

# Semi-Automated Map Layout Generation Using ArcObjects and VB.NET

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# Outline

## Purpose

Purpose

Functionality

## Methodology

Code Specifications

Minimizing User Input

## Implementation

Setting Up the Window in ArcMap

Dockable Window Options

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# Motivation

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- Little to no adjustments made by the user
- Adds in the map elements automatically (map title, legend, author, etc.)

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This will be an add-in for Esri's ArcMap (10.4) software. Current options for generating map layouts *can* take considerable time for the user.

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All Customizable

## 1. The required map elements

- Title
- Author
- Date
- Projection
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  - Data Sources
  - Descriptive Text
  - Page Orientation
  - Page Size

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    - Title
    - Author
    - Date
    - Projection
    - Scalebar
    - North Arrow
    - Legend
  2. Other elements and options
    - Subtitle
    - Data Sources
    - Descriptive Text
    - Page Orientation
    - Page Size
- Some or all of these map elements will either be added automatically, included as specified by the user, or omitted if unwanted.
  - Standard map elements such as the North arrow, legend, and scalebar will be automatically added without user input. These can be manually deleted if unwanted.

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## Technology Used

- Esri ArcGIS Desktop (ArcMap 10.4)
- Visual Studio 2015, Community Edition
- ArcObjects SDK (.NET)
- VB.NET programming language

## Libraries Referenced

- **Carto**—Primary library for page layout
- ArcMapUI
- Catalog
- esriSystem
- Display
- Geometry
- Geodatabase
- stdole

# Methodology

- Two ArcMap Add-ins:
  1. Button add-in: opens the dockable window
  2. Dockable window add-in: creates the map layout
- The button add-in allows the user to close-out the dockable window, and is available if the user forgets to close the dockable window with the tab option.
- Each option in the dockable window is written in VB.NET as a separate, private function that is called by the map generating button “on click” .

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- Users choose different options for the map layout (all are optional; if left blank, nothing will happen). The user specifies which options will be included (to some extent) within the dockable window interface.
- If the “Map Document Properties...” window has been filled out, then this will be automatically filled into the window.
  - This method allows for the most powerful use of this script, as the result requires *no additional input* by the user.

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# Adding the Dockable Window to ArcMap

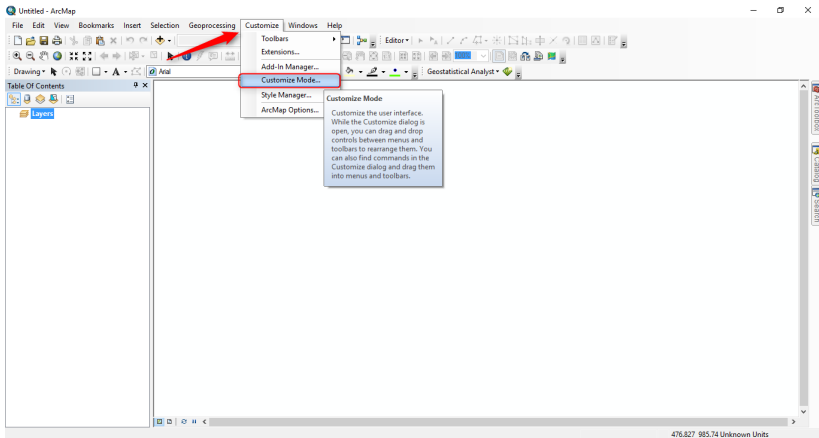
## Procedures

1. Open `MapLayout_Taliceo.sln` and navigate to Build → Build Solution<sup>1</sup>.
2. Open ArcMap. 10.4. Go to Customize → Customize Mode... → Commands → Add-In Controls.
3. Drag and drop Map Layout Options button to the Layout toolbar.

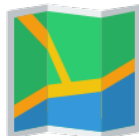
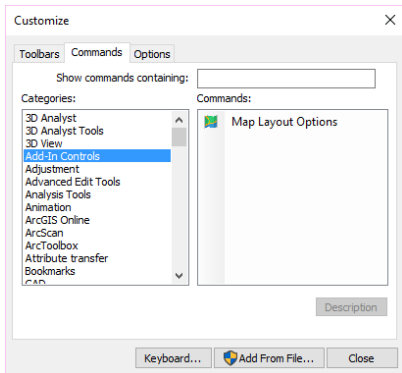
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<sup>1</sup>This only needs to be done the first time.

# Adding the Dockable Window to ArcMap



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# Adding the Dockable Window to ArcMap

Map Layout Window

**Partially Automated Map Layout**

Title:

Subtitle:

Author:

Credits:

Text:

Legend Alignment:

Text Box Alignment:

Page Orientation:

Portrait  Landscape

Page Size:

To Layout View...      Make a Map!

Export to PDF or Image

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To Layout View... Make a Map!

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### Legend & Text Box Alignment

- Bottom-Left
- Bottom-Right
- Top-Left
- Top-Right

### Page Size

- Letter (8.5in. x 11in.)
- Legal (8.5in. x 14in.)
- Tabloid (11in. x 17in.)

# Summary

- This ArcMap add-in creates a quick method of creating a map layout that incorporates all of the essential map elements.
- This program has the capability of choosing different page sizes and layouts.
- There is also the option of exporting to PDF or other graphic.
- Outlook
  - I can further improve on this by adding more page size options, as well as other aesthetic options.
  - I can update this program to work with ArcMap 10.5 and ArcGIS Pro in the future.



## For Further Reading I



Chang, Kang-Tsung. *Programming ArcObjects with VBA: A Task-Oriented Approach*. 2nd ed. Boca Raton: CRC Press, 2008. Print.



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“Data View/Layout View Changes–ArcMap 10.” *Arcgis 10.0–Data View/Layout View Changes–ArcMap 10–Geographic Information Systems Stack Exchange*. Web. 16 Apr. 2017.  
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## For Further Reading II



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<http://support.esri.com/technical-article/000007581>.



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