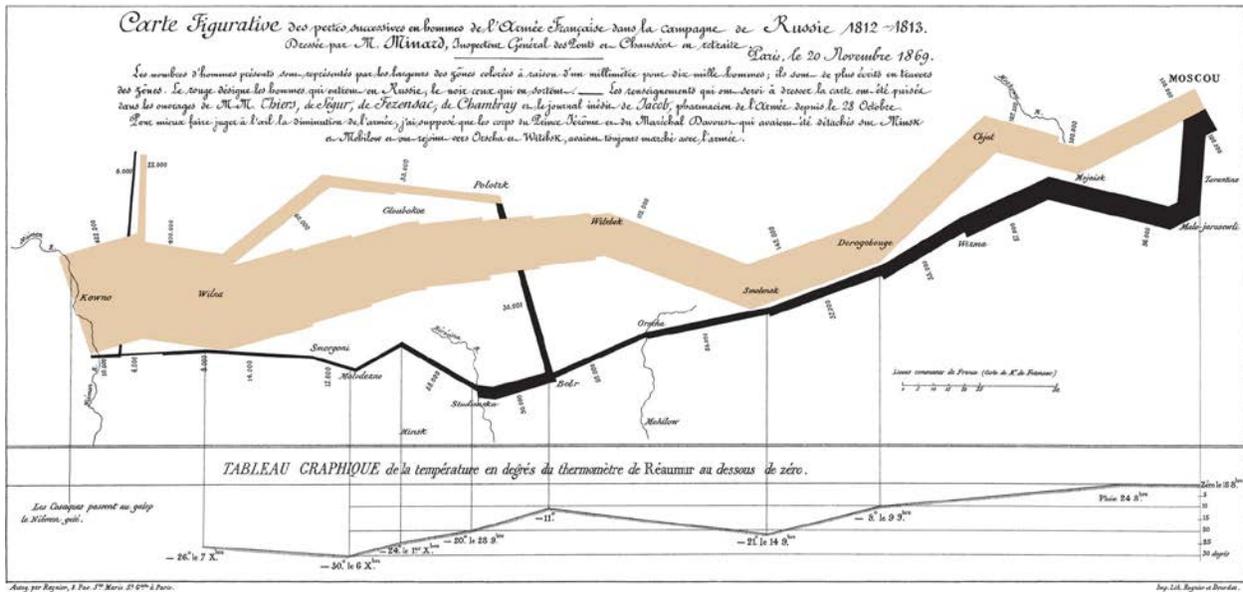# Cookbook 4 December 2013
Infographics and ModelBuilder

Overview

1. Infographics
2. Introducing ModelBuilder

Napoleon's Invasion of Russia
Show the army's direction of travel, the location the troops passed through, the size of the army as troops died from hunger and wounds, and the freezing temperatures they experienced.

Source: http://en.wikipedia.org/wiki/File:Minard.png

1) Infographics

The essence of science: Storytelling with data!

In GIS we have geospatial data so we can tell our stories with maps. But, just because we can does not mean that we (always) should!

For example: a service area analysis or viewshed analysis are forms of geospatial analysis that result in data and those you present and visualize…maybe as a map, maybe not.

Infographics are graphic visual representations of information, data or knowledge intended to present complex information quickly and clearly.

visual.ly: create and share infographics
http://visual.ly/

visual.ly Blog
http://blog.visual.ly/

Visualizing complex issues with data and design
http://www.visualizing.org/

FlowingData: great blog dedicated to data visualization
http://flowingdata.com/

How Diagrams Communicate (great video!)
http://www.vbnyc.com/design_intro_diagrams.html

infogr.am: create and share interactive infographics
http://infogr.am/

IBM Many Eyes: create and share infographics
http://www-958.ibm.com/software/data/cognos/manyeyes/

Hohli Online Charts Builder
http://charts.hohli.com

Stately: Maps of the US with Fonts!
http://intridea.github.io/stately/

FF Chartwell: Create graphs with Fonts!
https://www.fontfont.com/how-to-use-ff-chartwell

2) Introducing ModelBuilder

How many acres of forest are located within X feet of a road in town Y?

X = any distance
Y = any town

1. What's the workflow for this geospatial analysis?
2. What's the result?
3. How do you best report your result?
4. How do you best visualize your result?
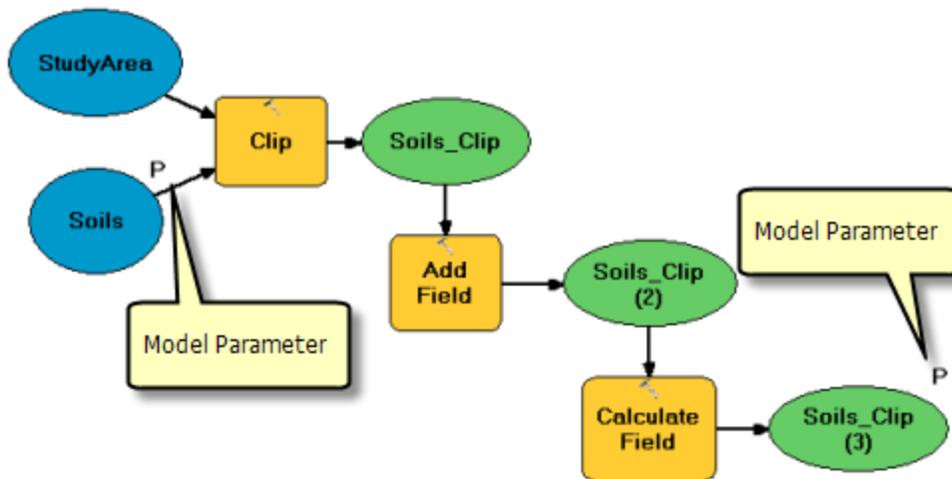
2.1) About Modelbuilder

ModelBuilder is an application with ArcGIS you can use to create, edit, and, manage models. Models are workflows that string together sequences of geoprocessing tools, feeding the output of one tool into another tool as input. ModelBuilder can also be thought of as a visual programming language for building workflows. *Or: an automated flowchart!*

Scenario:

You're assembling data for a specific study area, represented by the StudyArea variable in the model, and you need to clip several datasets to the study area. For each dataset you clip, you want to add a field and calculate the field, for example the area of the clipped dataset.

This works even better with model parameters: in the example below, the Soils and Soils_Clip (3) variables have been made model parameters.

Now when you run your model you can change the Soils parameter to something else, such as a vegetation dataset or layer. You can also supply a different output dataset name. When you click OK, the tool will run using the data you provide.

What is ModelBuilder?
http://resources.arcgis.com/en/help/main/10.1/index.html#//002w00000001000000

A quick tour of creating tools with ModelBuilder
http://resources.arcgis.com/en/help/main/10.1/index.html#//002w0000007m000000

2.2) Modelbuilder Example

How many acres of forest are located within X feet of a road in town Y?

X = any distance, Y = any town

1. **What's the workflow for this geospatial analysis?**
2. What's the result?
3. How do you best report your result?
4. How do you best visualize your result?

Workflow 1

BUFFER tool around roads, 100 feet, Dissolve Type = ALL.
CLIP tool to clip the land use polygons to the road buffer.
Select by Attributes the forested polygons.
Statistics, Sum

That works, but is inefficient if you need to analyze more than 1 town!

Workflow 2

Create a model that executes these 4 steps automatically!

That is no more work! Plus, with a little tweaking you can perform the analysis for any distance, any land use type, and any town!

2.3) Modelbuilder Tutorials

Tutorial: Executing tools in ModelBuilder
http://resources.arcgis.com/en/help/main/10.1/index.html#/Tutorial_Executing_tools_in_Model
Builder/002w0000007t000000/

This tutorial takes you step-by-step through creating a model and executing tools in ModelBuilder. You start by adding a tool to ModelBuilder and supplying values for the tool's parameters. This constructs a process. A model is built by connecting processes.

This tutorial builds a very simple model that identifies the vegetation types near proposed roads. In the model, the roads are first buffered using values from a distance field in the roads attribute table. The output from the Buffer tool is used to clip the vegetation data to create a dataset of vegetation types within the buffer polygons.

Tutorial: Creating tools with ModelBuilder
http://resources.arcgis.com/en/help/main/10.1/index.html#/Tutorial_Creating_tools_with_Mode
lBuilder/002w0000007v000000/

This tutorial takes you step-by-step through the process of creating a model tool. In this tutorial, the model built in the *Executing tools in ModelBuilder* tutorial is made into a useful tool by exposing model variables as model parameters.