

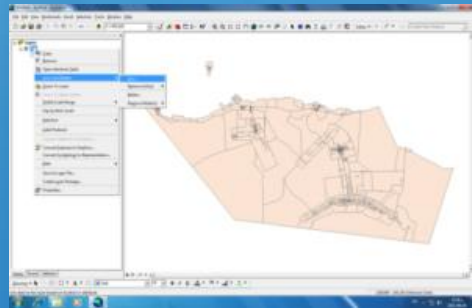
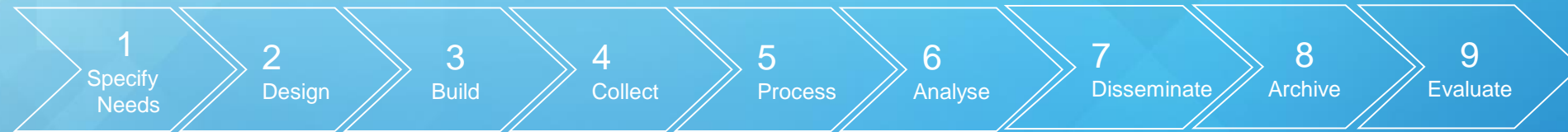
ArcGIS Platform For NSOs

Applying GIS and Spatial Thinking to
Official Statistics



Applying GIS at the NSO

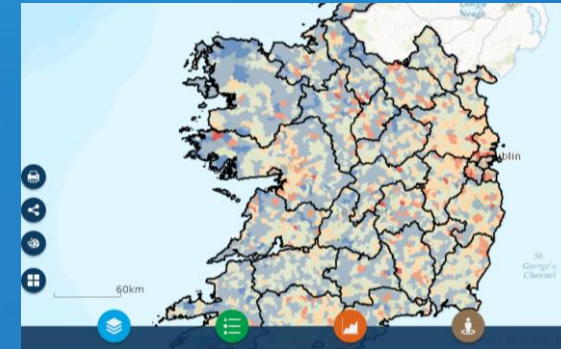
Generic Statistical Business Process Model (GSBPM)



Design and
production of
base maps and
enumeration areas

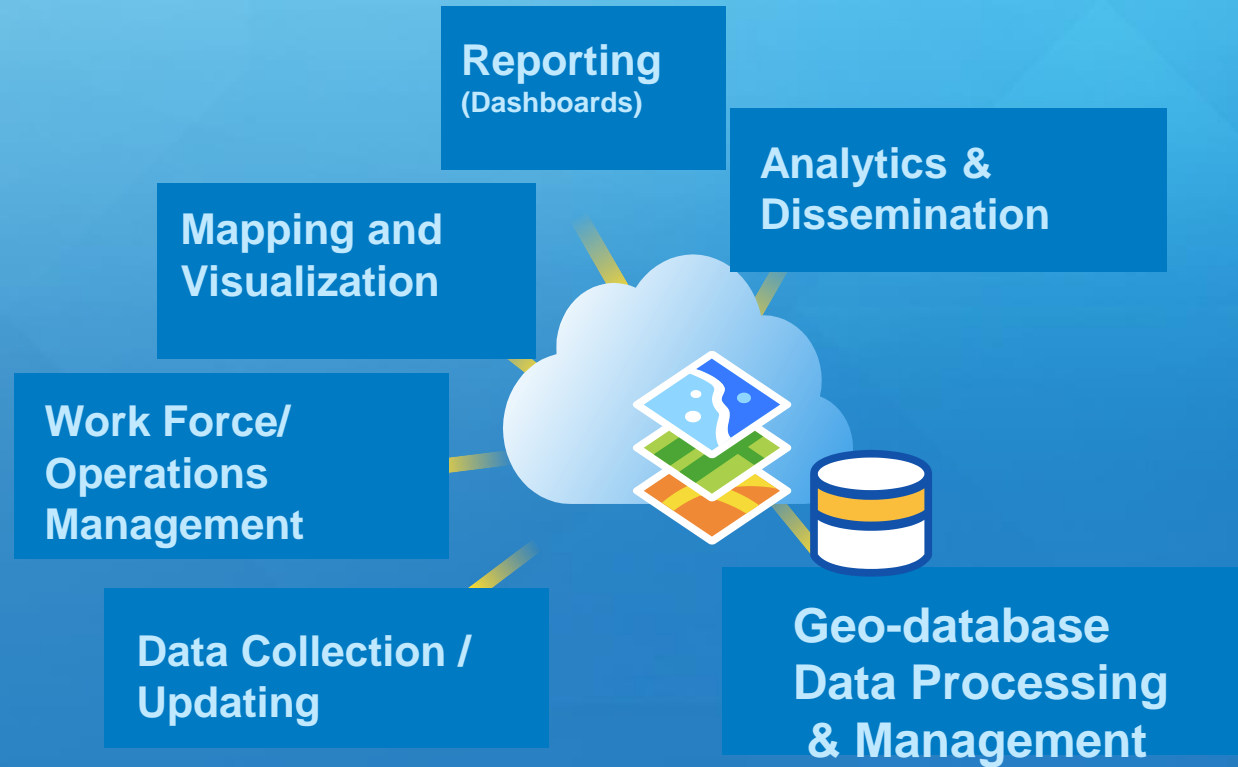


Data collection
using Mobile
devices, tablets
and laptops



Census dissemination
Online thematic maps

GIS for Official Statistics



**System of
Record**

**System of
Insight**

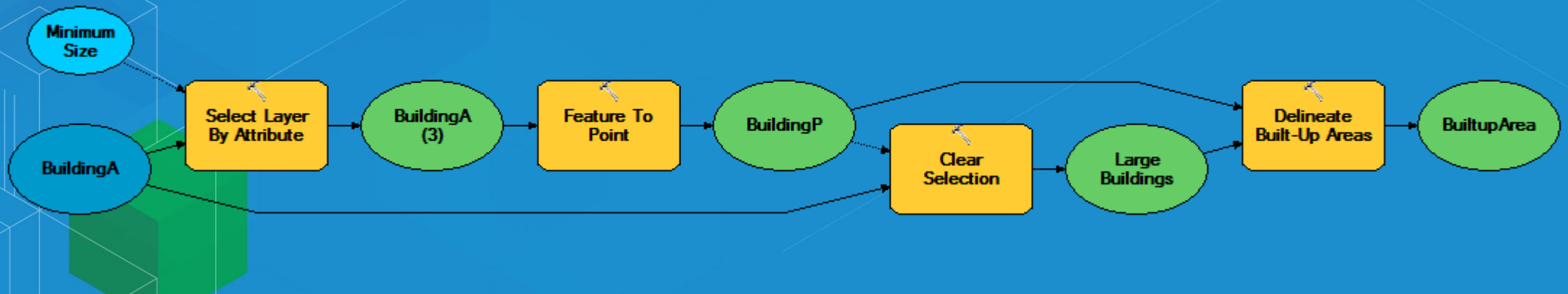
**System of
Engagement**



System of Record |

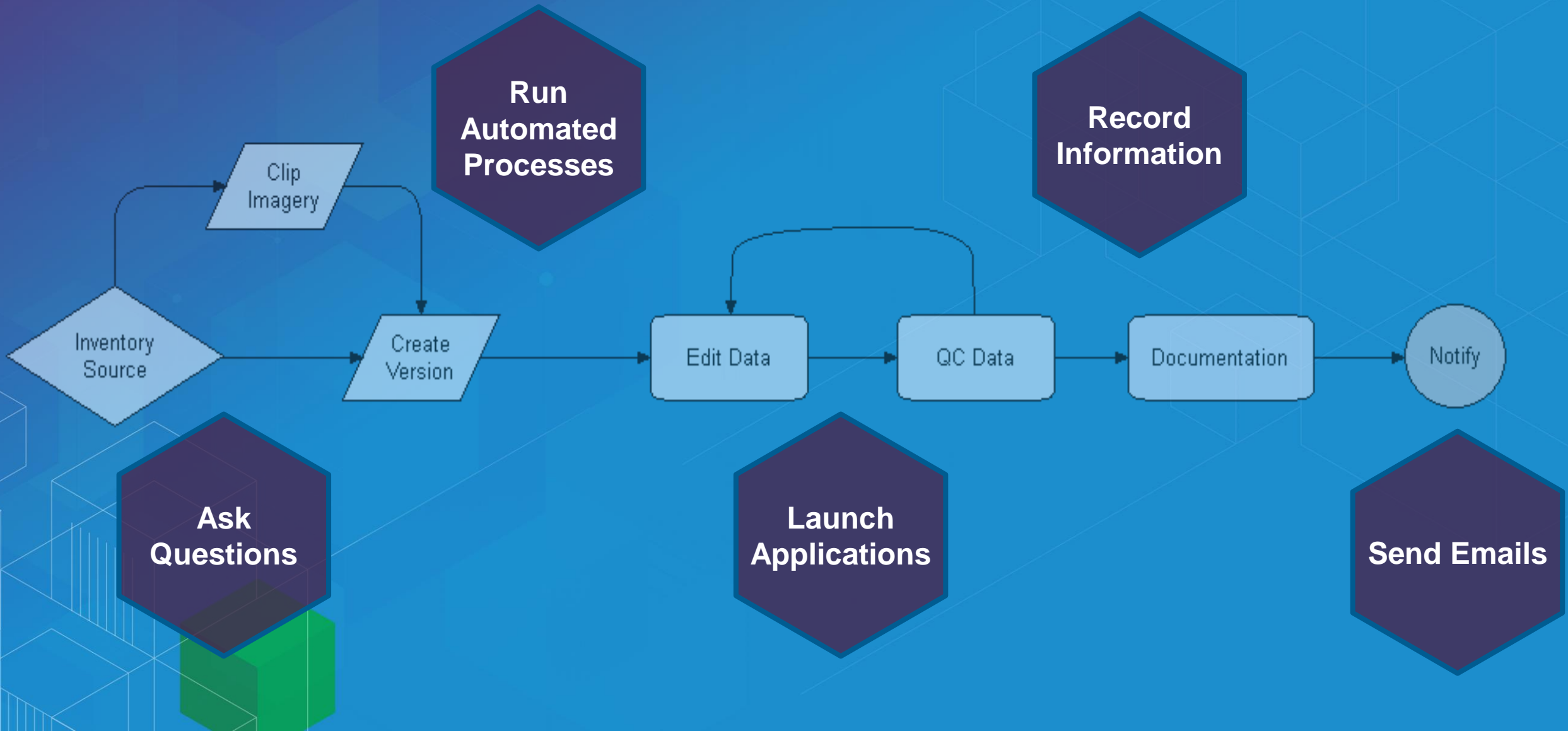
Planning

Automate process



Enhance workflows

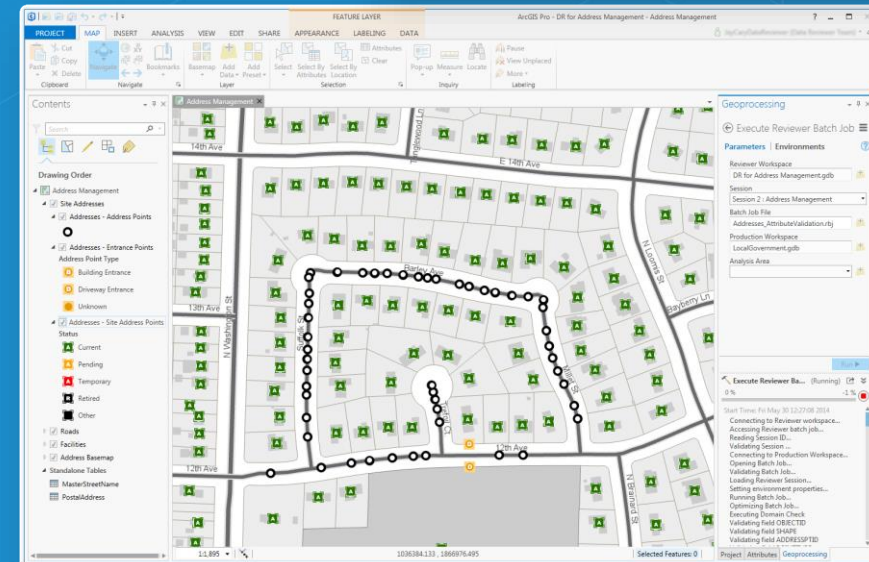
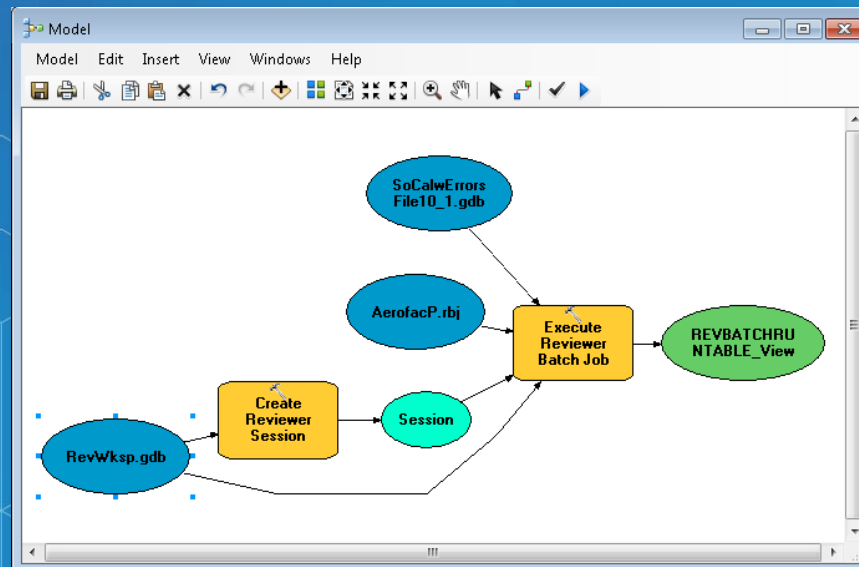
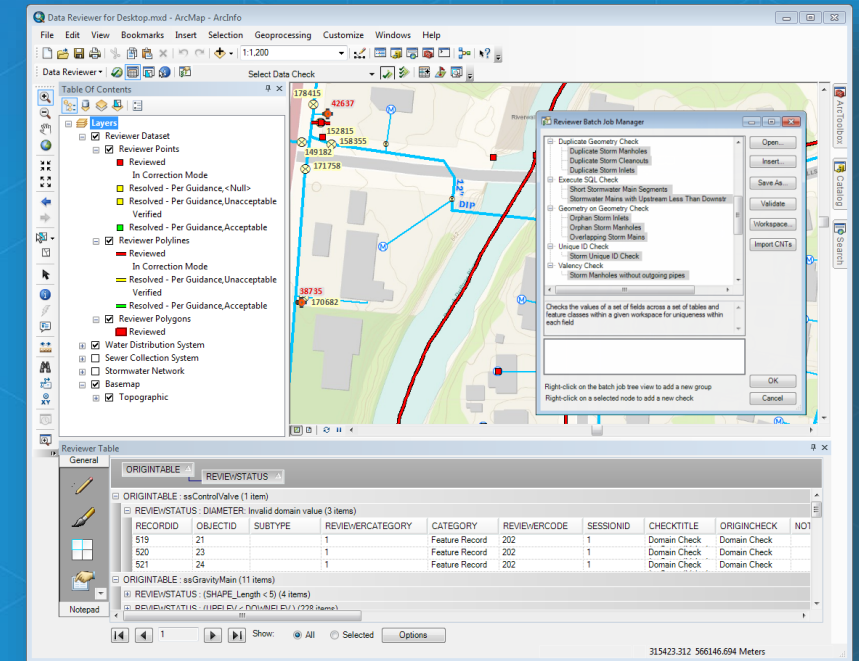
Sequence of steps and paths



Run Automated Models

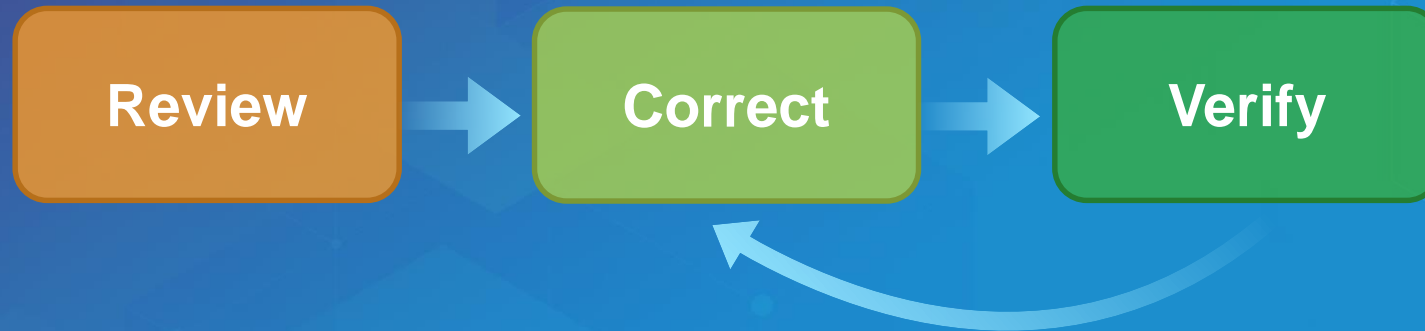
Execute data validation using

- ArcGIS Pro
- Model/Python script



Centralize Issue Tracking

Lifecycle Management



Reviewer Table

General

ORIGINTABLE ▾ REVIEWSTATUS ▾

ORIGINTABLE : ssControlValve (1 item)

REVIEWSTATUS : DIAMETER: Invalid domain value (3 items)

RECORDID	OBJECTID	SUBTYPE	REVIEWERCATEGORY	CATEGORY	REVIEWERCODE	SESSIONID	CHECKTITLE	ORIGINCHECK	NOT
519	21		1	Feature Record	202	1	Domain Check	Domain Check	
520	23		1	Feature Record	202	1	Domain Check	Domain Check	
521	24		1	Feature Record	202	1	Domain Check	Domain Check	

ORIGINTABLE : ssGravityMain (11 items)

REVIEWSTATUS : (SHAPE_Length < 5) (4 items)

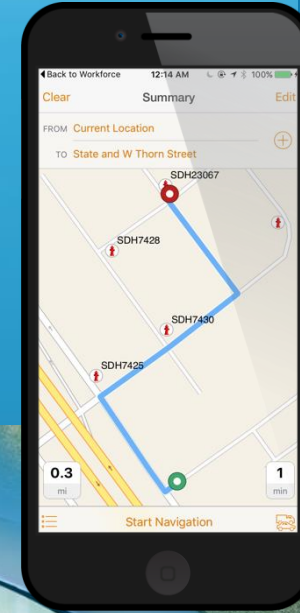
REVIEWSTATUS : (PIPE_EV < DOMAIN_EV) (228 items)

Notepad

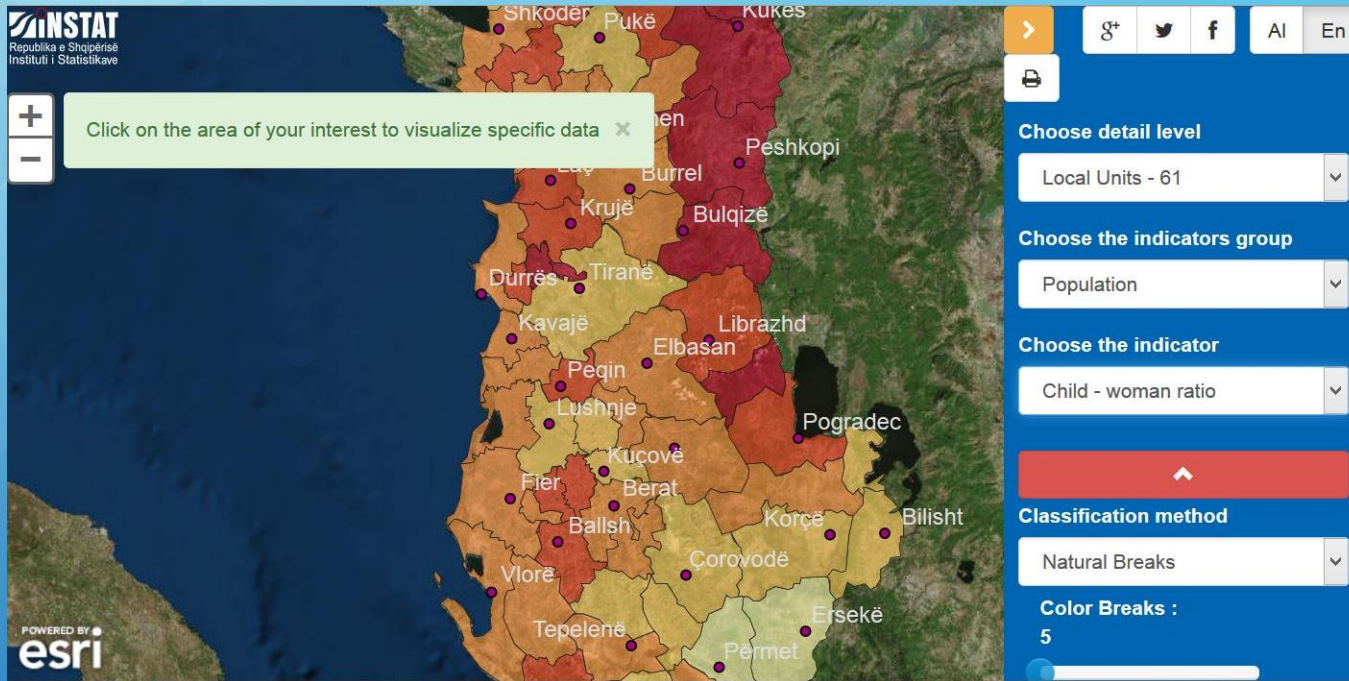
Show: ☒ All ☐ Selected Options

315423.312 566146.694 Meters

Data Collection



Data Dissemination



The screenshot shows the United States Census Bureau's "Census Business Builder: Small Business Edition" web application. The header includes the United States Census Bureau logo, the title "Census Business Builder: Small Business Edition", and links for "Privacy Act Statement", "FAQs", and "Send Feedback". The main heading is "Determine the Best Location for Your Business".

1. What type of business do you want to start or research?

Select your type of business first from the broad categories below and then from the detailed list provided

Construction, Food Services, Healthcare, Personal Services, Prof & Biz Services, Retail

2. Where are you considering locating the business?

Select the proposed location for your business by either clicking on the Go To My Current Location button or by searching for it

County, City/Town, or ZIP Code

Go to Map

... Click "Create Report" to go straight to the report for your type of businesses and location

Create Report

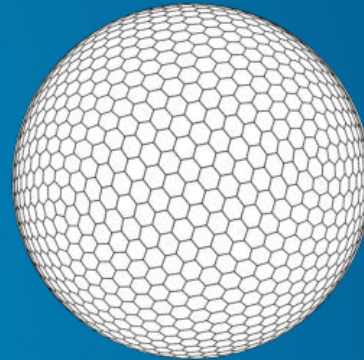
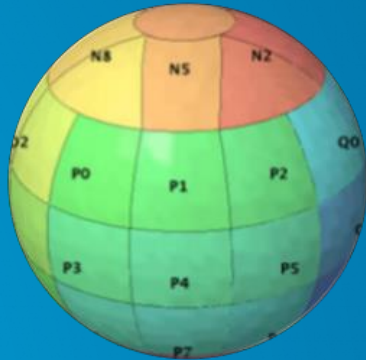
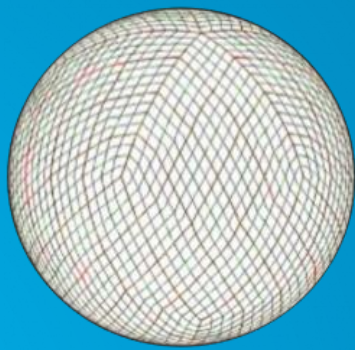
Don't see your type of business listed? Click [here](#) to request that your industry be added.



System of Insight

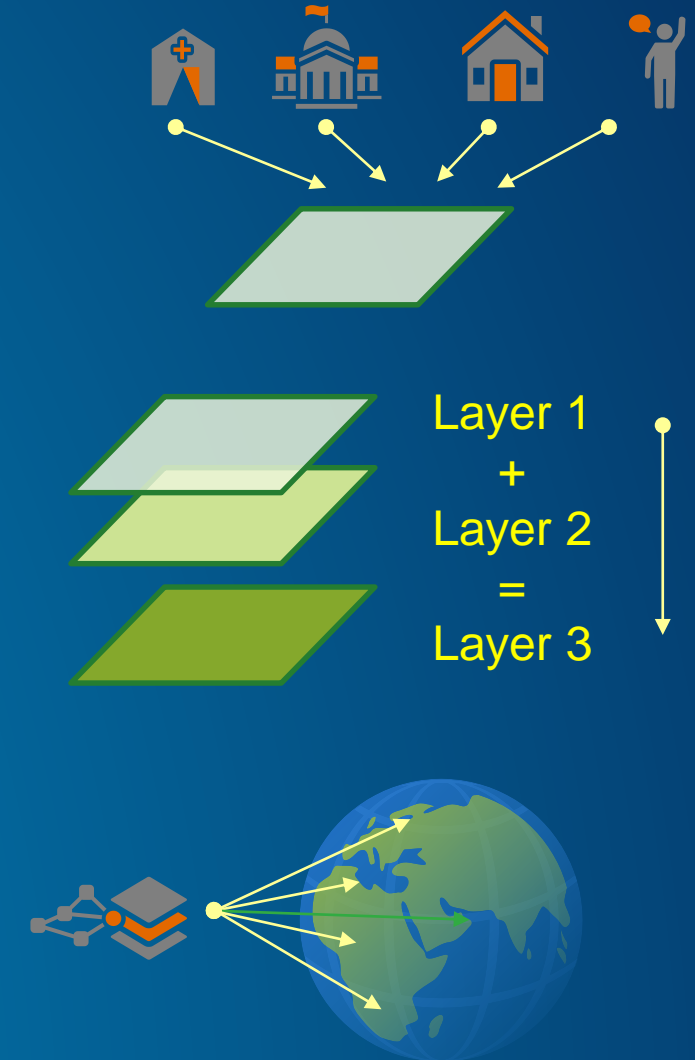
Discrete Global Grids

“..A DGGS is a **spatial reference system** that uses a hierarchy of **equal area tessellations** to partition the surface of the Earth into grid cells or their analogous lattice points...”



What can a discrete grid system do for you?

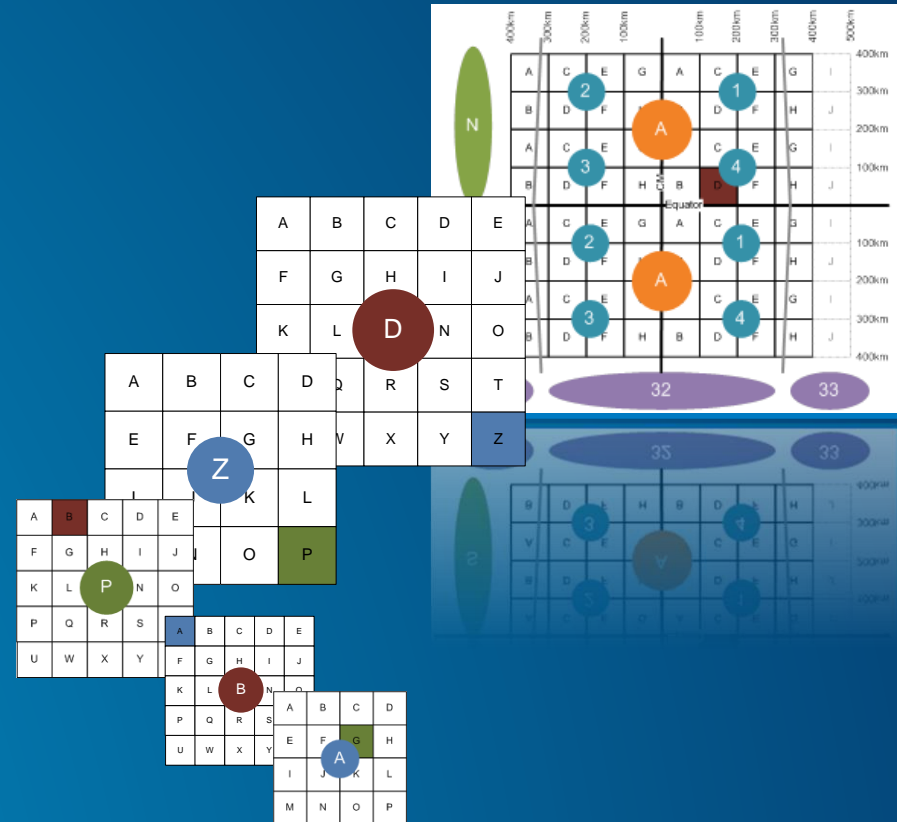
- Information recorded about phenomena at a location can be easily referenced to the explicit area of the associated cell
- Integrated with other cell values, and provides statistically valid summaries based on any chosen selection of cells
- Spatial analysis can be replicated consistently anywhere on the Earth independent of resolution or scale



An example of a discrete grid system - GGRs

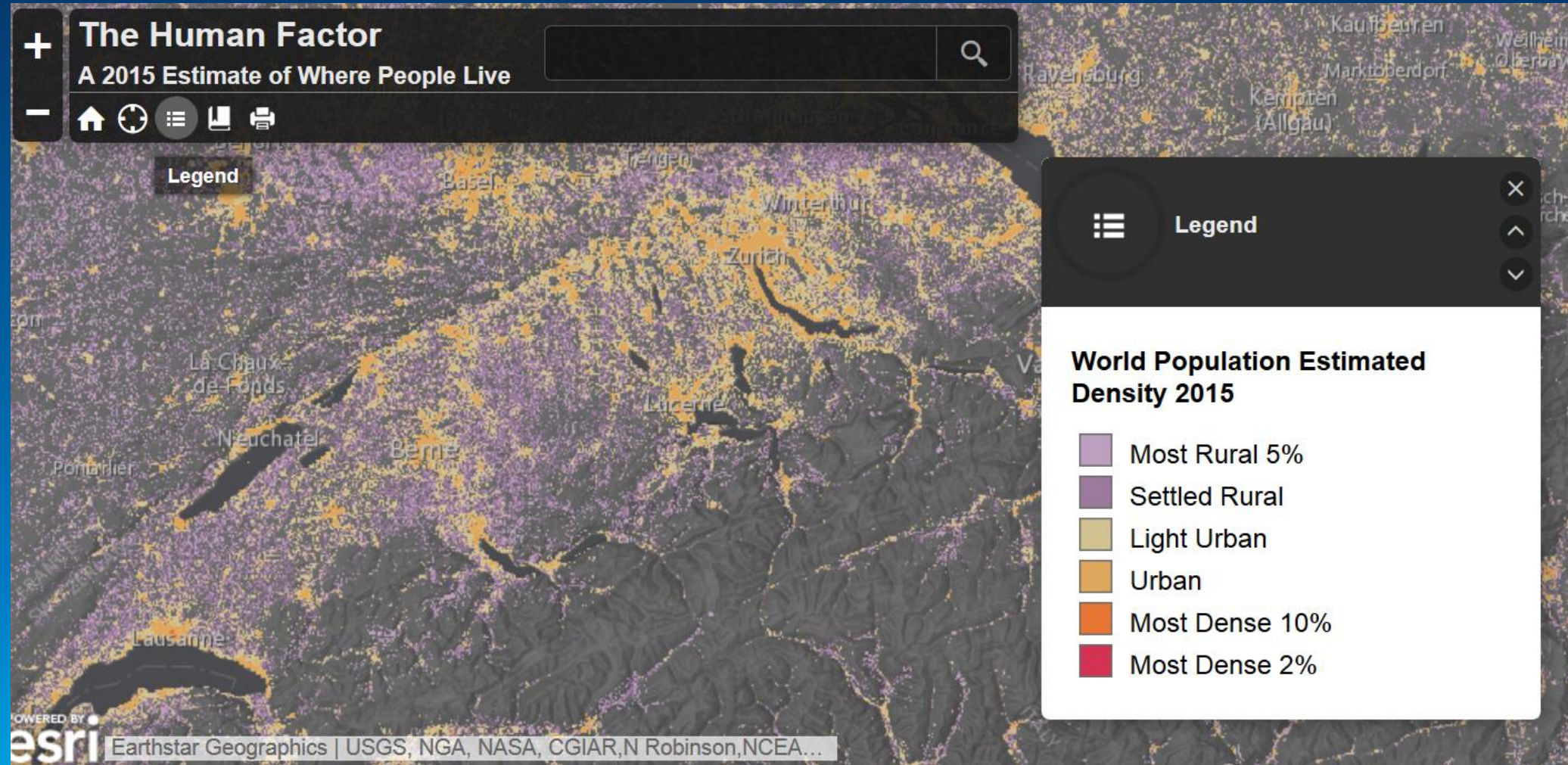
Introduces a unique horizontal definition / identification of a quadrant and centroid down to any level on the globe

100.000 km	N32A4D
20.000 km	N32A4DZ
5.000 km	N32A4DZP
1.000 km	N32A4DZPB
0.200 km	N32A4DZPBA
0.500 km	N32A4DZPBAG
0.010 km	N32A4DZPBAGA
0.002 km	N32A4DZPBAGAA
.....	Etc.



Hemisphere	UTM zone	Band	Quadrant	100 km block	20 km block	5 km block	1 km block	0.2 km block	0.05 km block	0.01 km block	0.002 km block
N	32	A	4	D	Z	P	B	A	G	A	A

World Population Estimate



<https://blogs.esri.com/esri/esri-insider/2016/03/30/updated-population-dataset-sharpens-focus-on-the-human-footprint/>

Welcome to the R – ArcGIS Community

Combine the power of ArcGIS and R to solve your spatial problems

The R – ArcGIS Community is a community driven collection of free, open source projects making it easier and faster for R users to work with ArcGIS data, and ArcGIS users to leverage the analysis capabilities of R.



Need the R Statistical Software? [Download it now.](#)

r-bridge-install
Python

Install the R ArcGIS Tools

🔗 8 ★ 24

r-bridge
C++

Bridge library to connect ArcGIS and R,
including `arcgisbinding` R library

🔗 3 ★ 17

r-sample-tools
R

Sample tools illustrating R usage in
geoprocessing scripts

🔗 3 ★ 20

BROWSE ON GITHUB

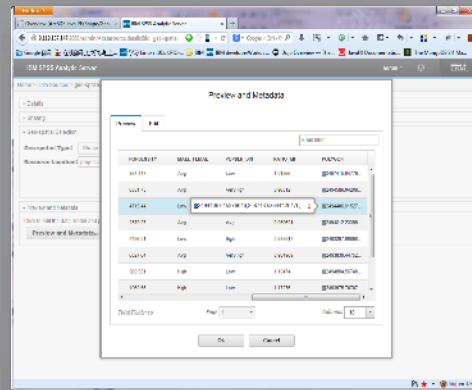
IBM Alignment with the Esri Platform

IBM DBMS, and SPSS statistics software that integrates Esri software libraries and uses the ArcGIS platform



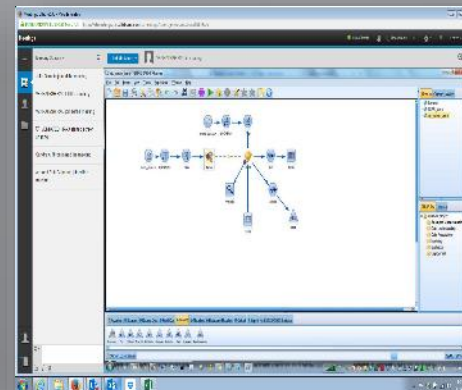
IBM DB2, Informix

Built with Esri PE and Spatial Libraries



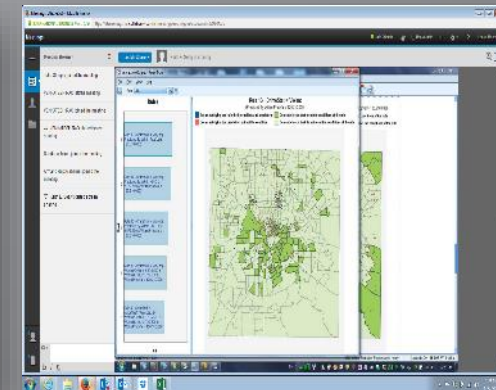
SPSS Analytic Server

Built with Esri PE and Spatial Libraries, Java API



SPSS Modeler

Built on SPSS Analytic Server



SPSS Statistics

Built on SPSS Analytic Server

IBM has four extensions available:

SPSS Modeler Business Partner

Web-Heatmaps

CensusTracts.shp → CrimeStat → Web Heat Maps

esri

Create interactive heatmaps using different Esri Basemaps

R Geospatial

[Go to Repository](#)

SPSS Modeler Business Partner

Reverse-Geocoding-Esri

User Input → Reverse Geocoding → Table

esri

Code a point location (latitude, longitude) to a readable address or place name.

R Geospatial

[Go to Repository](#)

SPSS Modeler Business Partner

Publish-to-ArcGIS

Data → Sort → Publish to ArcGIS

esri

Publish your SPSS analysis to Esri ArcGIS platform.

R Geospatial

[Go to Repository](#)

SPSS Modeler Business Partner

Get-Coordinates-Esri

User Input → GeocodingESRI → Table

esri

Get the latitude and the longitude of a location in IBM SPSS Modeler using Esri services

R Geospatial

[Go to Repository](#)

<http://ibmpredictiveanalytics.github.io/>



System of Engagement

Open Data

Share



Map and feature services as complete services or individual layers.



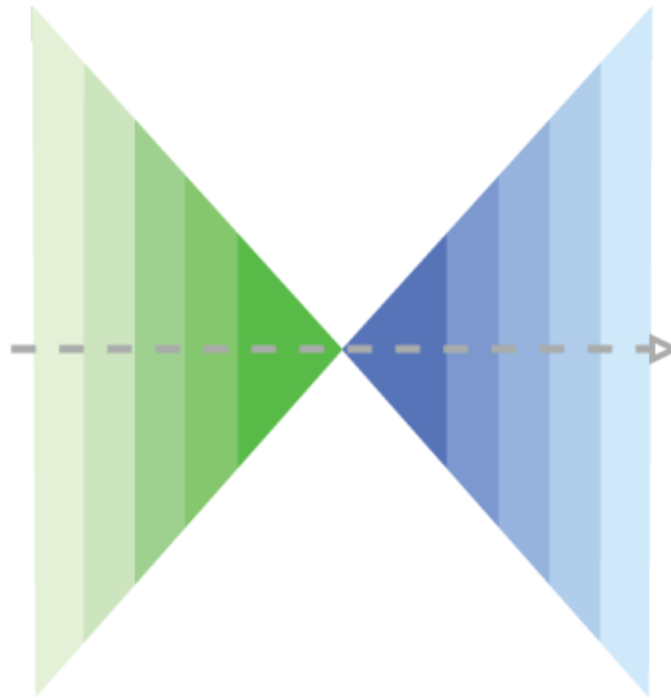
Image services.



Non-spatial data like spreadsheets, tables and CSVs.



Web maps, apps, documents, PDFs, web links, and more.



Your data will be available via:



Download - Download all of the data or a filtered subset directly from the source in multiple formats



API - Access data directly as GeoJSON or GeoServices.



DCAT - Federate your data simply by sharing a standards compliant catalog

Open Data

A story map



Modernization of Statistics: Dissemination using GIS

Success Stories

RWANDA

National Institute of Statistics of Rwanda

GIS Tools for Monitoring Support of National Development Indicators

"GIS is a very important tool in our daily work, as you can analyze statistical data in a spatial manner. Almost anybody can be an end user and can benefit from the system. Therefore, we are committed to increase the transparency and the dimensions of our existing data, as well as of the new data we will collect from the census and other important statistical activities. Maps showing the statistical data will facilitate dissemination, accessibility, and planning and decision making tremendously."

- Florent Bigirimana, Head of the GIS section of the National Institute of Statistics of Rwanda.

Read more on how GIS Supported Rwanda's 2012 Statistics [here](#).

IRELAND

Census 2016 Preliminary Results

All Island Atlas Observatory



nlsr
NATIONAL INSTITUTE OF
STATISTICS OF RWANDA

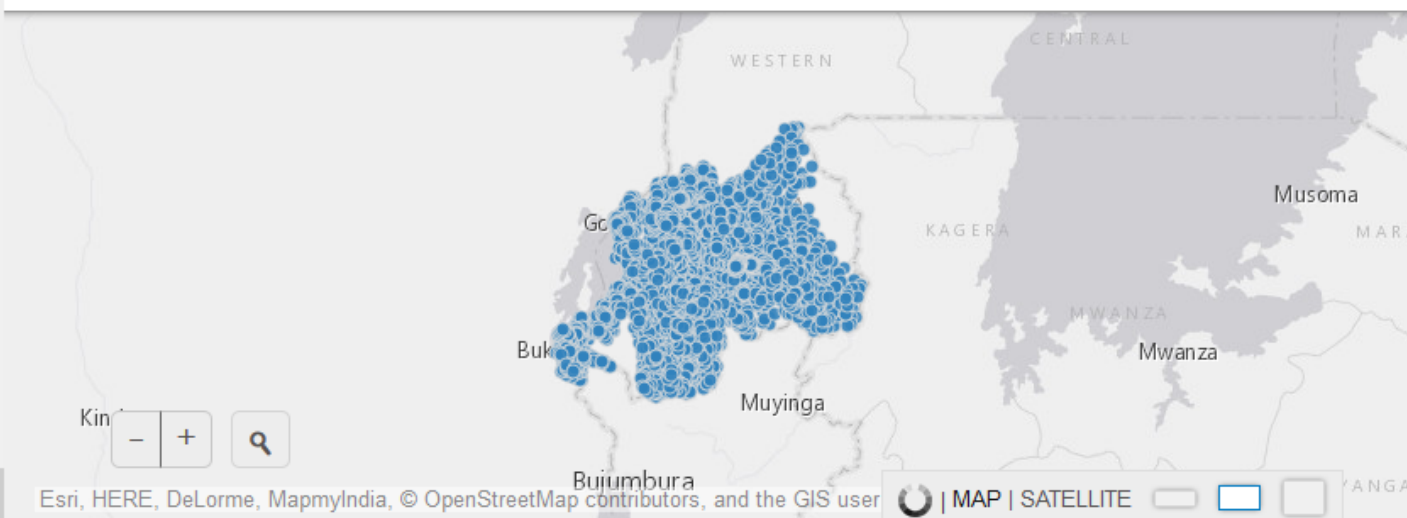
Geodata Portal

Search for open data



☐ SEARCH WITHIN MAP

[My Activity](#)



School Establishments 2012

[Open In ArcGIS](#)

[Share](#)

[Download Dataset](#)

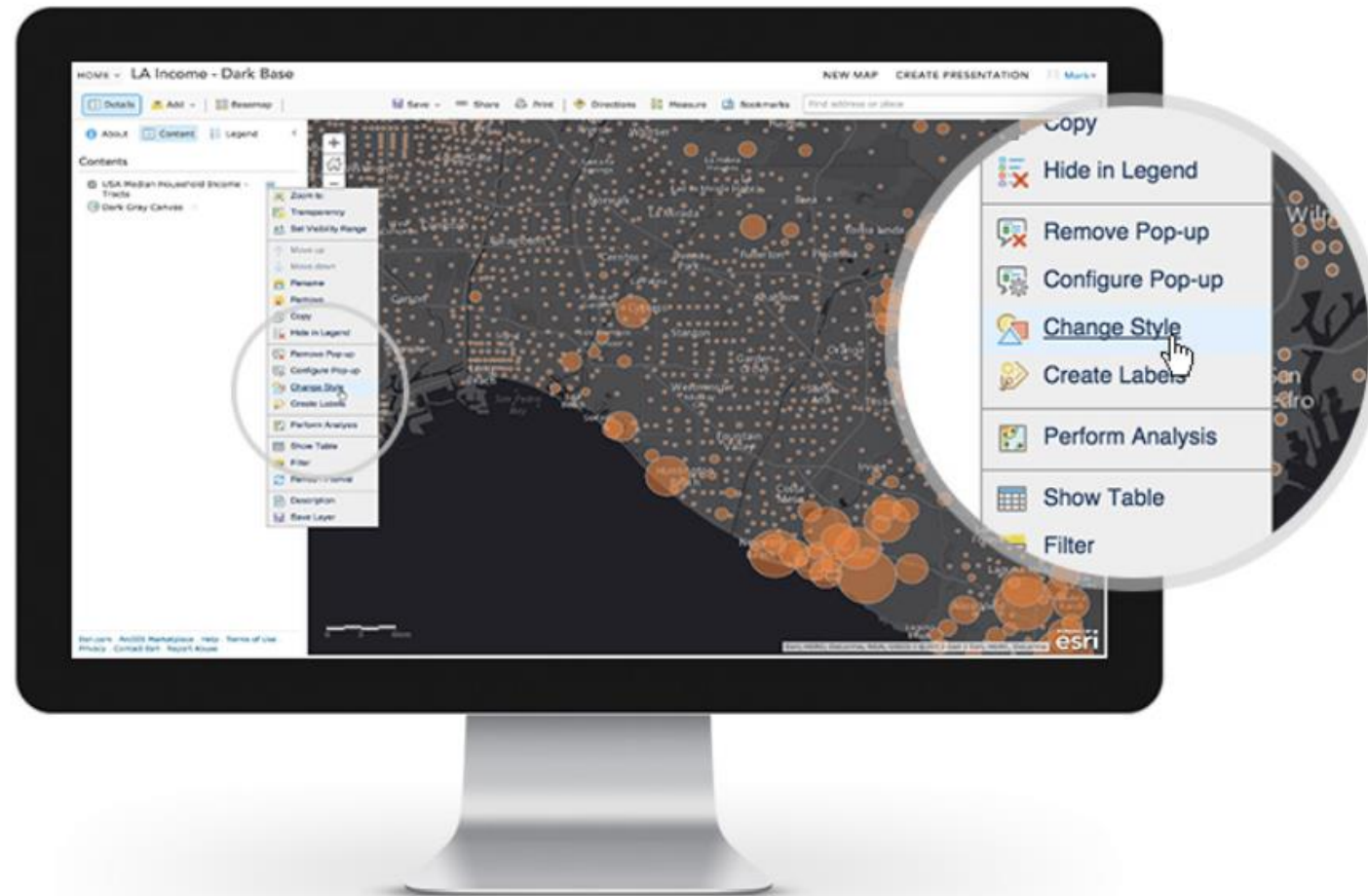
[APIs](#)

[Details](#)

[Table](#)

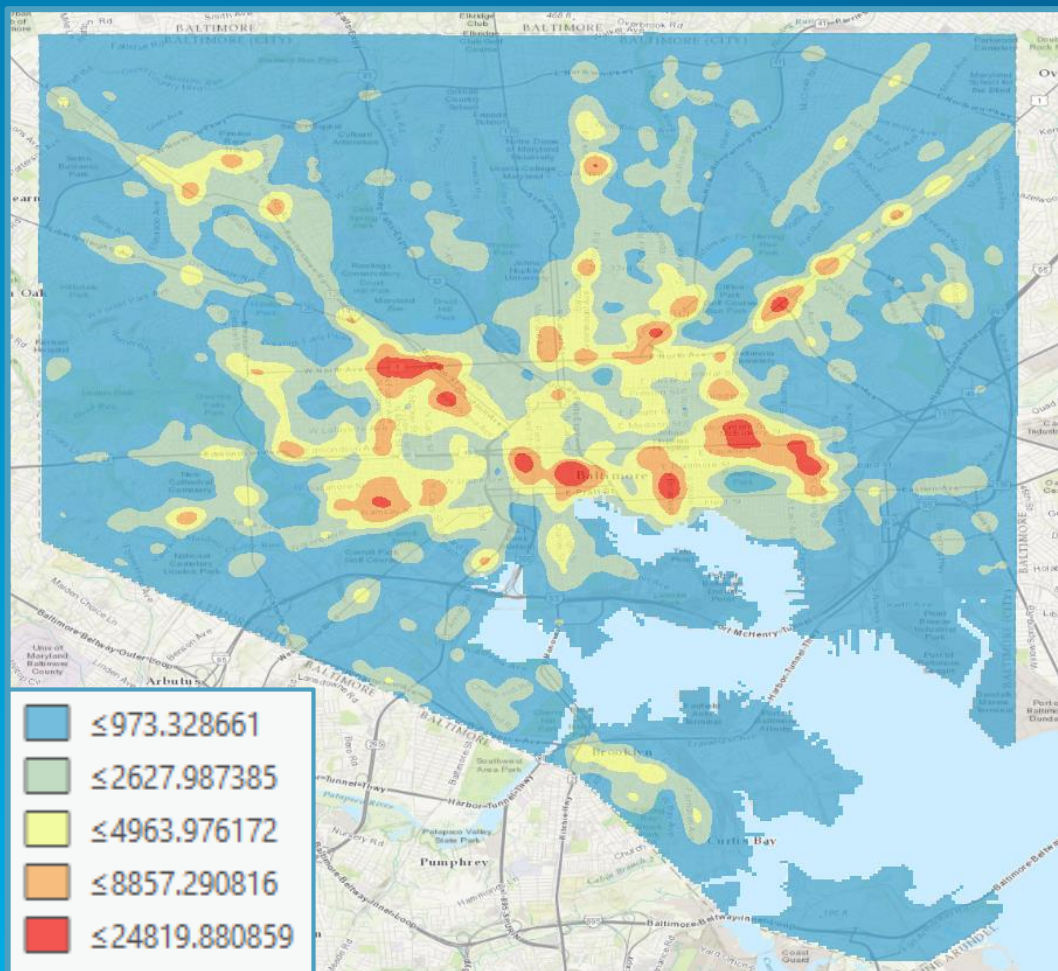
[Charts](#)

Smart Mapping

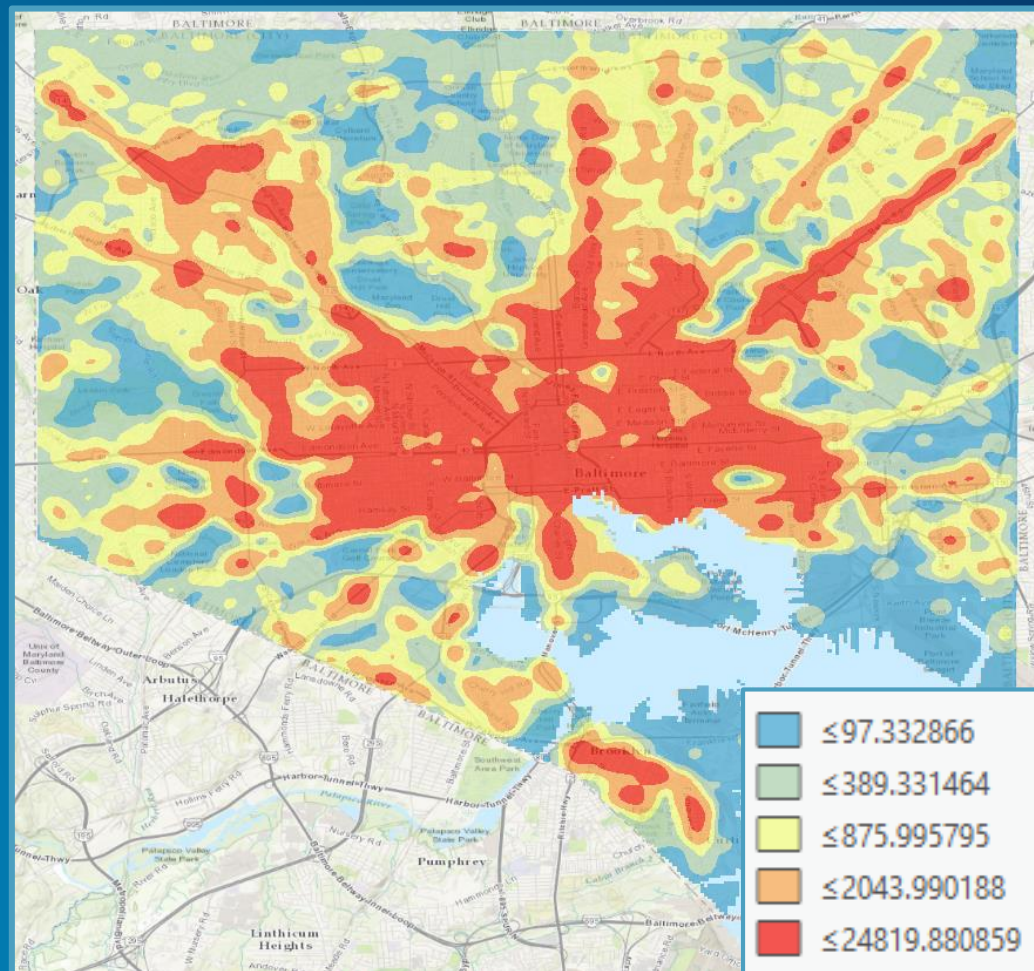


The subjectivity of visual pattern analysis

Natural Breaks



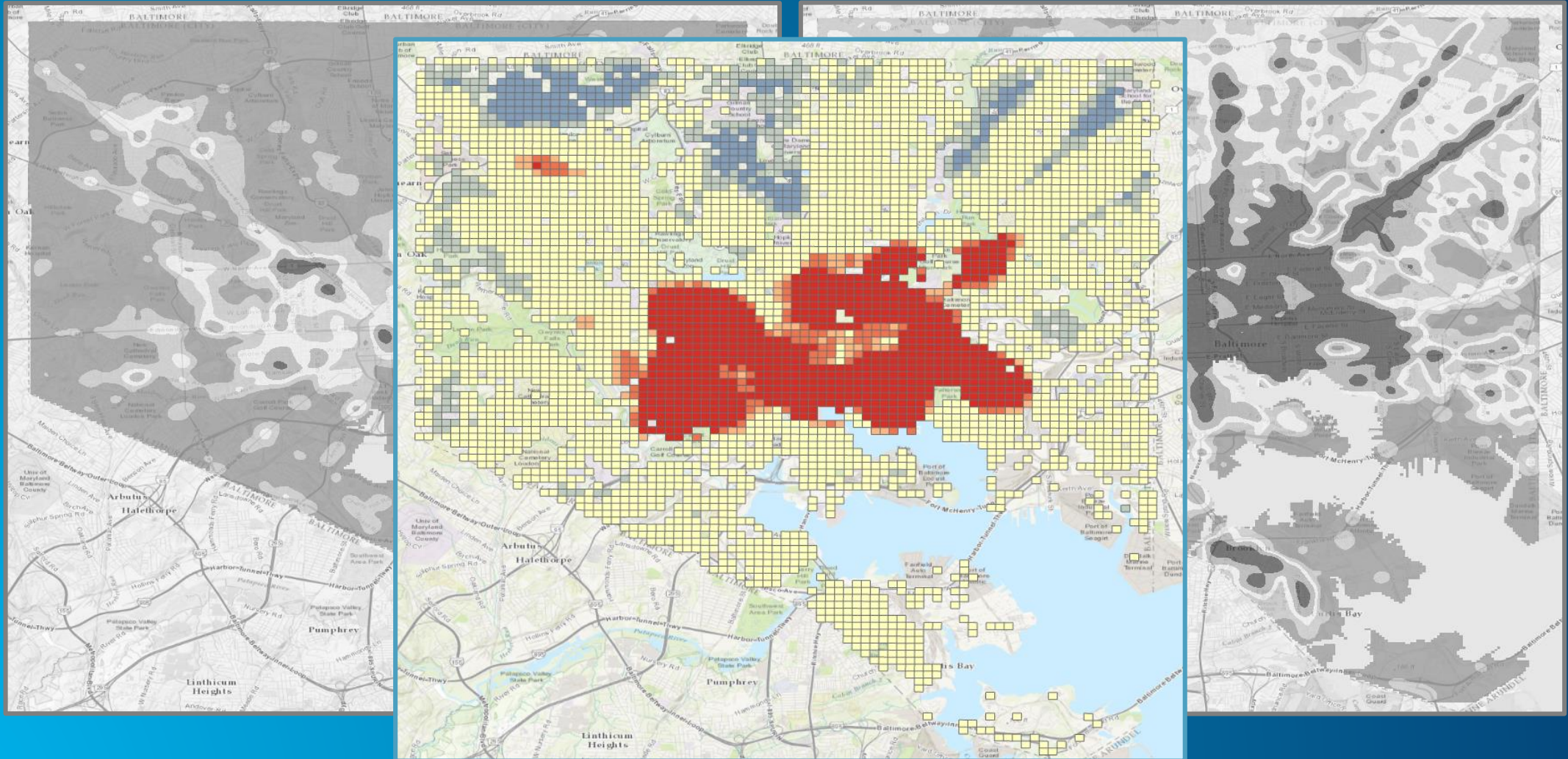
Quantile



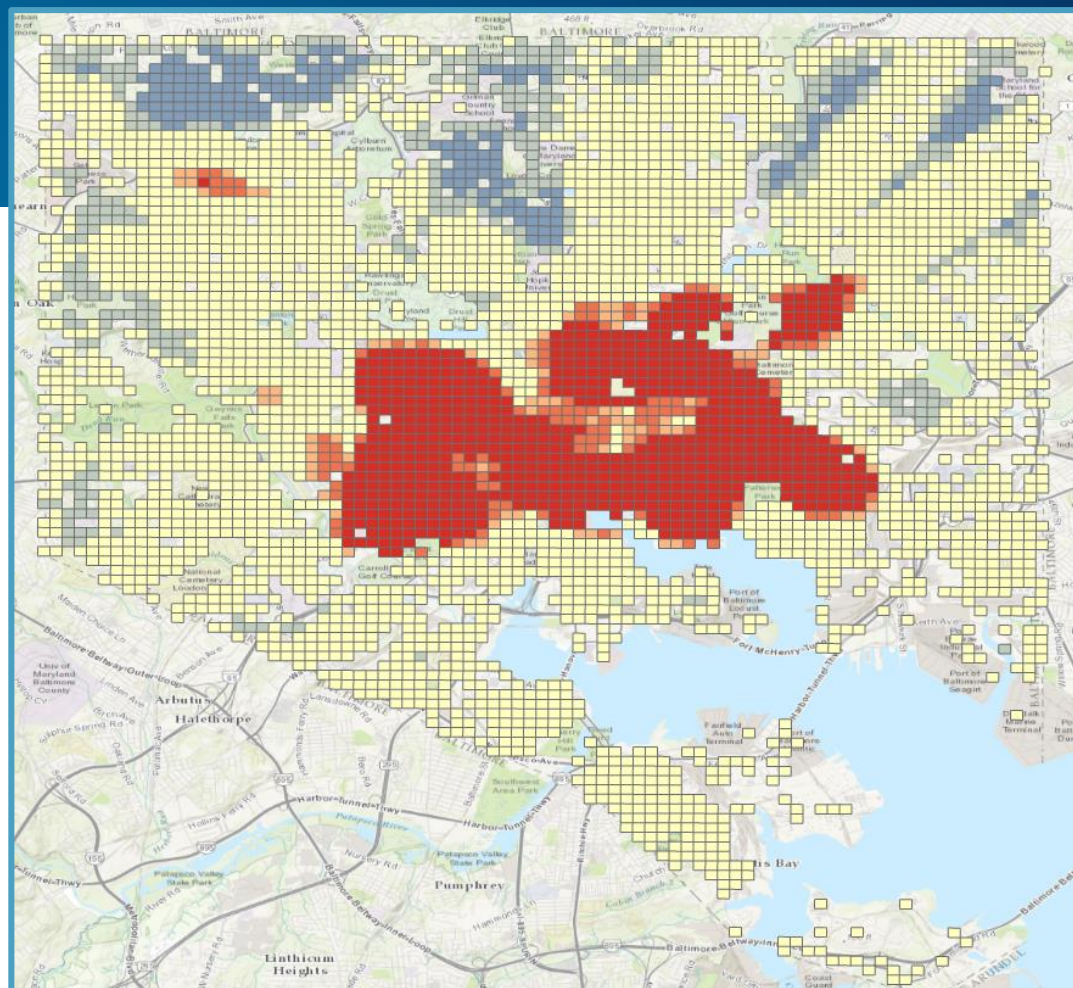
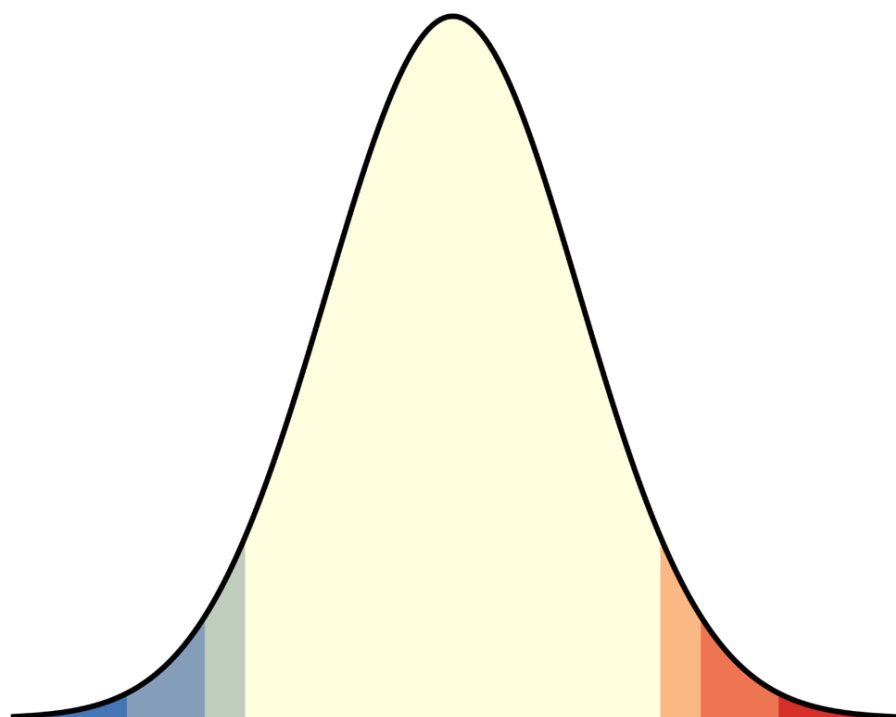
Where are the hot spots? Where is the variation greater?

Minimizing the subjectivity

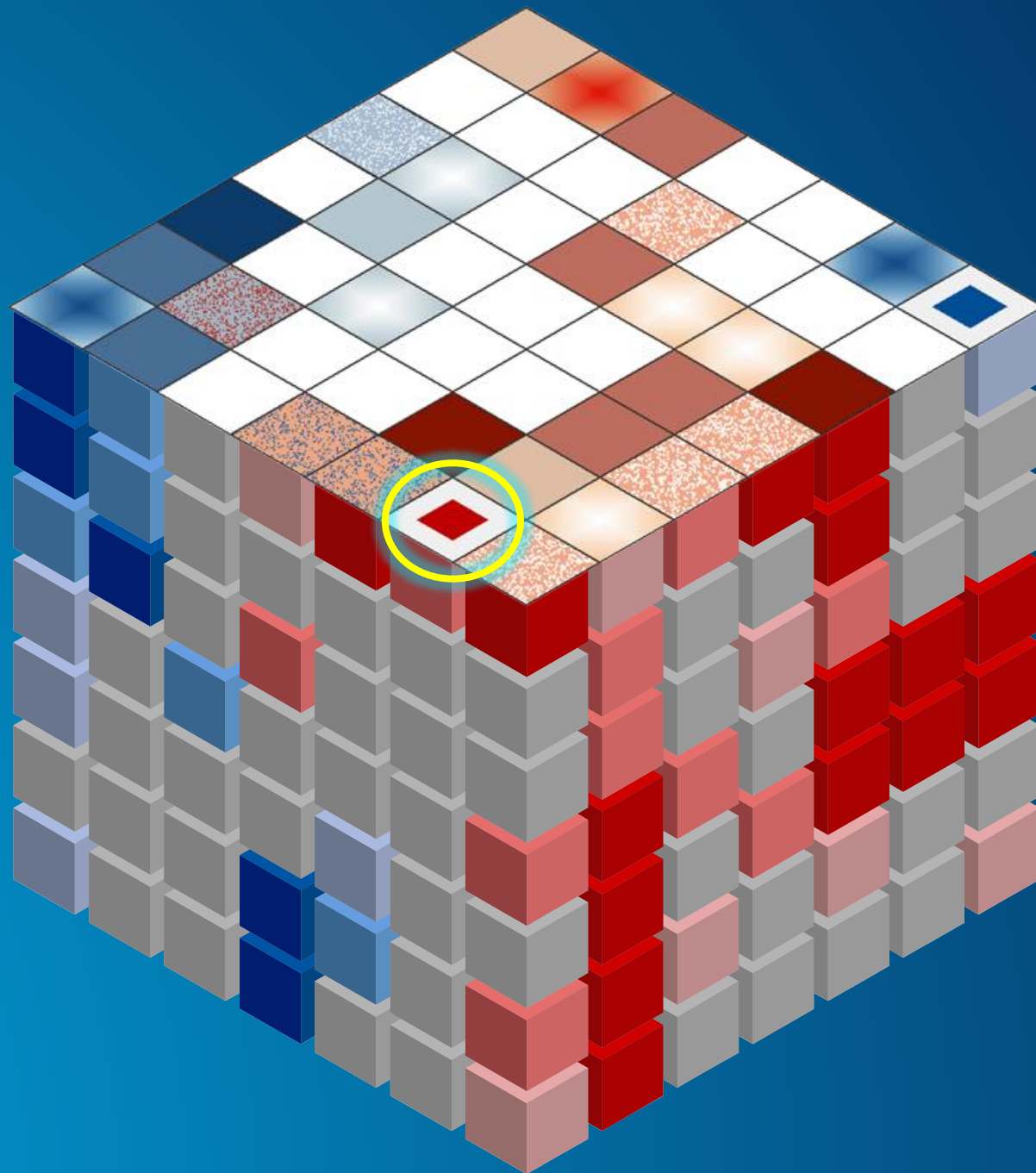
Turning the map into information



“...everything is related to everything else, but near things are more related than distant things.”



z-scores	...-2.58	-1.96	-1.65	0	1.65	1.96	2.58...
p-values	...0.01	0.05	0.10	0	0.10	0.05	0.01...



Understanding the SDGs



Location Platform Can Support the NSO Enterprise



GIS Empowers Everyone

Expanding Impact Across the Organization



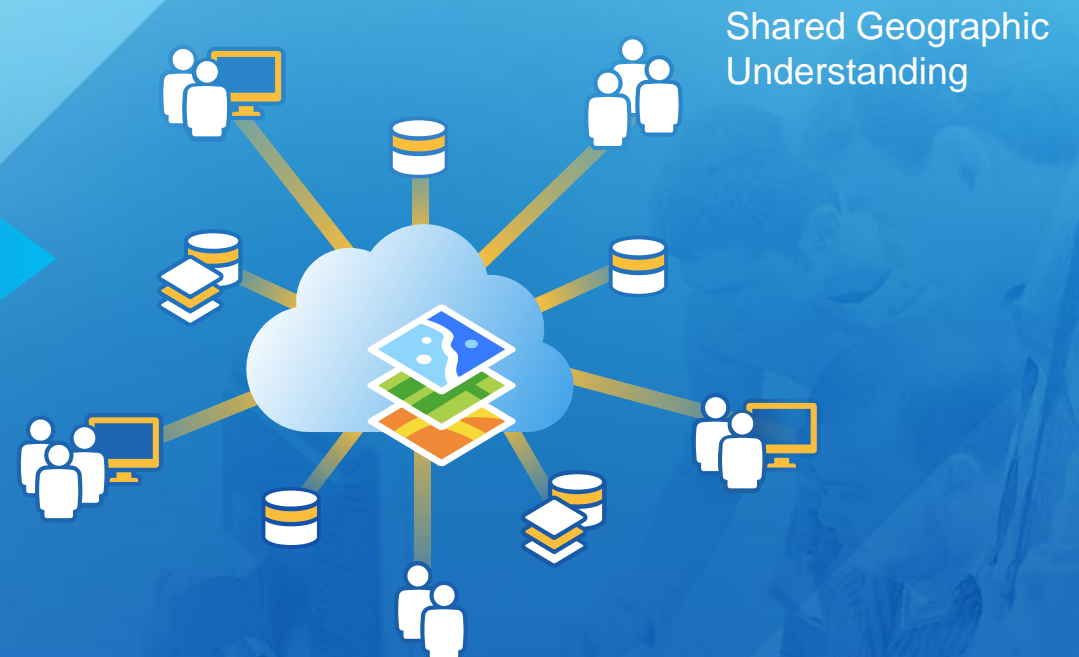
Providing Everyone the Geographic Advantage

GIS Transforms Organizations

Creating Shared Information and Facilitating Collaboration



Networked

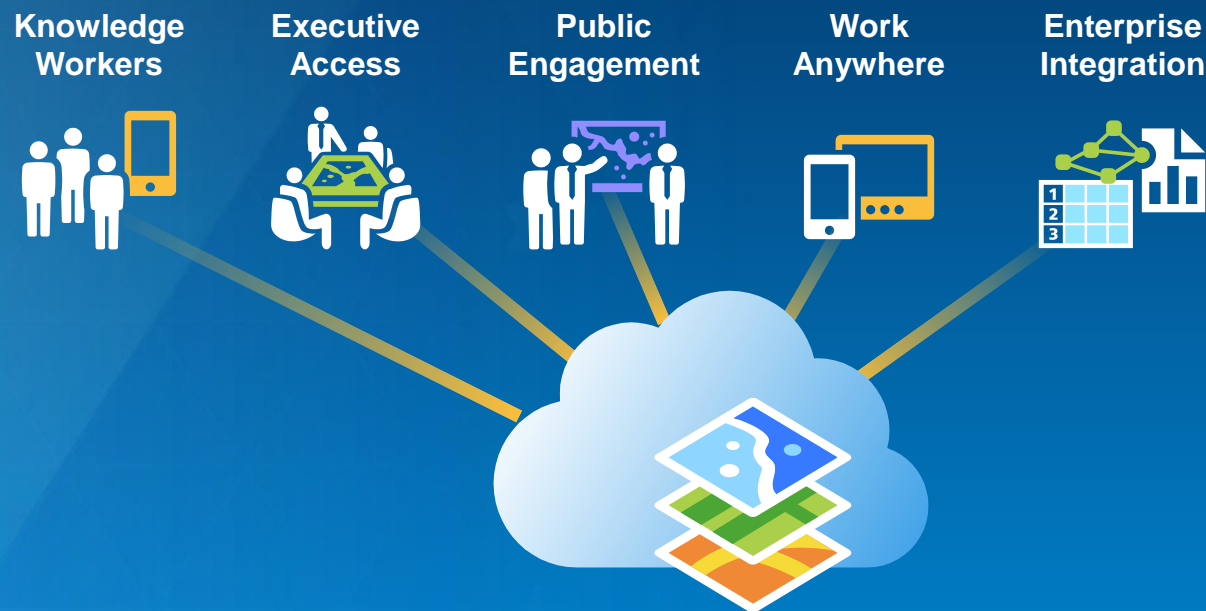


Opening Access and Engaging Everyone

An Integrated System...

Requires More Than Data and Technology

- Vision and Leadership
- Understanding How GIS Contributes
- Planning and Governance
- Apps That Are Relevant
- Good People



A Culture of Sharing and Collaboration

VISION

A Geographic Platform
for Official Statistics

