

Creating a Cloud Based Data Model for School Boundary Collection

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SANAMATRIX



School Boundary Geodatabase History

§ Continuation of the SABINS project

§ Headed by Prof. Salvatore Saporito, The College of William & Mary

§ David Van Riper, Minnesota Population Center

§ www.sabinsdata.org

§ First released in the SDDS Map Viewer in May 2012

§ 2009-2010 school boundaries for the largest 350 districts

§ <http://nces.ed.gov/surveys/sdds/ed>



School Boundaries Collection Initiative

- § Required OMB Clearance
- § Collection of school attendance areas for all 13,000+ U.S. school districts
- § Combination of data collection by Census and a “group-sourced” mapping effort
- § The 2013-2014 school year will serve as a trial year
- § Census Bureau is summarizing the data by school boundary

School District Contact and Data Tracking Tool

- § Tracks all contact between the district and the Census collection team
- § Stores information about the original dataset
- § Records the date completed and user name for each processing step
- § Generates a variety of reports
- § Integrates with the School Boundary Collection app

Edit

Delete this Data Summary

LEA: Arlington County Public Schools
 IFA ID: 5100770
 Contact: Gerry Bourne
 Year Range: 2010 - 2011

Data Is Ready: Date Range Indicated On Website: Is Data Available Online: Processed By Third Party:

Online Data URI:

<http://www.arcgis.com/home/item.html?id=65b4c05498c94474bc8f5afd357245e6>

Projection:

File Transmission Method: Downloaded

File Type: PDF Map

Comments:

1a) PDF Has Been Digitized

By: aconver

% Complete:

Start Date:

Last Updated: 3/06/2013

1b) Previous Data Used As Template

By:

Date:

1c) Imported into Geodatabase

By:

Date:

2) Added & Populated SCHNAM & NCESSCH Fields

By: aconver

Date: 3/06/2013

3) 1st QA Complete- Feature Class Loaded to the Cloud

By: aconver

Date: 3/05/2013

4) 2nd QA Complete

By: rcostas

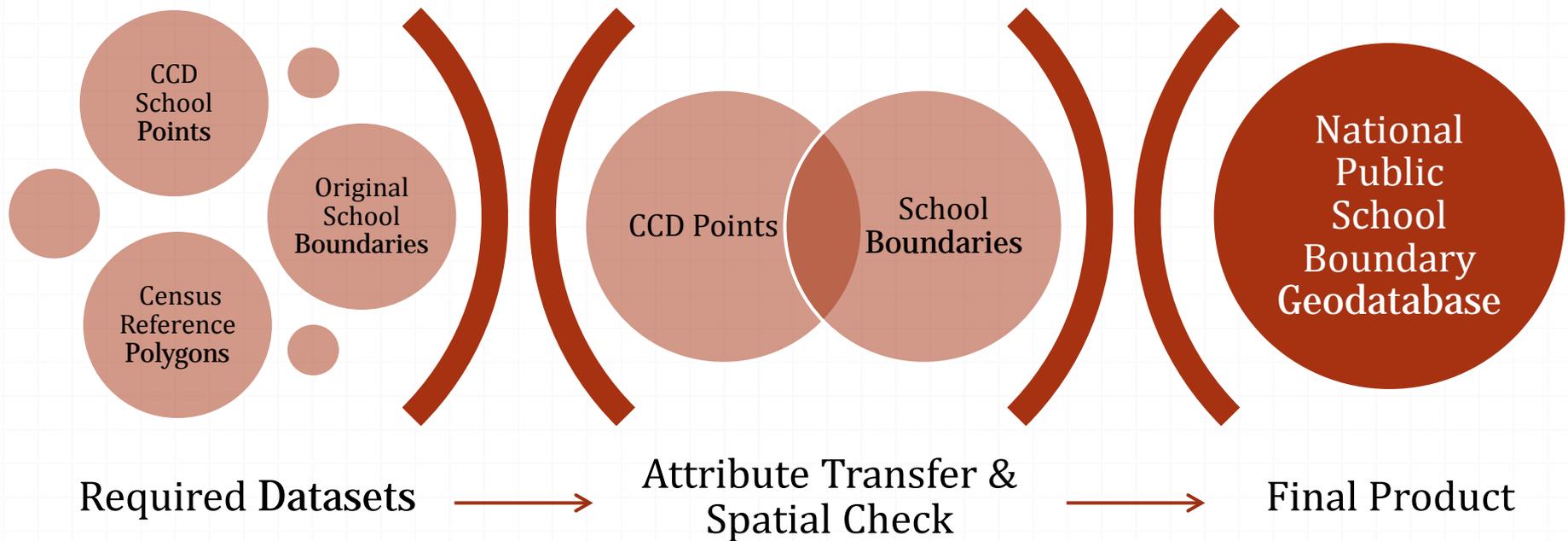
Date: 3/22/2013

5) Final Version Synced to the Cloud

By: rcostas

Date: 3/22/2013

Conceptual Data Model



School Boundary Technologies

§ Using ArcSDE 10.1sp1

§ Centralized Data Repository on Cloud

§ Data Replication



§ Using ArcGIS Server 10.1 on the Cloud

§ Data visualization

§ Data dissemination



§ Python (Arcpy)



Custom Toolbox

§ Automated name matching

§ QA/QC

§ Confirm that all regular schools have a boundary

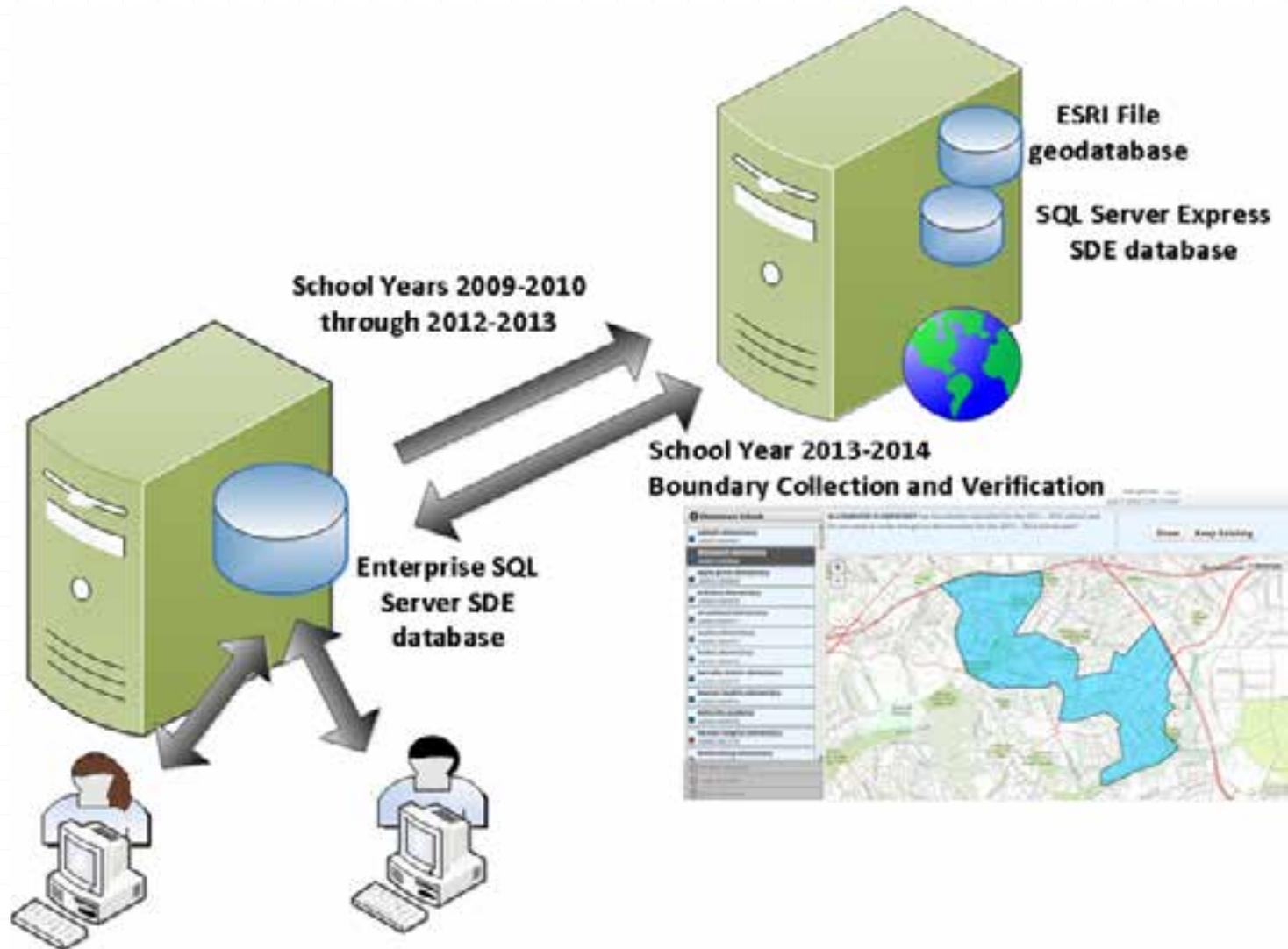
§ Confirm that all attributes correspond

§ Confirm that every geographical area is served by every grade

§ Check spatial relationship between school point and school boundary

- [-]  School Boundary Toolbox
 - [+]  Stage 1: Data Processing
 - [+]  Stage 2: QAQC
 - [+]  Stage 3: Final Delivery
 - [+]  Stage 4: Block Rectify and Feeders
 - [+]  Sync

School Boundary Collection Workflow



Public School Boundary Collection and Verification Tool

Public School Boundary Collection and Verification System

Allenwood Elementary

Allenwood Elementary has boundaries submitted for the 2011 - 2012 school year. Do you want to make changes to the boundary for the 2013 - 2014 school year?

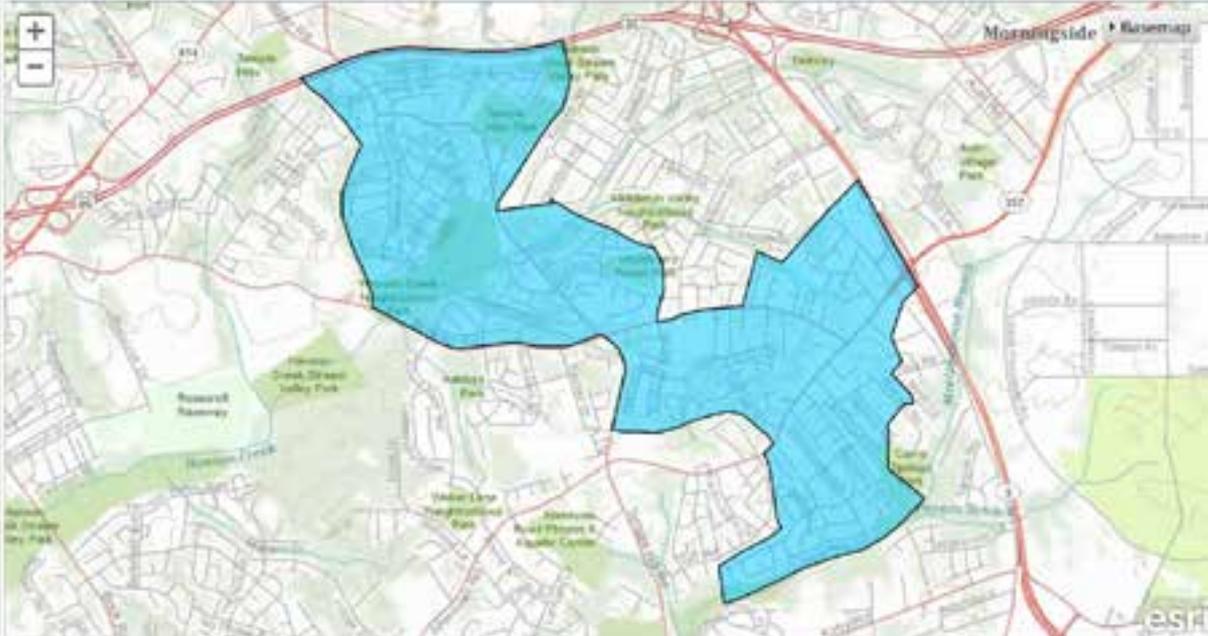
Elementary Schools

- adelphi elementary 240051000965
- allenwood elementary 240051000966**
- apple grove elementary 240051000969
- antimora elementary 240051000970
- arrowhead elementary 240051000971
- axalon elementary 240051000972
- baden elementary 240051000973
- barnaby manor elementary 240051000974
- beacon heights elementary 240051000975
- beltsville academy 240051000978
- beacon heights elementary 240051001272
- bladenburg elementary

Middle Schools

High Schools

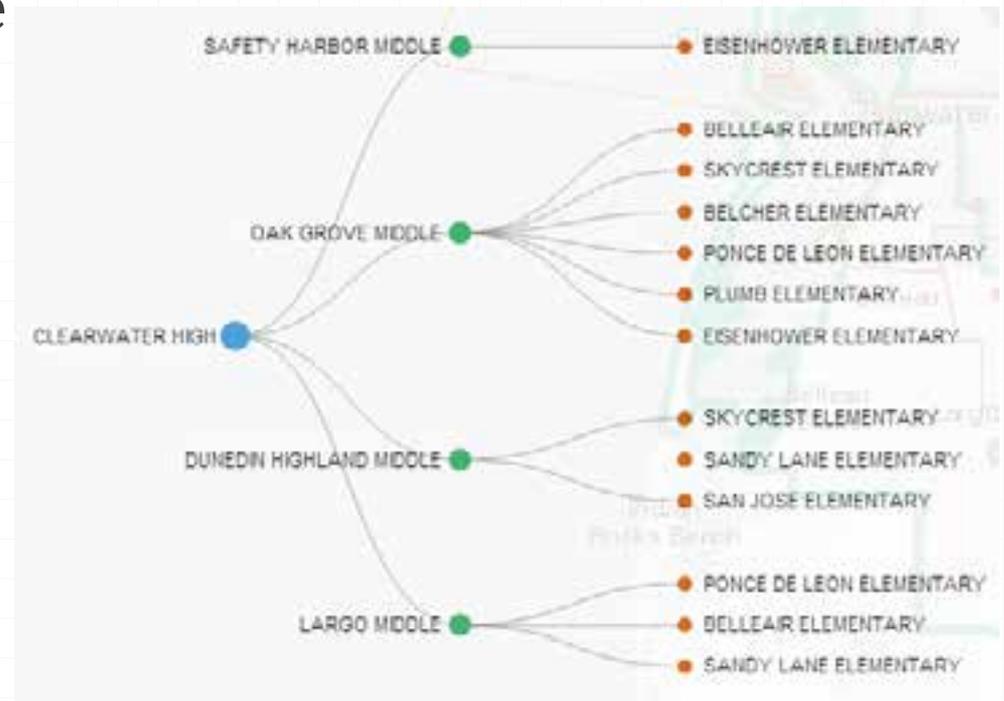
Other Schools



The map displays a residential area with a large, irregularly shaped region highlighted in blue, representing the school boundary for Allenwood Elementary. The map includes street names, parks, and a legend in the bottom right corner. The interface also features a zoom control on the left and a 'BaseMap' label in the top right of the map area.

How the Boundaries Can be Used

- § By Districts
 - § Creation of walk and bike zones
 - § Simplified boundary re-design
- § Support foster care initiatives
- § School feeder patterns
- § Proximity analysis



Workflow Issues

- § Working with different teams in a variety of locations
- § No shared network
- § Data collection from a variety of sources
- § Balancing ease of use and data quality
- § Determining what to collect
- § Refactoring QA/ QC based on requirements and deliverables

Conclusions

- § A simplified data model decreases file size and streamlines QA/QC
- § Custom tools have minimized human error, improved overall data quality, and reduced processing time
- § Reduce error and processing time by enlisting help from the source
- § Servers in the cloud increases accessibility

For More Information



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