



*CAD To GIS Conversion For Facility
Management Using Model Builder*

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Getting CAD into GIS

There are several ways to Get CAD data into GIS. Each method had advantages and disadvantages. One thing that all methods have in common is that the more consistent your data is the better your results will be.

Establishing a CAD data schema is essential !

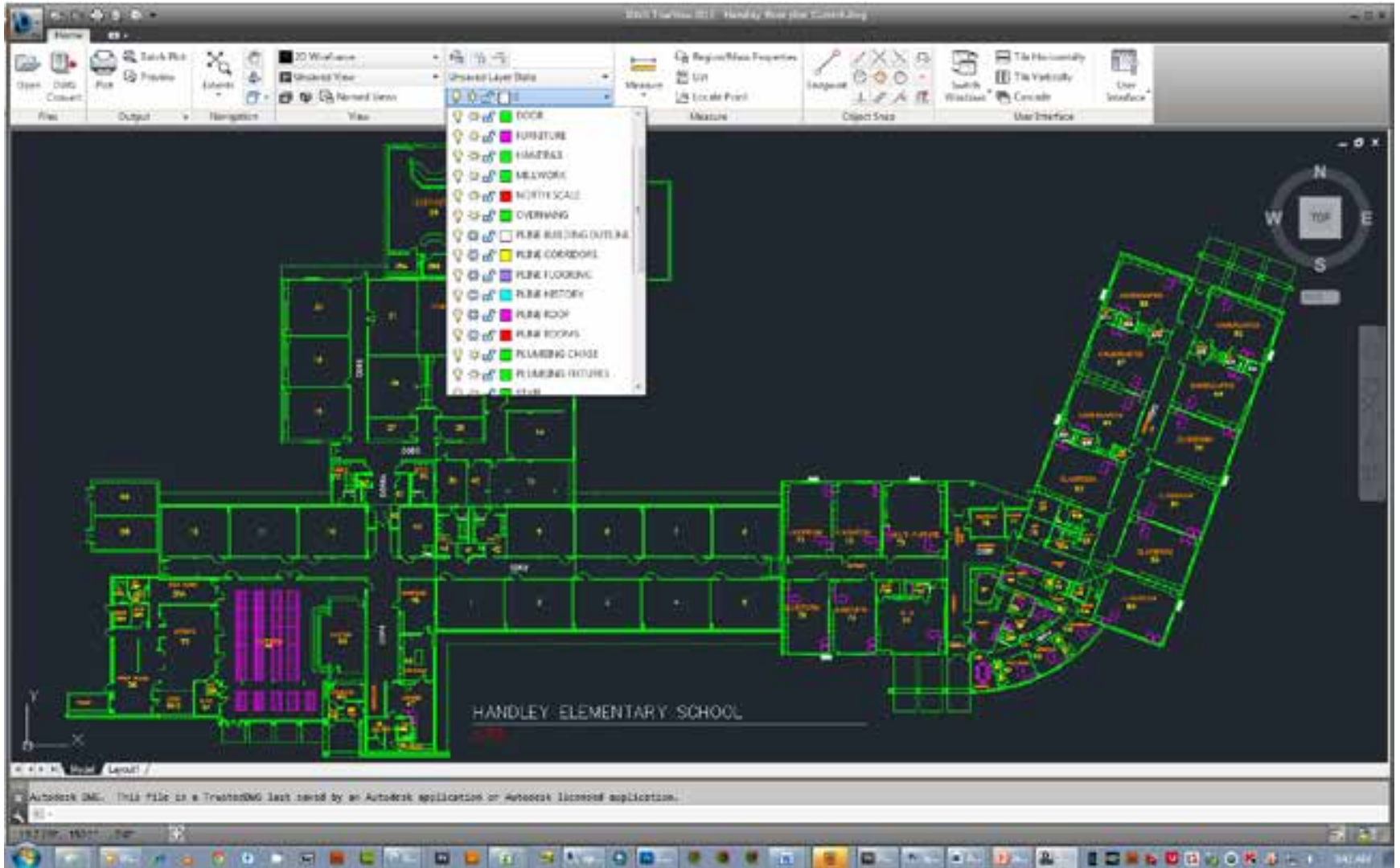
Specific layer names are established for each type of data
Rooms, Roof, History

In CAD unlike GIS geometry types points, lines, polygons and Annotations are mixed.

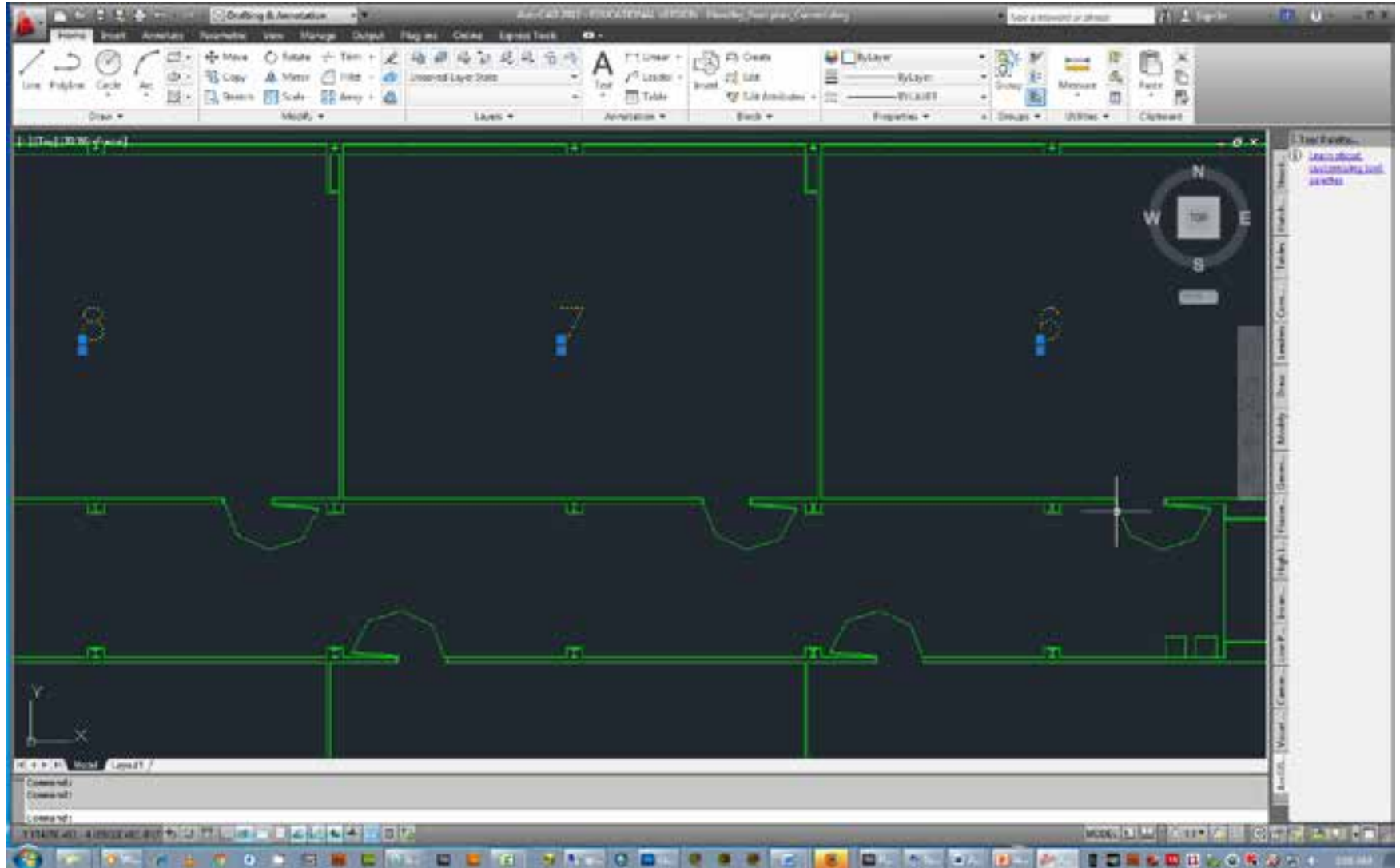
Keep how the data will be used in both programs in mind when establishing your schema.

The GIGO principle applies, "Garbage In Garbage Out"

CAD Layers



Annotation Geometry



Data rules for good conversion

Spaces that will become GIS polygons must be “Closed” polygons in AutoCAD

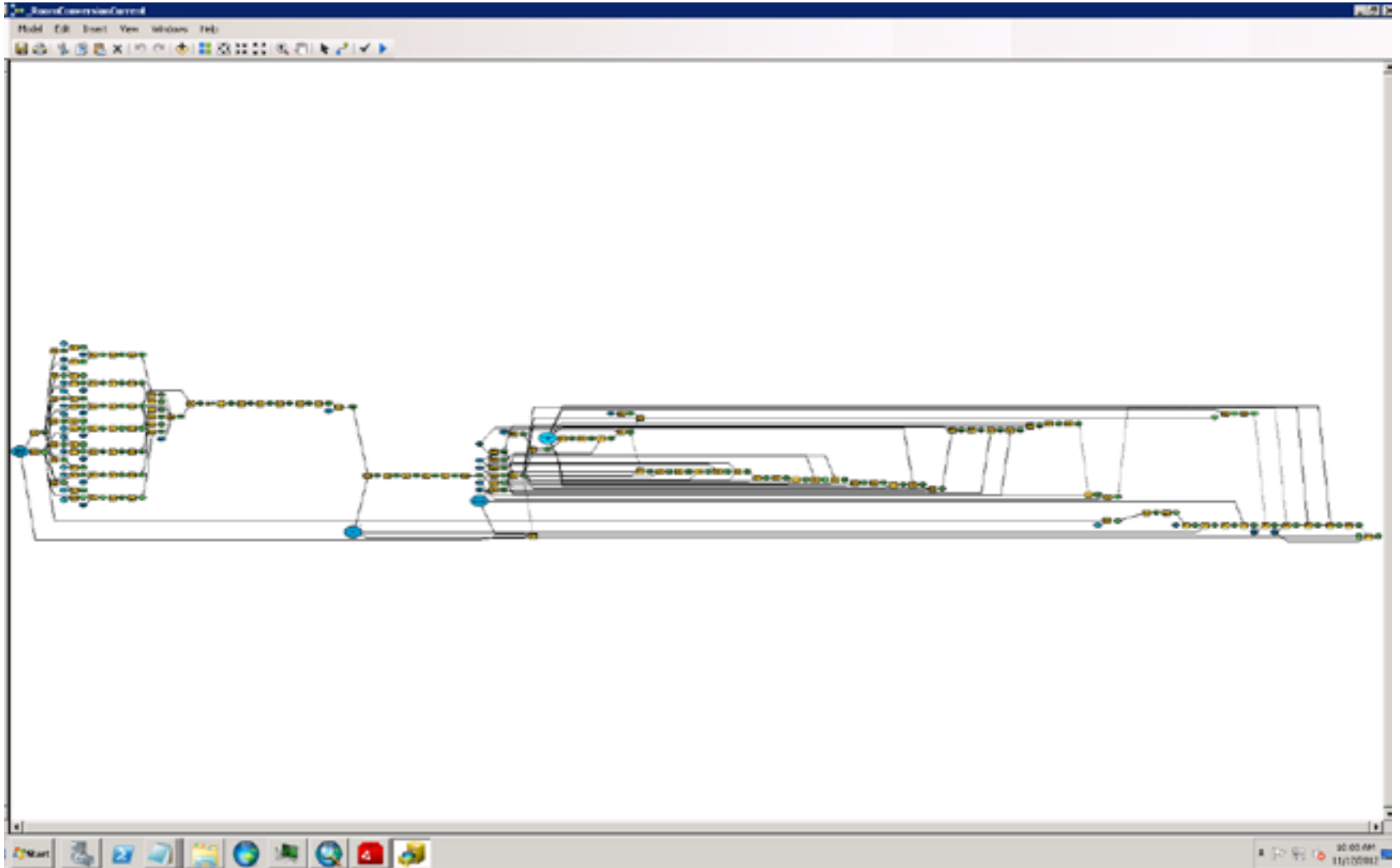
CAD blocks cause problems!

Annotation anchor points will be spatially joined to polygons, an anchor point must be inside its target polygon.

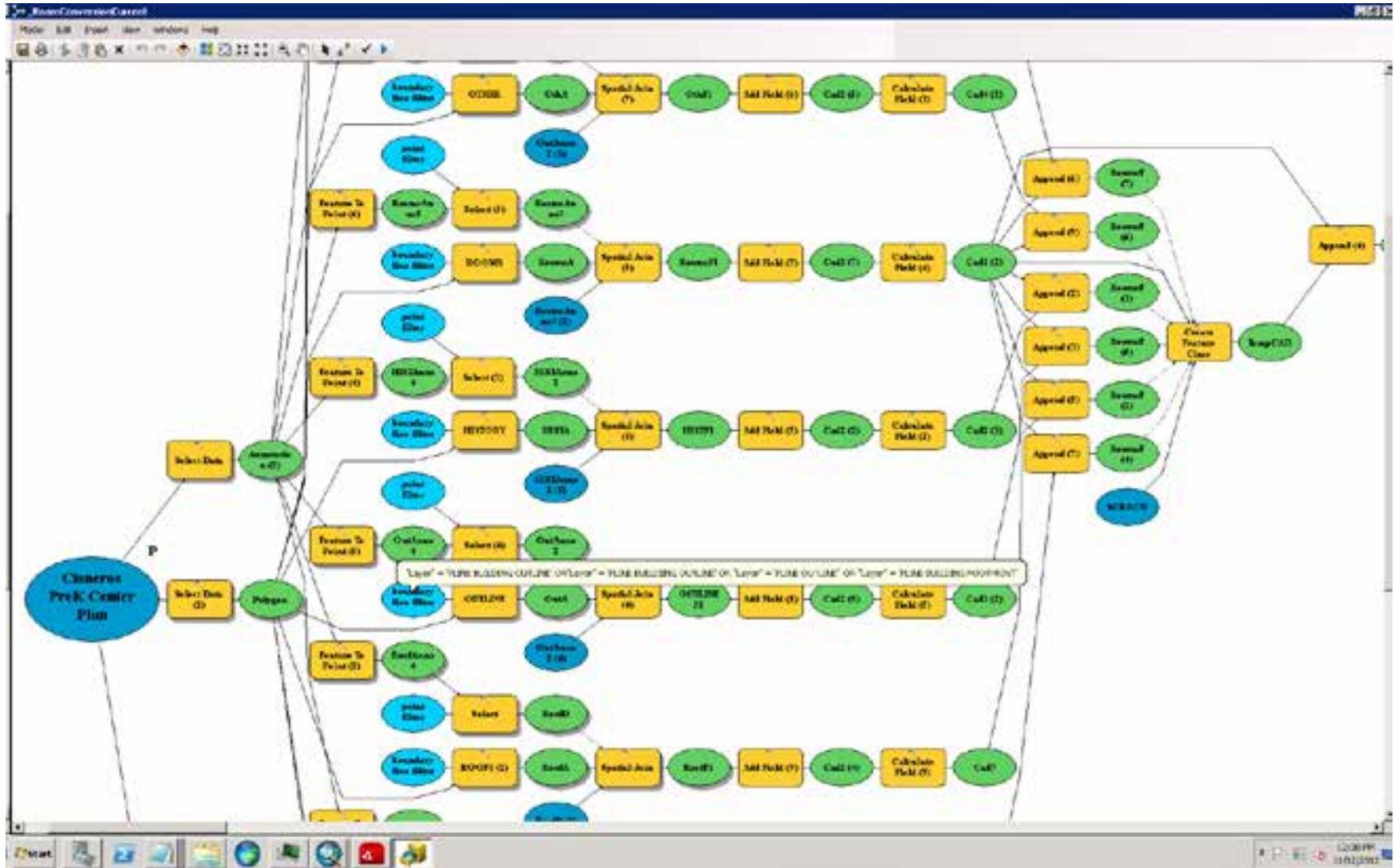
Multiple annotations in the same CAD layer should not be placed in the same target polygon.

Annotation text should be simple, single line, left justified, with no special formatting.

CAD Conversion Model



CAD data Structured Queries and Spatial Joins



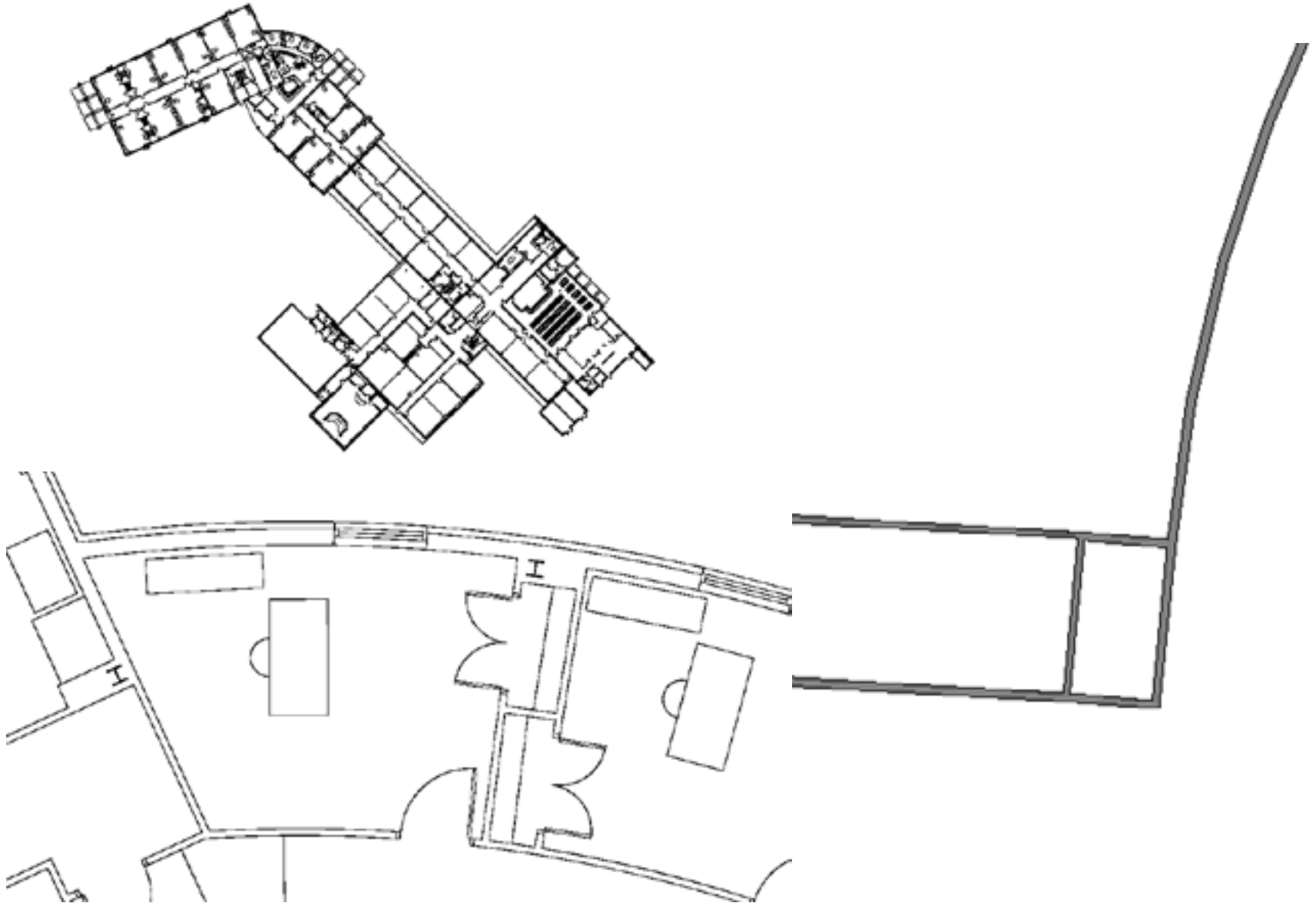
Imbedded model for each Drawing

The screenshot displays a software application interface with three main windows:

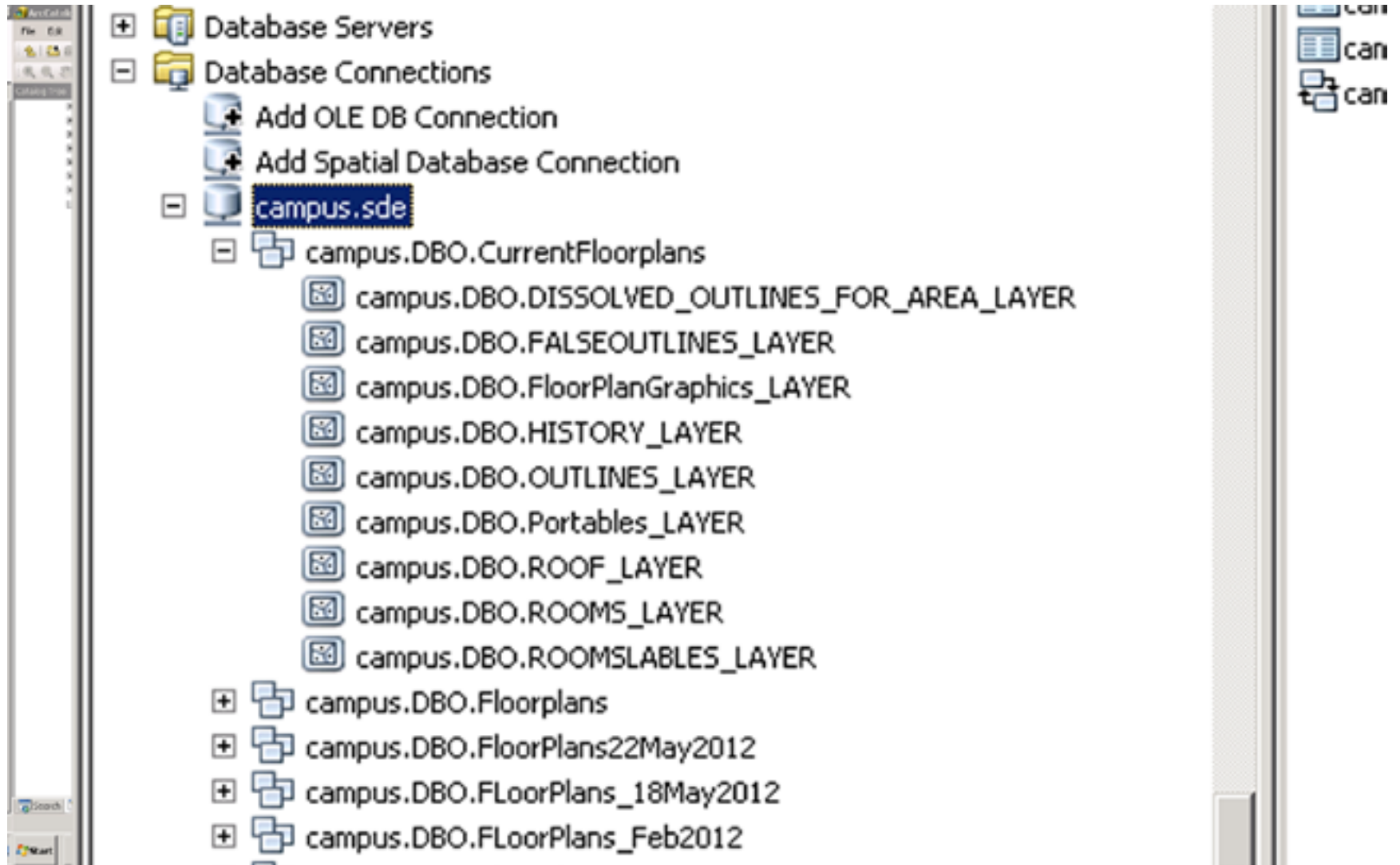
- File Explorer (Left):** Shows a hierarchical tree structure of files and folders. The selected folder is 'APUNLESS', which contains sub-folders for various locations like 'ABSETT', 'ARMSTRONG', 'BAY', etc.
- Drawing Window (Top Right):** Displays a drawing titled 'ANAL.D'. It shows a simple rectangular shape with the text 'ANAL.D' centered below it.
- Embedded Model Window (Bottom Center):** Titled 'APUNLESS', this window shows a directed graph model. It consists of four blue oval nodes on the left: 'USE Expression (3)', 'Handle Row with Column 2', 'FLUSH LEV', and 'In'. Arrows from these nodes point to a single yellow rectangular node on the right labeled 'JoinConnection.wire'.

At the bottom right of the application window, the system tray shows the date and time: '10:19 AM (1/17/2011)'.

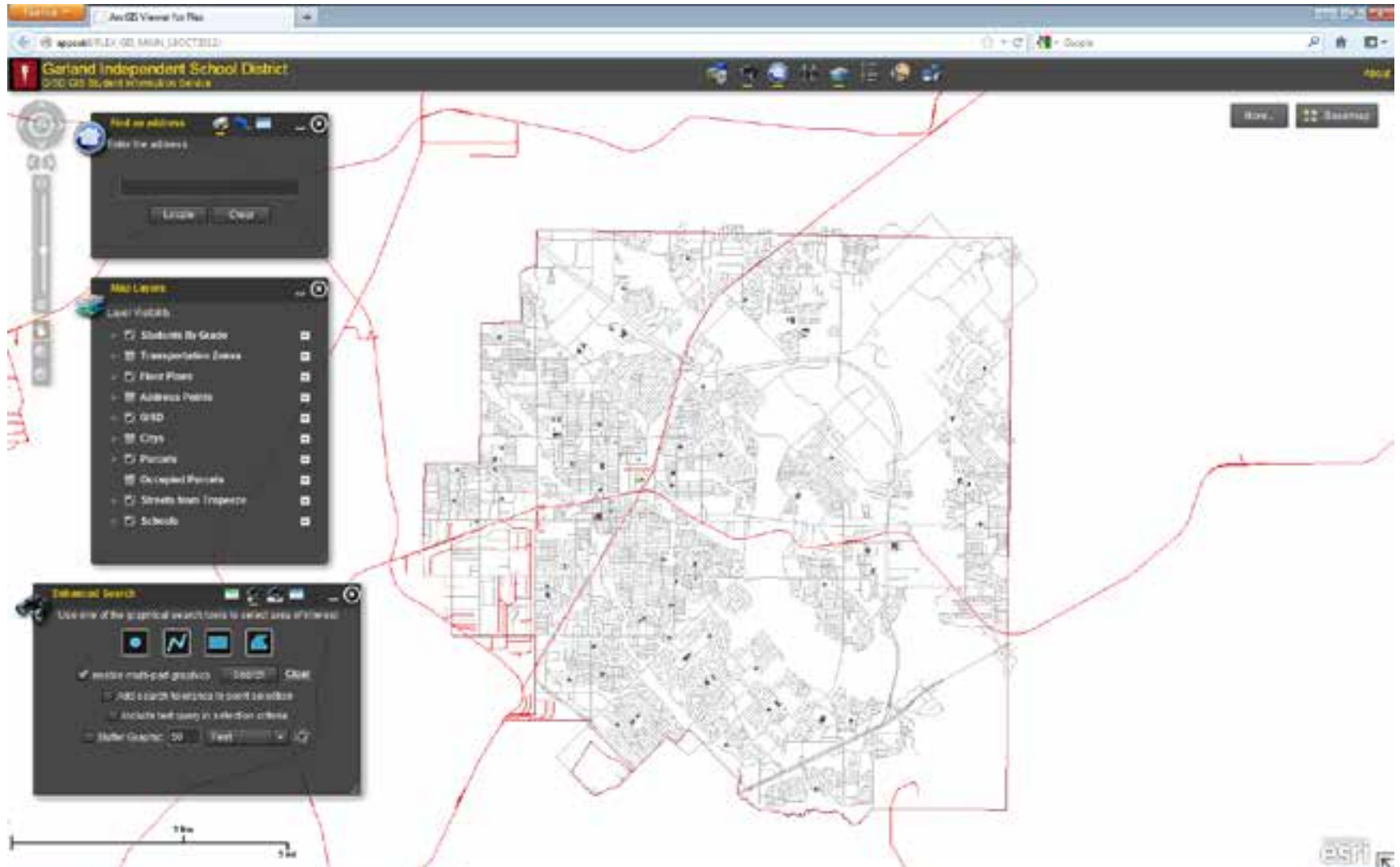
CAD polylines convert to GIS polygons using buffer tool.



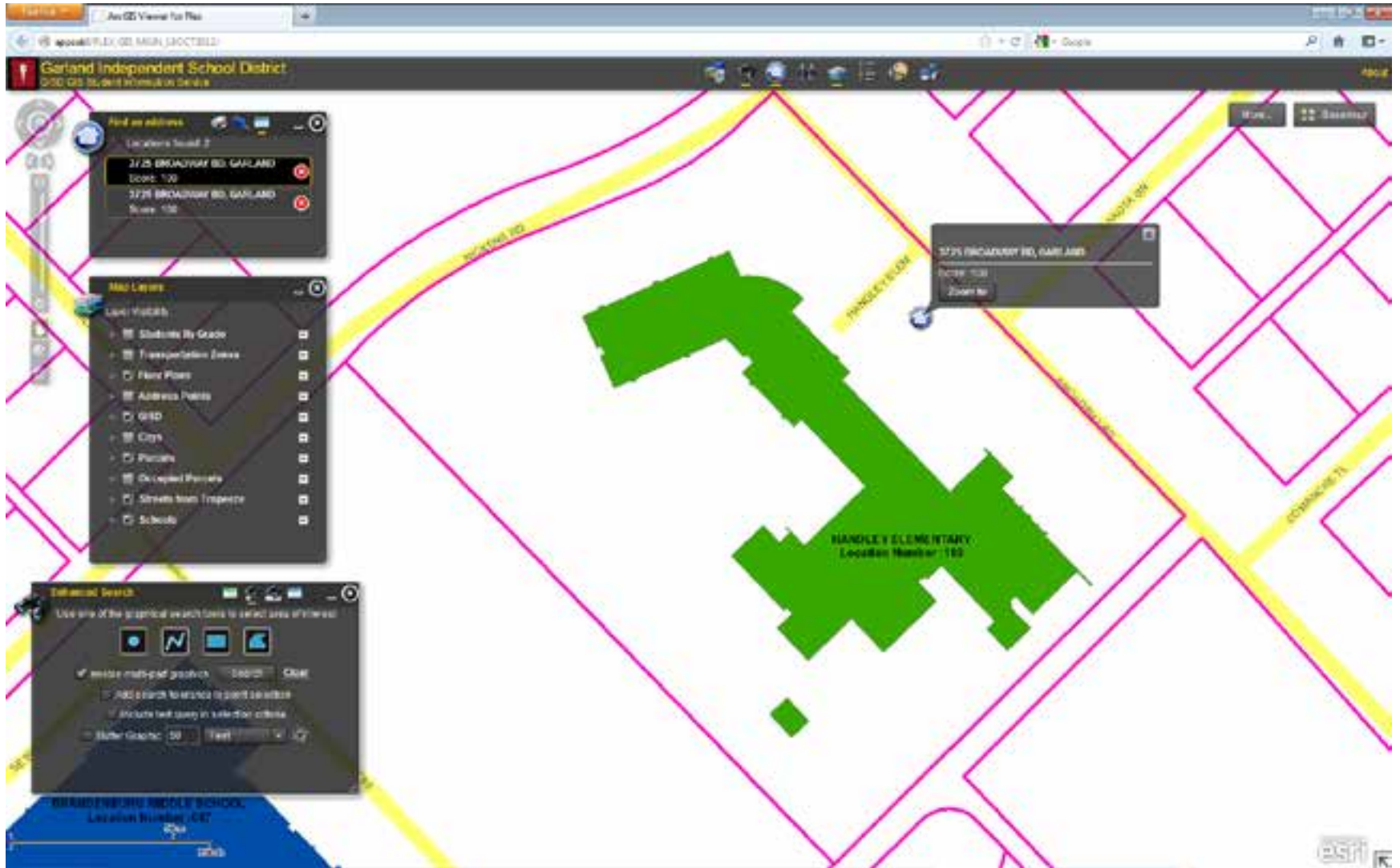
Resulting Feature Classes



FLEX Application



Building Outline



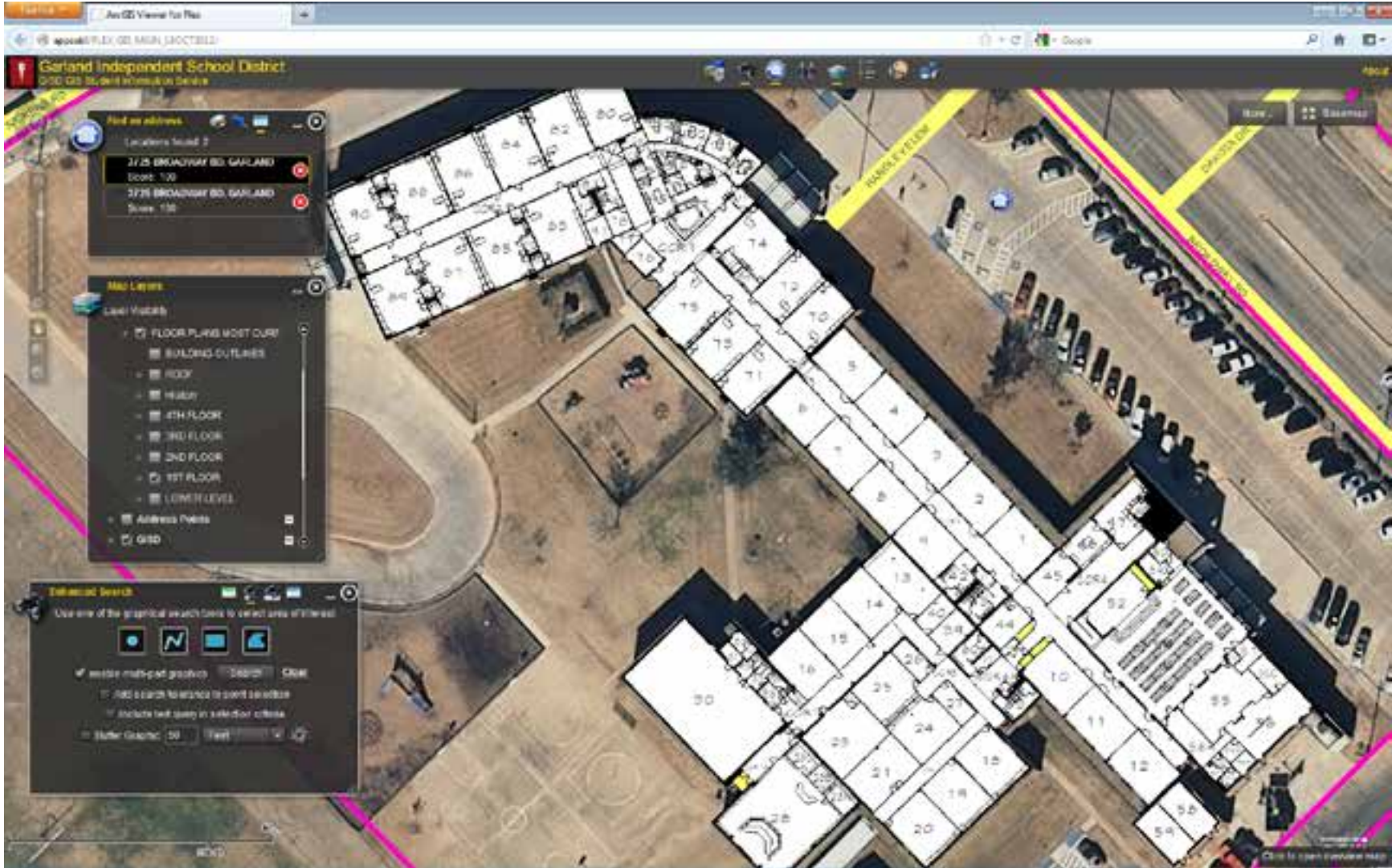
Imagery added



Roof layer joined with records



Floor Plan

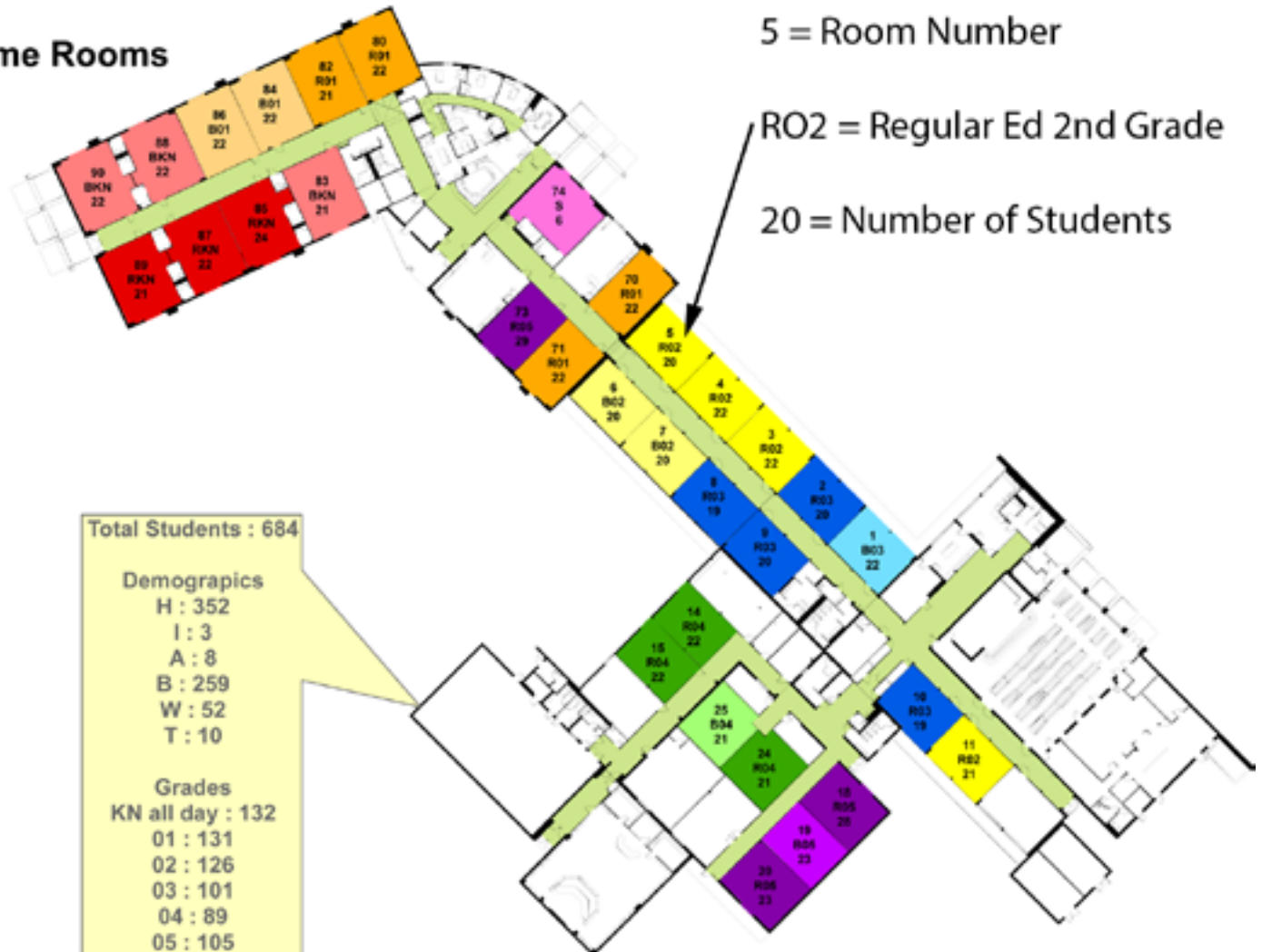


ES Home Room and Enrolment Info

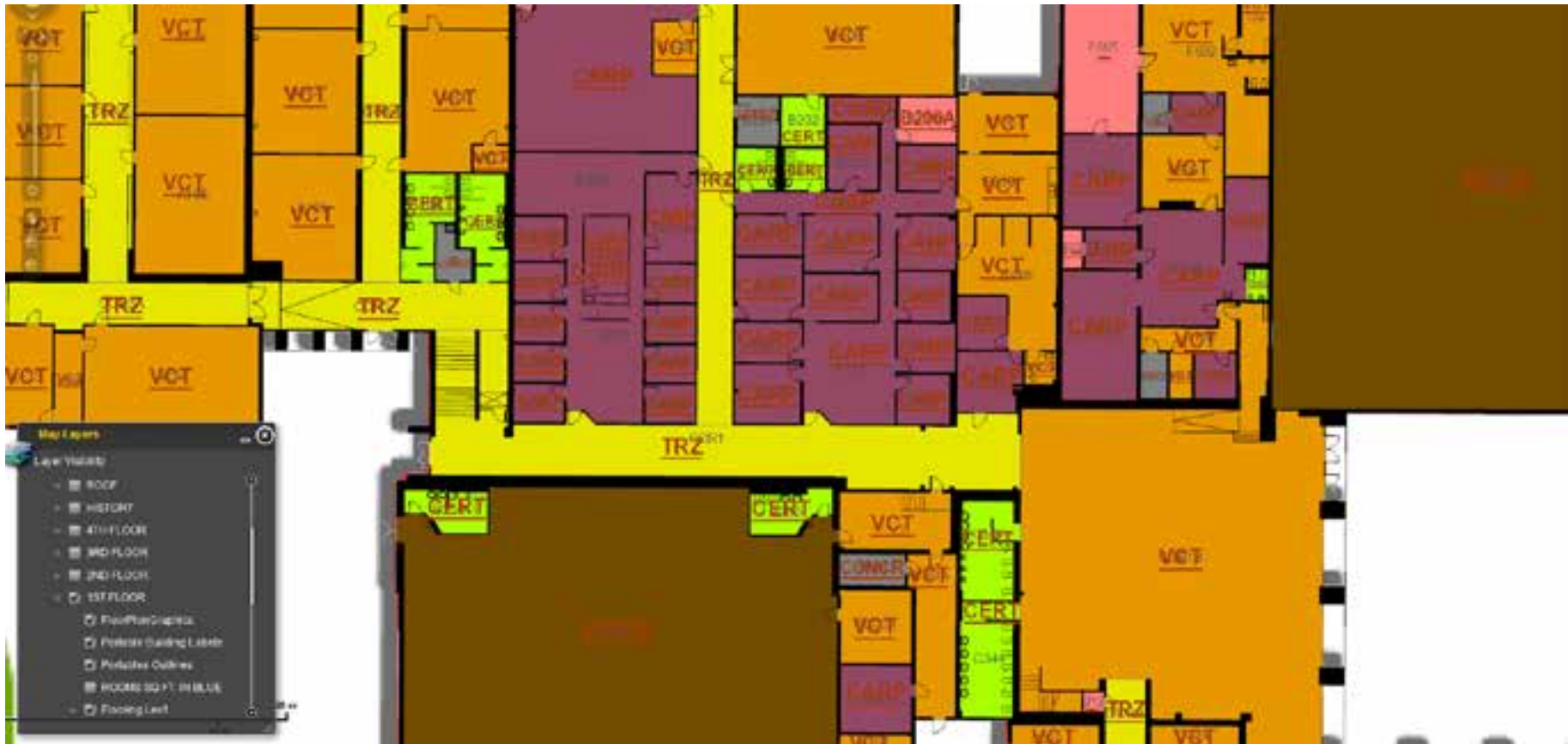
Legend

Students to Home Rooms

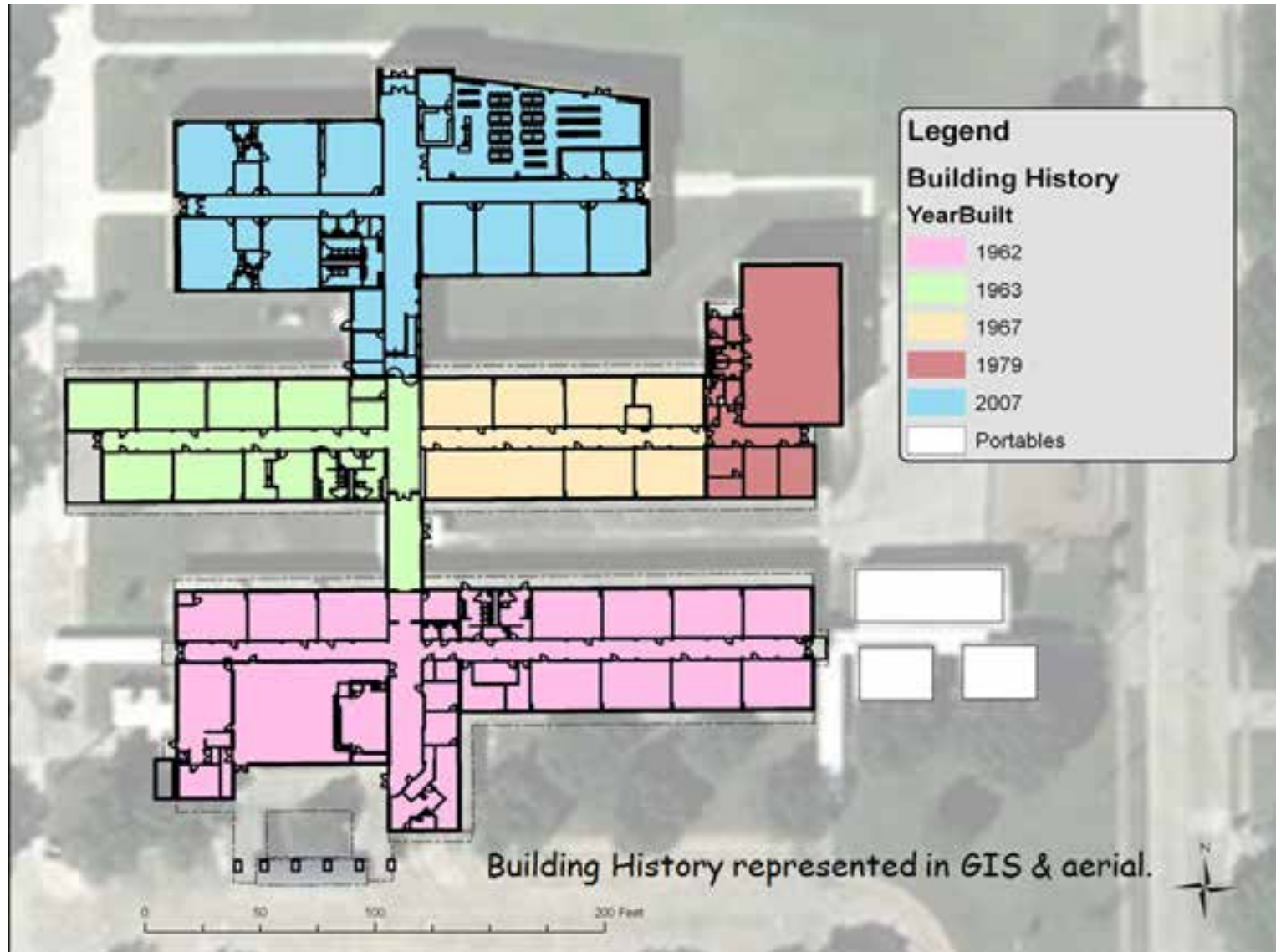
- REG 05
- BESL 05
- REG 04
- BESL 04
- REG 03
- BESL 03
- REG 02
- BESL 02
- REG 01
- BESL 01
- REG KN
- BESL KN
- S
- REC
- REG PK AM
- REG PK PM
- BESL PK AM
- BESL PK PM



Floor Surface Information



Building History



Going forward

Our initial workflow overwrote the floor plan of a building each time we reran our model on a CAD drawing.

We have added permanent space ID's and are in the process of updating our workflows to compare and update instead of overwriting information in the data base.

We have also given access to our room list to other departments so that going forward data they are collecting will be easily integrated with our maps.