optional) Label Features (optional) OK Cancel Environments.... Show Help >>

Then, the new polygon shape file is created as following.



From Editor toolbar, select "Start Editing".

	Editor - Editor - C	Start Editing This map contains data from more than one d	atabase or folder.
	X Start Editing	Please choose the layer or workspace to edit.	
.c	Stop Editing		
	III Save E胡田		
	(
nd Choose Target feature.			
nd Choose Target feature.		Source	Туре
nd Choose Target feature.		Source G:¥TOGO¥_GIS¥GIS挂術移動設¥03_Stru G:¥TOGO¥_GIS¥GIS挂術移動設¥03_Stru	Type cturi Shapefiles / dBase Files cturi CAD Workspace

In this case, small polygon on the right is not nee	ded.		
(Because of being outside of TOGO)		(
So delete the outside polygon.		2	
(Select the polygon and press "Delete" button			
on the keyboard.)			TOGO
	Boundary ->		

Exit the edit mode once, and then save the data. Since in edit mode, you will not be able to add the attribute fields.

After saving, open attribute table and add field according to the attribute definition. And input attributes.

Add "CODE" field as following.

	Defin	ition Docum	ent of Topog	graphic Database	e in Tog	o(⊦-	-⊐"[国地形测	則量デー	-タベース定義書)
File N	lame	Limit_Poly_1	Contents	Frontière-Borne fronti Boundary between Co 国境	ère untries					
Data	Туре	Polygone	Code	1001						
No	(Article 項目		Contents 内容	Length	Data 1	Type	Decimal 小数	Encode コード化	Remarks 備考
1	CODE)	Code		4	TE	хт	-	0	
2	NAME	<u>۱</u>	Country Nar	ne	20	TE	α	-		
3	AREA	\backslash	Area	/	15	Dou	ble	3		Uhit is ~m2~
4										
								l		



Add "NAME" field as following.

	Defin	ition Docume	ent of Topo,	graphic Database	e in Tog	」(トーゴ	- 国地形》	則量デー	-タベース定義書)
				Frontière-Borne fronti	ère				
File N	lame	Limit_Poly_1	Contents	Boundary between Co 国境	untries				
Data	Type	Polygone	Code	1001					
		Anticla		Contanto	1	Data Trac	Designal		Director
No		項目		ontents 内容	Length 長さ	Data Type デーク型	Decimal	Encode コード化	Hernanks 備考
1	CODE		Code		4	TEXT	-	0	
2	NAME		Country Nar	ne	20	TEXT	-		
3	AREA	\	Area		15	Double	3		Unit is ~m2~
4				/					



Add "AREA" field as following.

	Defin	ition Documer	nt of Topo	graphic Database	in Tog	っ(トーゴ區	国地形测	則量デー	-タベース定義書)
File	Name	Limit Boly 1	Contents	Frontière-Borne fronti Boundary between Co	ère Intries				
-				国境					
Data	а Туре	Polygone	Code	1001					
No		Artide 項目		Contents 内容	Length 長さ	Data Type デーク型	Decimal 小数	Encode コード化	Remarks 備者
1	CODE		Code		4	TEXT	-	0	
2			Country Nar	те	20	TEXT	-		
			Area		15	Double	з		Unit is "m2"
4	+ - \	`							



Attribute table is created, it is displayed as follows.

□ - 묩 - ┗ €	¥≣∉×			
Limit_poly_1				
FID Shape *	Id CODE	NAME	AREA	1
O Dahara 714	0		1	0

Next, input and edit attribute value.

From Editor toolbar, select "Start Editing" again.

Input "CODE" value directly. (In this case, the value is "1001".)

And also input "NAME" value. (In this case, the value is "TOGO".)

"AREA" value is calculated automatically as following way.

Choose "AREA" field, and right-click. Select "Calculate Geometry".

apie I · 뭡 · 뭡 없 .imit_poly_1	国 句 X			_	×
FID Shape * 0 Polyson ZM I 0 Limit_poly_1	Id CODE 0 1001 +1	NAME TOGO	AREA d)		Sort Ascending Sort Descending Advanced Sorting
			-	Σ	Summarize Statistics
					Field Calculator Calculate Geometry

In the following window, choose "Area" from Property pull-down menu. And click "OK".

Property: Area		
Coordnate Syste Area (a) Use coordnate 30 Perimeter Dibrowin Max 2 of geometry Vac 2 of geometry Vac 2 of geometry Vac 2 of geometry Vac 2 of geometry		
Use coordinate Y Coordinate of Centroid	Table	
1 Sta Inde Lander Handelijk	🛛 🔁 📲 📲 🚷 🗆 🐺 🗶 🚽	
Jnits: Unknown Units	Limit_poly_1	
Gelci/late selected records only	FID Shape * Id CODE NAME	AREA
Help OK Can		746327170,006
	If t 0 + H = (0 out of 1 Selecte	d)

Attributes that are required will be entered all. Save data and Stop editing.

Open Arc Catalog, set Coordinate System ("WGS_1984_UTM_Zone_31N") of the edited data.

(2) Road (From line to line feature)

Add to ArcMAP DWG line data that includes road data.



Select added data, and right-click, choose "Open Attribute Table".

Table Of Contents	4 ×			ble	-								8
			EN	I + 1	a. ⊾.			_					
E Jugers			10	NC 3		an anna Bala							-
⊞ 🗹 <mark>d_NG-33-1-+<_f</mark> _c	t.dwg Po	Сору	1.2**	FID	Shape	UC.OWG POly Entity	line Layer	Color	Linetype	Ele vation	LineWt	RefName	×
	×	Remove		1	Polyline Z	LWPolyline	index E1.02	7	Continuous	0	25		E
	m	Open Attribute Table		3	Polyline Z	L WPolyline	51 02	105	Continuous	0	13		-
	6003	open recibere hobie		4	Polyline Z	LWPolvline	5102	5	Continuous	0	13		
		Joins and Relates		5	Polyline Z	LWPolyline	5102	5	Continuous	0	13		
		and the second second		6	Polyline Z	LWPolyline	2003	7	Continuous	0	13	1	
	- Q2	Zoom To Layer		7	Polyline Z	LWPolyline	2004	7	Continuous	0	13		
				8	Polyline Z	LWPolyline	2007	7	Continuous	0	13		
				9	Polyline Z	LWPolyline	2007	7	Continuous	0	13		
				10	Polyline Z	LWPolyline	2007	7	Continuous	0	13		
				11	Polyline Z	LWPolyline	5103	163	Continuous	0	13		
		N N		12	Polyline Z	LWPolyline	5103	163	Continuous	0	13	1	
				13	Polyline Z	LWPolyline	5103	163	Continuous	0	13		
				14	Polyline Z	LWPolyline	2007	7	Continuous	0	13		
				15	Polyline Z	LWPolyline	5103	163	Continuous	0	13	_	
				10	Polyline 2	LWPolyline	5103	163	Continuous	U	13		
				1 12	Polyline Z	LWPolyline	0103	103	Continuous	0	13		
				10	Polyline Z	LWPolyline	2007 E1.02	160	Continuous	0	12		-
					1 81-I-4-c_h_	+ + D	(0 oi (line)	ut of 744	5 Selected)		19		

From "Table Option", Select "Select by Attributes".

	Table	-	1.00
	Find & Replace		
	Select By Attributes		
	T Flear Selection	olor	Linetype
	and press are set as a set of the	7	Continuous
	Switch Selection	163	Continuous
In th Laye	is case, input as following.) er" LIKE '200%'		
	1. 1		
And c	click "Apply".		
And of Then	road line data are selected in	ArcMA	P.

Method :	Create a n	aw selection
"FID" "Entity" "Layer" "Color"		× m
Linetype	-	
	= And	
	() Not	
Is SELECT * F	ROM Polyline	Get Unique Values Go To:
"Entity" =	LWPolyline' A	ND "Layer" LIKE 200%
-		



Route_Lin.shp is added in the ArcMAP window. And open attribute table.



Remove unnecessary fields. (In this case, delete "FID_", "Entity", "Color", "Linetype", "Elevation", "LineWt", and "RefName".)

Select field, right-click, and choose "Delete Field".

Do not remove the Layer field, because the content of this field is the same as CODE field.

		Property			0.1				D 41 1
FID	Shape *	FID	Entity IL	awar I	Color I	Linetype	Elevation	LineWt	RefName
0	Polyline ZM	- B-	Sort Ascending			Jous	0	13	
- 0	Polyline ZM		City Bullion and			Jous	0	13	
2	Polyme Zivi	- F	 Sort Descending 				u.	10	
	Dables 7M		Advanced Sorting		Jous	0	13		
- 4 E	Polyine ZW	-			Jous	0	13		
6	Polyine ZM		State States		lous	0	13		
7	Polyine ZM		Summarize			hour	0	13	
8	Pohdine ZM		-				0	13	
9	Pobline 7M	- 2	Statistics		lious	0	13		
10	Polyline 7M				lious	0	13		
11	Polyline 7M		Field Calculator				0	13	
10	Pobline ZM				lious	0	13		
13	Pobline 7M		Calculate	alculate Geometry		lious	0	13	
14	Pohline ZM					lious	n n	13	
15	Pohline 7M		Turn Field Off			lous	0	13	
16	Polyline ZM					hous	0	13	
17	Polyline ZM		Erecze /I In	freeze	Column	lious	0	13	
18	Polyline ZM		Treeze/or	meere	column	Jous	0	13	
19	Polyline ZM	1.00	Dalate Die	14		lous	0	13	
20	Polyline ZM	×	- X Delete Field			Jous	0	13	
21	Polyline ZM	Tens 1	Properties			Jous	0	13	
22	Polyline ZM	CT CT				Jous	0	13	-
23	Polyline ZM	UTCS	monane 20	107	71	Continuous	0	13	
24	Polyline ZM	O LV	Polytine 20	107	7	Dontinuous	0	13	
25	Polyline ZM	O LV	Polyline 2007 7 Con			Continuous	0	13	
26	Polyline ZM	O LY	Polytine 20	107	7	Continuous	0	13	

Add "CODE" field as following.

? ×
C

lable				Field Calculator		3
* * * • • • Route_Lin FID Shape * 0 Polyline ZM 1 Polyline ZM 2 Polyline ZM 3 Polyline ZM 4 Polyline ZM	Layer COD 2003 2004 2007 2007 2007	and the	Sort Ascending Sort Descending Advanced Sorting	Parser	Type: Funct © Number Abs Abs Sgring Exp (Date Ind	ions:
4 Polyline 2M 5 Polyline 2M 6 Polyline 2M 7 Polyline 2M 8 Polyline 2M 9 Polyline 2M	2007 2007 2007 2007 2007 2007	z	Summarize		Log (Sin (Sar (Tan (
10 Polyline ZM 11 Polyline ZM 12 Polyline ZM 13 Polyline ZM	2007 2007 2007 2007 2007		Field Calculator Calculate Geometry	CODE = [Layer]	* [/ (<u>&</u> + - (
put Formula in n this case, inp	n the below out as follow	v bo vin	x. g.)	,		
Layer]			-		lear Load Savi	e
and click "OK"					0	K Cancel
the CODE fie	eld, layer va	alue	is inputed.			

Select "CODE" field, right-click, and choose "Field Calculator".

Delete Layer field.

Then add "NAME", and "LENGTH" field according to the attribute definition.

	Defi	nition Docur	ment of Topog	graphic Database	in Togo	(トーゴ玉	地形測	量デー	タベース定義書)
File N	Name	Route_Lin	Contents	Routes Roads 道路					
Data	Туре	Ligne	Code	2001 - 2007					
No		Article 項目		Contents 内容	Length 長さ	Data Type データ型	Decimal 小数	Encode コード化	Remarks 備考
1	CODE		Code		4	TEXT	-	0	
2	NAME		National Roa	ad Name	20	TEXT	-		National Road Only "RN 15" etc•••
3	LENGTH	I	Length		10	Double	3	1	Un it is "m"
								_	

Only to the national road, enter a value in the "NAME" field. With reference to national road name data, you will be able to determine the need for input. Without national road in the map, then there is no need to enter the value of "NAME" field. With national road in the map, start editing and enter the name in the table directly. (Like "RN 15")

Next, calculate "LENGTH" field value by the "Calculate Geometry".

Select "LENGTH" field, right-click, and choose "Calculate Geometry".

Property: Length Units: Meters [m] And click "OK".

Property:	Length	
Coordinate !	System	
O Use coord	linate system of the <u>d</u> ata source:	
PCS: W	SS 1984 UTM Zone 31N	
Use coord	linate system of the data frame:	
PCS: W	35 1984 UTM Zone 31N	
Units:	Meters [m]	•
	and should a set offer easily	
(3) Small Buildings (From point to point feature with angle attribute)

Add to ArcMAP DWG point data that includes small buildings data.

Add Data	
Look In: Wid_NC-314-4- <u>c_f_cout.dwg</u> Annotation MultiPatch Polygon Polyline	Selection Geoporating Catanots Without • </th
Name: Point Add Show of type: Datasets and Layers T	
	129 G (20 H, 1)

Select the added data, and right-click, choose "Open Attribute Table".



From "Table Option", Select "Select by Attributes".

Find & Replace			Enter a WHI	ERE clause to select reco
Select By Attributes			Method :	Create a new selection
Clear Selection	olor 7 163 5	Linetype Continuous Continuous Continuous	~Entity~ ~Layer~ ~Color~ ~Linetype	"
put Formula in the below box.		Ç		<> Like >= And <= Or

(In this case, input as following.)

"Layer" = '3002'

And click "Apply".

Then small buildings point data are selected

in ArcMAP.

ne trou :	Create a ne	w selec	tion				
"FID"							1
"Entity"							
"Color"							100
"Linetype"							-
= <>	Like	1					
>) (>=	And						
< <=	Or						
. N O	Not	-					
ls		Get	Unique	Values	Go To		
ELECT * FRO	M Point M	HERE:	-				_
'Layer''' = '30	02'						e de la companya de l
	1-11-11-1	-1.5		1.0		-1.5	-
	Verific		Help		Load		Save

2 52







Batim_Pnt.shp is added in the ArcMAP window. And open attribute table.

Remove unnecessary fields. (In this case, delete "FID_", "Entity", "Color", "Linetype", "Elevation", "LineWt", and "RefName".)

Select field, right-click, and choose "Delete Field".

Do not remove the Layer field, because the content of this field is the same as CODE field.

T	FID	Shape *	FIC		1.4	1	···· · pe	Elevation	LineWt	RefName	Angle	1
	0	Point 2M	E	Sort	Ascendir	pr	0.5	0	13	3002	3.074974	
1	1	Point ZM				-	US	0	13	3002	345 372887	11
1	2	Point 2M	W.	Sort	Descend	ing	us.	0	13	3002	340.646288	t i
1	3	Point 2M					U.S.	0	13	3002	334.932597	t:
1	4	Point ZM		Adva	anced So	rting	US	0	13	3002	342 24601 8	t
1	6	Point 2M					05	0	13	3002	50119722	1
1	6	Point 2M		Sum	marize		05	0	13	3002	70.601.067	t
	7	Point ZM	-				US	0	13	3002	350.312335	L
	8	Point 2M	5	: Stat	istics		05	0	13	3002	42.087133	1.
Т	9	Point ZM	- 10				05	0	13	3002	358,891816	Ε.
1	10	Point ZM	100	Eielc	Calculat	or.	US	0	13	3002	350.443052	D
1	11	Point 2M	1	a mene	Concorac		05	0	13	3002	343120422	1
т	12	Point ZM		Calc	ulate Ger	metry	0.5	0	13	3002	355.616185	D
Т	13	Point ZM		0010	onder oct	and a fine	US	0	13	3002	342.521583	Đ.
	14	Point 2M		Turn	Field OB		05	0	1.3	3002	337.207694	D.
Т	15	Point ZM		Turn	Field Of		0.5	0	13	3002	342.288841	Ε.
1	1.6	Point ZM		1.00			US	0	13	3002	344583772	D
	17	Point 2M		Free	ze/Unfre	eze Colur	nn us	0	13	3002	311.657266	D.
	1.8	Point ZM					U.S	0	13	3002	42,992478	D -
	19	Point ZM	2	Dele	te Field		US	0	13	3002	9,788911	D
	20	Point 2M					20	0	1.3	3002	338185554	D.,
1	21	Point ZM	100	Prop	erties		US	0	13	3002	358,936908	D
1	22	Point ZM					US	0	1.3	3002	355 511 951	p.,
1	23	Point 2M	0	Insert	3002	9	Continuous	0	13	3005	50.288388	1
4	24	Point ZM	0	Insert	3002	9	Continuous	0	13	3002	30.602603	1
1	25	Point 2M	0	Insert	3002	9	Continuous	0	13	3005	315 501 793	Ľ.
1	26	Point 2M	0	Insert	3002	9	Continuous	0	13	3005	262 229587	
-	27	Point ZM	0	Insert	3002	9	Continuous	0	13	3002	274.427365	Γ.

Add "CODE" field as following.

		Def	nition Docum	ent of Topo	graphic Data	abase in Togo (トーゴ国地刑	測量データベース定義書])
F	ile N	łame	Batim,Pnt	Contents	Petits Bâtimen Small buildings 小さい建物ある	ts ou Eâtiments banco or いは土壁建物		
C)ata	Type	Point	Code	3002			9
T	No		Article 項目		Contents 内容	Length Data Type Decim	Add Field	
	1	CODE		Code		4 TEXT	CODE	
	2	ANGLI	1	Angle		3 Short Int	Field Properties	
'				I		1 1 1	Length	
								UK Cancel

Clear Load... Save... Help

OK. Cancel

aure			_				Field Calculator				
⊟ + ' ŧ Batim_P	립·暗·喧啦 P 관· atim_Pnt						Parser VB Script Python				
FID	Shape *	Layer	Angle	CODE	1		Fields:	Type:	Functions:		
1.094	Point ZM	3002	0.064191		Ξ.	Sort Ascending	EID	T and all all all all all all all all all al	Abs ()		
1351	Point ZM	3002	0.117262		-		Shape	String	Atn ()		
1457	Point ZM	3002	0.150253		Ŧ.	Sort Descending			Cos ()		
35	Point ZM	3002	0.31558	_	1		Layer		Exp ()		
1438	Point ZM	3002	0.318157			Advanced Sorting	CODE	Date	Fix ()		
184	Point ZM	3002	0.51 005			/ arenaes as ang			log()		
1121	Point ZM	3002	0.681292			Cummarizo			Sin ()		
1884	Point ZM	3002	0.83725	_		Summanze			Sgr ()		
1515	Point ZM	3002	0.900919		100	Cromerow			Tan ()		
425	Point ZM	3002	0.955808		14	SILCUSILLE					
82	Point ZM	3002	0.973446			and the dealerships		-			
642	Point ZM	3002	1.091231			Held Calculator	Show Codeblock				
1411	Point ZM	3002	1.169287		-		CODE		* / & + -		
1899	Point ZM	3002	1.263732			Calculate Geometry	CODE =				
1 1050	D-1-1-714	2000	1.004000				[Layer]				
put F	Formula	in the	below b	ox.							

Select "CODE" field, right-click, and choose "Field Calculator".

(In this case, input as following.)

[Layer]

And click "OK".

In the CODE field, layer value is inputed.

Delete Layer field.

Then add "ANGLE" field according to the attribute definition.

Definition Document of Topographic Database in Togo (トーゴ国地形測量データベース定義書)										
			Petits Bâtiments	ou Bâtiments ba						
Varme	Batim_Pnt	Contents	s Small buildings or 小さい建物あるいは土壁建物							
Туре	Point	Code	3002							
	Article 項目		Contents 内容	Length 長さ	Data Type デーク型	Decimal 小数	Encode コード化	Hermanks 備者		
CODE		Code		4	TEXT	L	0			
ANGLE		Angle		3	Short Int	-		Uhit is "Degree". Origin is East. Direction is anti-clockwise.		
	Defin Iame Type CODE	Definition Docum	Definition Document of Topo Image: SetimuPht Contents Type Point Code Article TODE Code ANGLE Angle	Definition Document of Topographic Datab ame Batim_Pnt Contents Petits Extiments Type Point Code 3002 Article Code 1002 Article Code 4002 Angle Angle	Definition Document of Topographic Database in Tog ame Batim_Pnt Contents Small buildings or 小さい強物あるいは土筆建物 Type Point Code 3002 Article Contents Length 項目 Code 4 ANGLE Angle 3	Definition Document of Topographic Database in Togo (トーゴ) ame Batim_Pht Contents Petits Extiments ou Extiments benco Small buildings or 小さい強物あるいは土蟹建物 Type Point Code 3002 Atticle Contents Length 日本 Type 内容 月日 日本 Type Atticle Code 1002 CODE Code 14 TEXT ANSLE Angle 3 Short Int	Definition Document of Topographic Database in Togo(トーゴ国地形) ame BatimPht Contents Petits Bâtiments ou Bâtiments benco Small buildings or 小さい強物あるいは土酸強物 Type Point Code 3002 Article Code 3002 Article Code 日本	Definition Document of Topographic Database in Togo(トーゴ国地形測量デー ame BatimPht Contents Petits Eâtiments ou Eâtiments banco Small buildings or		

But in this data, "Angle" field exits already. So make temporary field like "Temp". And move the value of angle attribute to temporary field.





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Next, delete "Angle" field, then add new "ANGLE" field according to the attribute definition. Finally move the value of attribute to new "ANGLE" field, and delete temporary field.



(4) Boundary of Forest reservation, National park (From polygon to polygon feature)

Add to ArcMAP DWG polygon data that includes forest reservation and National park data.



Select the added data, and right-click, choose "Open Attribute Table"

			T.E	* (웹 •) 🖫 🕲 💷 🗶								
NB31-	XX-3a OILd		_polygon_NB31-XX-Sa_DJT.awg Polygon									
सित्ते	Conv		FID	Shape	Entity	Layer	Color	Linetype	Elevation	LineWt	RefName	
1EH	coby		-1	Polygon Z	LWPolyline	6002	3	Continuous	0	13		
×	Remove		2	Polygon Z	LWPolyline	6002	3	Continuous	0	13		
~	HEIHOVE		3	Polygon Z	LWPolyline	6002	3	Continuous	0	13		
(TTT	Onon Attribute Table		4	Polygon Z	LWPolyline	6002	3	Continuous	0	13		
EE	open accinute indie		5	Polygon Z	LWPolyline	6002	3	Continuous	0	13		
	Joins and Relates		б	Polygon Z	LWPolyline	6002	3	Continuous	0	13		
	Some and Relaces		7	Polygon Z	LWPolyline	6002	3	Continuous	0	13		
100	Zoom To Laver		8	Polygon Z	LWPolyline	6002	3	Continuous	0	13	1	
4	200m to Luyer		9	Polygon Z	LWPolyline	6002	3	Continuous	0	13		
			- 10	Polygon Z	LWPolyline	6002	3	Continuous	0	13		
			11	Polygon Z	LWPolyline	6002	3	Continuous	0	13		
			12	Polygon Z	LWPolyline	6002	3	Continuous	0	13		
			13	Polygon Z	LWPolyline	6002	3	Continuous	0	13		
	N N	1.0	14	Polygon Z	LWPolyline	6002	3	Continuous	0	13		
		7 114	15	Polygon Z	LWPolyline	6002	3	Continuous	0	13		
	<u> </u>		16	Polygon Z	LWPolyline	6002	3	Continuous	0	13		
			17	Polygon Z	LWHolyline	15002	3	Gontinuous	0	13		
			18	Polygon Z	LWPolyline	6002	3	Gontinuous	0	13		
			19	Polygon Z	LWPolyline	5002	3	Continuous	0	13		
			20	Polygon Z	LWPolyline	6002	3	Continuous	0	13		
			21	Polygon 2	LWPolyline	6002	3	Continuous	0	13		
		FI	N_pol	1 lygon_NB3	+ + 1	(0 c	out of 26 ygon	45 Selected)	,	1 13	,	

From "Table Option", Select "Select by Attributes".

	Table	R 1 1 1 1 1
	Find & Replace	
	Select By Attributes	
	Elear Selection	olor Linetype
	Switch Selection	163 Continuous 5 Continuous
(In thi	is case, input as following.))
(In thi	is case, input as following.)	1
"Laye	er" = '6111'	
And c	click "Apply".	
Then	parks polygon data are sele	ected
in Arc	CMAP.	

Method :	Create a ne	w selection	-
"FID" "Entity" "Layer" "Color"			× E
	 Like And Or Not 	'6005' '6007' '6008' '6111'' '8888 Jot_area'	
IS SELECT * F	ROM Polygon	Gelt Unique Values Go To:	
"Layer" = '	6111'		i d
	-1		
Clear	Verify	Help Load	Save

The Study on Establishing Topographic Database in Togo Technology Transfer Manuel





舞題 - ArcMap - ArcInfo	
Elle Edit View Bookmarks Insert Selection Geoprocessing Customize Wit	ndows Help 同口 钟 K? g Editor
이 이 이 가 2 1 후 1 원 · U 후 1 \end{pmatrix} · U • U • U • U • U • U • U • U • U • U	g Georeterencing + Layer (ENpolycon,NB3)-XX-3a_OJTok ▼ (Q + 4* g Snapping + O ⊞ □ □
	Table
E Zayers	四••••••••••••••
	Parc_Poly
E □ FIN_polygon_NB31-XX-3a_0JT.c	FID Shape * FID. Entity Layer Color Line type Elevation Line WR Re: * 0 Polycon ZM 0 LWPolytine 6111 2 Continuous 0 13 2 Polycon ZM 0 LWPolytine 6111 2 Continuous 0 13
The second secon	
· · · · · · · · · · · · · · · · · · ·	Parc_Poly

Parc_Poly.shp is added in the ArcMAP window. And open attribute table.

Remove unnecessary fields. (In this case, delete "FID_", "Entity", "Color", "Linetype", "Elevation", "LineWt", and "RefName".)

Select field, right-click, and choose "Delete Field".

Do not remove the Layer field, because the content of this field is the same as CODE field.

Table						×
日・日本 日本 日本 日本 Parc_Poly	2					×
FID Shape * FID D Polygon 2M Q 1 Polygon 2M Q 2 Polygon 2M Q 2 Polygon 2M Q	 Sort Ascending Sort Descending Advanced Sorting Summarize, Statistics Field Calculator Calculate Geometry Turn Field Off Freeze/Unfreeze Column Delete Field Properties, (v out or 5 selecteo) 	ype Ous Ous Ous	Elevation 0 0 0	Line WK 13 13 13 13	RefName	
Parc_Poly						_

	Def	inition Docum	ent of Topo,	graphic Database	in Tog	៰(トᅳ⊐[国地形》	測量デ	データベース定義書)	
File N	lame	Parc_Poly	Contents	Limite de réserve fores Boundary of forest res 森林保護区, 国立公園	tière, Parc ervation, Na の境界	national Itional park				
Data	Түре	Polygon	Code	6111						
No	_	Artide 項目		 Contents 内容	Length 長さ	Data Type デーカ # 4	Decimal 小数	Encode	Add Field	
	CODE)	Code		4	TEXT		-	DODE -	
2	NAME		Name of Fo	rest Reservation or Natio	30	TEXT	-		Cield Deservice	
3	AREA	L	Area		10	Double	3		Length 4	
			·							
									OK Cancel	

Add "CODE" field as following.

Select "CODE" field, right-click, and choose "Field Calculator".

Table		Field Calculator	2 ×
FID Shape * Layer COD 0 Polyson ZM 6111 1 1 Polyson ZM 6111 2 2 Polyson ZM 6111 1	Sort Ascending Sort Descending Advanced Sorting	Parser © VB Script Python Fields: FID Shape Layer CODE	Type: Functions: * Abs() Abs() Abs() String Cos() Exp() Fix() Int() Log() Sin() Sar()
	Summarize 5 Stelestics Field Calculator	Show Codeblock CODE = [Layer]	Tan () * / & + - =
	Calculate Geometry		
Input Formula in the below b	ox.		-
(In this case, input as following	ng.)	Clear	r Load Save Help
[Layer]			

And click "OK".

In the CODE field, layer value is inputed.

Delete Layer field.

	Defini	tion Docume	nt of Topo;	of Topographic Database in To <i>g</i> o (トーゴ国地形					-タベース定義書)
File N	Limite de réserve forestière, Paro national Name Paro,Poly Contents Boundary of forest reservation, National park 森林保護区、国立公園の境界								
Data	Data Type Polyson Code 6111								
No		Article 項目		Contents 内容	Length 長さ	Data Type データ型	Decimal 小教	Encode コード化	Remarks 備者
1	CODE		Code		4	T <u>EX</u> T	_ = .	0	
2	2 NAME Name of Forest Reservation or Nati			est Reservation or Natio	30	TEXT	-	I	In capital letters
3 AREA Area				10	Double	3	1	Unit is ~m2~	

Then add "NAME", and "AREA" field according to the attribute definition.

Enter values in the "NAME" field with reference to Forest reservation and National park name data such as old maps.

Add old map data. And from Editor toolbar, select "Start Editing".







Calculate "AREA" field value by the "Calculate Geometry".

Select "AREA" field, right-click, and choose "Calculate Geometry".

Property: AREA Units: Square Meters [sq m] And click "OK".

Property:	Area							
Coordinate System								
() Use coord	dinate system of the <u>d</u> ata source:							
PCS: W	GS 1984 UTM Zone 31N							
Use coord	dinate system of the data frame:							
PCS; W	GS 1984 UTM Zone 31N							
Units:	Square Meters [sq m]							
	and the second sec							

(5) Annotation (From annotation to point feature)

First open ArcMAP and Set Coordinate System.

From "View" menu, select Data Frame Properties, and go Coordinate System tag.

(In this case, choose "WGS_1984_UTM_Zone_31N" from Projected Coordinate Systems folder.) Add DWG annotation data to ArcMAP.

Add Data				×	
ook in:	Text_NB31XX3a.dwg	- 4 6 0	1 🗰 🔹 🖻 🖻		
Annotation MultiPatch					Selection Cooprocessing Castorina Windows Help - 1941/6 - 1941/6 - 197 Selection - 197 Select
Point Fall Bolycon					
Polyline					
lame;	Annotation			Add	
show of type:	Datasets and Layers		• Ca	ancel	
			S 5	1.1	Balan C
					292259-564 #56993.05 Mabara

Open Arc Toolbox, and select "Conversion Tools" \rightarrow "To Geodatabase" \rightarrow

"Import CAD Annotation"	🔨 Import CAD Annotation
ArcToolbox	Input features
ArcToolbox 3D Analyst Tools Analysis Tools Cartography Tools Conversion Tools From KML From Raster From WFS Metadata	Text_NB31XX3adwg Annotation
 To CAD To Collada To Coverage To dBASE To Geodatabase Cad to Geodatabase Feature Class to Feature Class Feature Class to Geodatabase (multiple) To fenore CAD Annotation 	Output feature class G¥TOGO¥_GIS¥GIS技術移動業¥03_Structuring¥temp@db¥text Reference scale 50000 IV Create annotation classes from levels (optional) IM Match symbols from first input (optional) IR Require symbols to be selected from the symbol table (optional) IR Feature-linked (optional) Linked feature class (optional)
First select annotation data from	Create annotation when new teatures are added (Feature-linked only) (optional) Update annotation when the shape of the linked feature is modified (Feature-link OK Cancel Environments Show Help >>
'Input features".	

Next click "Output feature class" button, and move to the appropriate folder.

In the folder, select "New File Geodatabase" button.

Output feature	e class	-	 -	X	
Look in:	G:¥	- 6	- 3		-
ArcGIS1 my docun Saudi TOGO	0 nent			- <u>New</u>	File Geodatabase
Name: Save as type:	Feature dasses		•	Save Cancel	

And create temporary file geodatabase as follows. Then double click new geodatabase.

ook in:	G:¥	•	2 4 3	iii • E	
Arc	GIS10	2.			
🗐 my c	locument				
Saud					
tom	o adh				
tem	p.gau				
-					
	/				
	/				
	/				
Name;	,			_	Save
Name;	,				Save

Input temporary feature name as follows. And click "Save" button.

Look in:	temp.gdb	*	企 	(a) (ff	+	3		100
	<i></i>					_		
Name;	text						Save	

In the "Import CAD Annotation" window, input "Reference scale". (In this case, input "50000".) And click "OK".

日 単語 - Arthap - Arctato File Edit View cessing Customize Windows Help Geode ArcToolbox • 🗹 🗏 🖉 🖉 😂 🖓 👷 Éditor • 👘 大氏の〇 II 22 + - 際・ 🖹 🕢 🖽 🖄 M 老名 🗉 岡 🛓 Georeterencing- Loyer, Text, NEX100Gaubre Ave ArcToolbox winten . 2 A BUD - IMM 3D Analyst . Layer - 12.2 3D Analyst Tools ble of Contents 0.5 Analysis Tools 12023 🗄 🌍 Cartography Tools 🗄 🌍 Conversion Tools - ۱ R 🗄 🎯 Data Interoperability Tools GR 1200 1 E 1300 Data Management Tools A 1100 Data Comparison 1 1110 120 1020 I 🖻 🗞 Database 1 🗄 🗞 Distributed Geodatabase I M 1060 1 Domains 2 1050 + K Feature Class 8 Lext NB31XX38. S Features Add XY Coordinates 🔨 Adjust 3D Z Searing Distance To Line 2 K Check Geometry 🔨 Copy Features 120.0.0.0 🔨 Delete Features 185235.3 - Dice 🔨 Feature Envelope to Polygon 🔨 Feature To Line K Feature To Point From Arc Toolbox, Select "Data Management Tools" \rightarrow Feature To Polygon K Feature Vertices To read "Features" \rightarrow "Feature Vertices To Points". Feature Vertices To Points Input Features text B -Set as following, and click "OK". Output Feature Class C:¥kouzouka¥8_Annotation¥Ano_Pnt.shp E Input Features: Point Type (optional) geodatabase annotation data START ALL MID Output feature class: (data directory/) END BOTH_ENDS Ano_Pnt.shp DANGLE Point Type: START Show Help >> OK Cancel Environments...

Geodatabase annotation will be imported in the map window.

Point data will be shown in the map window. And open attribute table of the Ano_Pnt.shp.



5-3-1-24

Remove unnecessary fields. (In this case, delete attributes other than "Layer", Text" and "Txt Angle".)

Select field, right-click, and choose "Delete Field".

Do not remove the Layer, Text and Txt Angle fields, because the contents of these fields are the same as CODE, CONTENTS, and ANGLE fields.

Pnt							
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(From Arc Toolbox, Select "Data Management Tools" \rightarrow "Fields" \rightarrow "Delete Fields", you can delete some fields at once.)

	Defi	nition Docur	ment of Topog	graphic Datal	ase in Togo	> (ト ━ゴ[国地形	則量デ	ータベース定義書)
File N	lame	Ano_Pnt	Contents	Annotation Annotation 注記					
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4									OK Cancel

Add "CODE" field as following.

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ln tl	he C	CODE	field,	layer value is inputed.				
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Select "CODE" field, right-click, and choose "Field Calculator".

Then add "CONTENTS", and "ANGLE" field according to the attribute definition.

Definition Document of Topographic Database in Togo(トーゴ国地形測量データベース定義書)									
File Name		Ano,Pnt	Contents	Annotation Annotation 注記					
Data Type		Point	Code	8101 - 8103					
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 \ ³	ANGLE		Angle of Annotation		3	Shart Int		l J	Uhit is "Degree". Origin is East. Direction is anti-clockwise.
4									

As in the case of "CODE", by using "Field Calculator" function, calculate the "CONTENTS" and "ANGLE" field's values.

Open Arc Catalog, set Coordinate System ("WGS_1984_UTM_Zone_31N") of the edited data.

Period