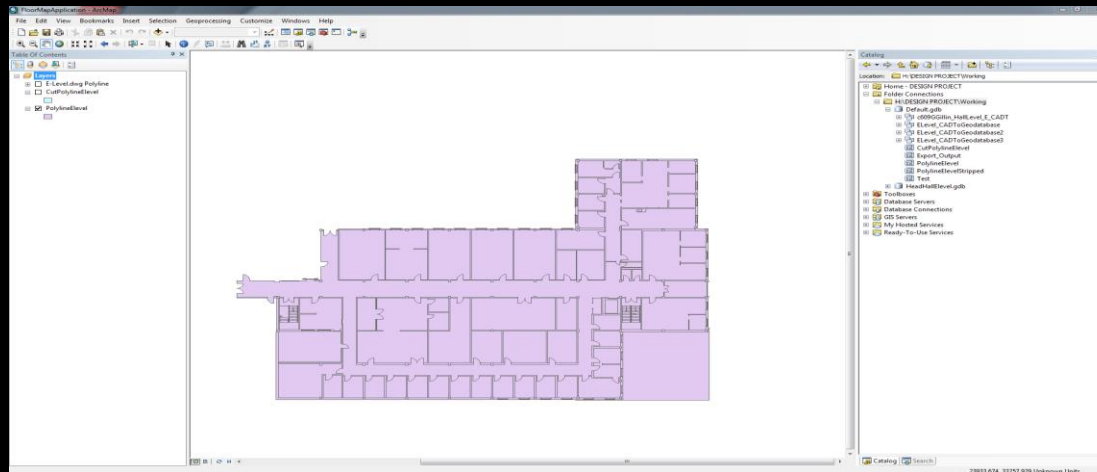


# Optimizing the Campus Floor Plan: An Interactive Mapping Application for E-Level of Head Hall, UNB



Acknowledgements: Dr. Stefanakis, David Fraser, & Michelle Ryan

Technical Report: Adam Paine

# Features

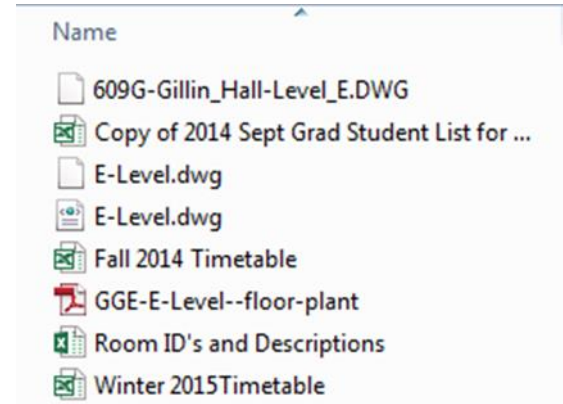
- Head Hall building IDs
- Room types (class, lab, office, storage, etc.)
- Office occupancies
- Graduate student lab occupancies
- Class schedules
- Photo references
- Faculty equipment locations
- Layer tab
- Legend
- Search function

# Research

- Review of ArcGIS software, past related courses
- Enabling a spatially enabled 'smart campus'
  - Conference at UC Santa Barbra, 2013
  - Group sharing of ideas by 35 professionals focusing on how to implement a spatially enabled 'smart campus'
  - Findings:
    - Spatially enabled 'smart campus' ~ 5 years away
    - Institutions of higher learning can be models for the innovative use of spatial analysis
    - Alternative methods: Augmented reality, micro simulation

# Methodology

- Collection and organization of input data



- Import of base E-level .dwg file into ArcMAP
- Polygon creation & preparation for input data inside ArcMAP
- Addition of input data, added fields
- Development of End Product

# Challenges

- Update of original outdated plan
- Method selection
- Management of knowledge and data as they develop; future required optimization of this application
- Integration of educational features and administrative features

# Implementation

- Original .dwg file



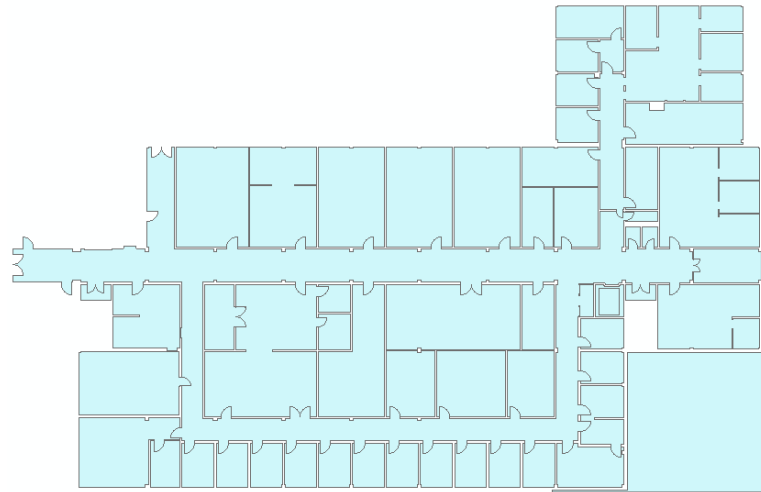
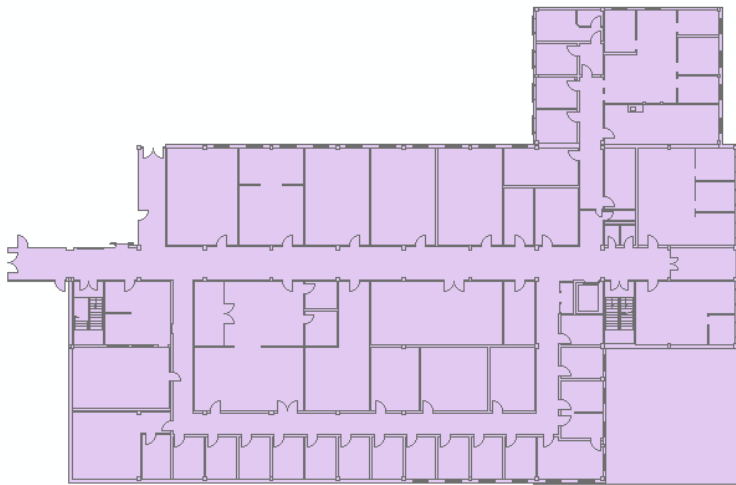
# Implementation

- Conversion to .shp file, prior to any editing



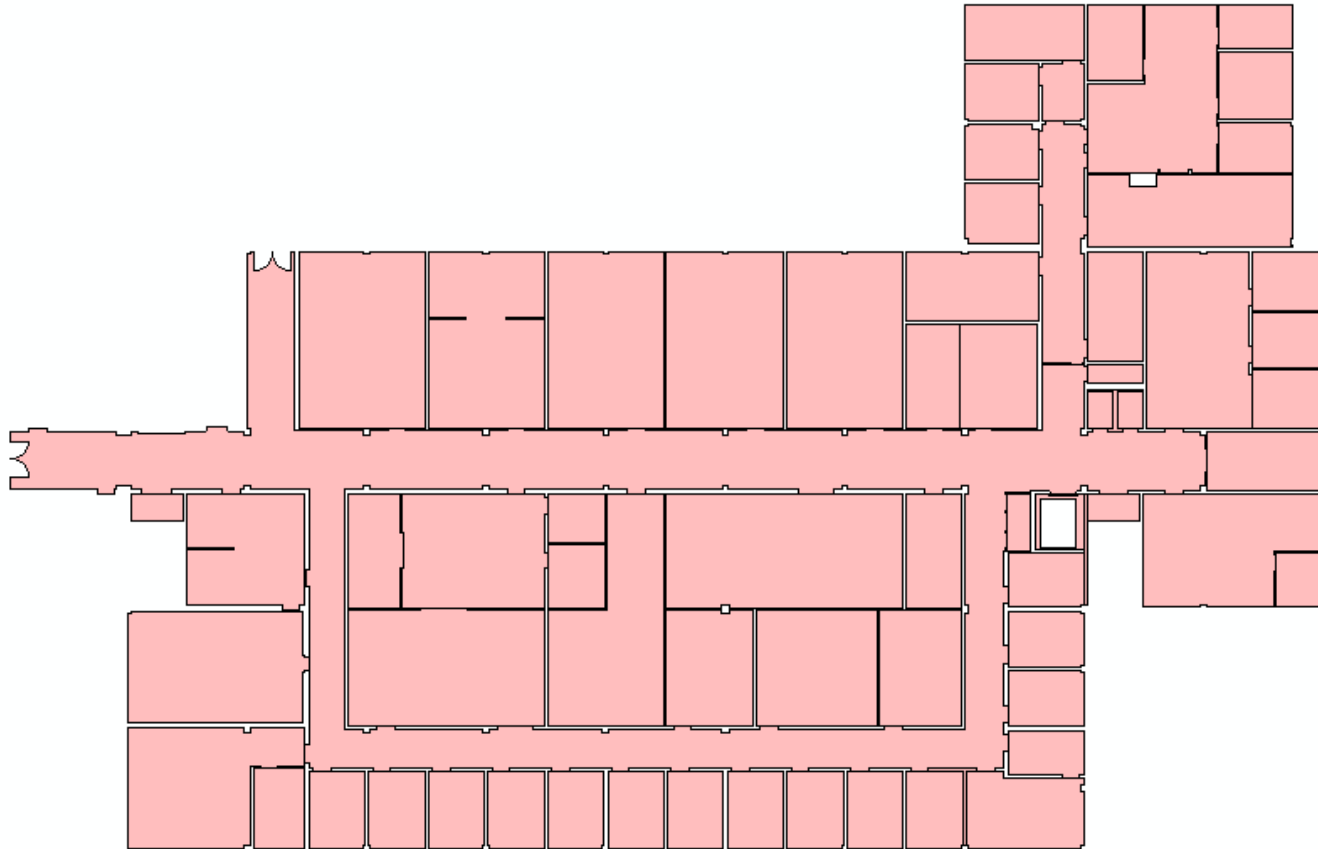
# Implementation

- Cutting of excess data
- Validation of line topology



# Implementation

- Polygon Creation



# Implementation

- 'RoomType', 'BuildingID', and 'Occupancy' Attributes added

PolylineElevelStripped

<all other values>

RoomType

<Null>

Bathroom

Chemical Engineering

Class

Conference Room

Elevator

GGE Kitchen

GGE Main Office

Glass Display

Graduate Student Lab

Hallway

Lab

Lounge

Mechanical Engineering

Mechanical Engineering Office

Office

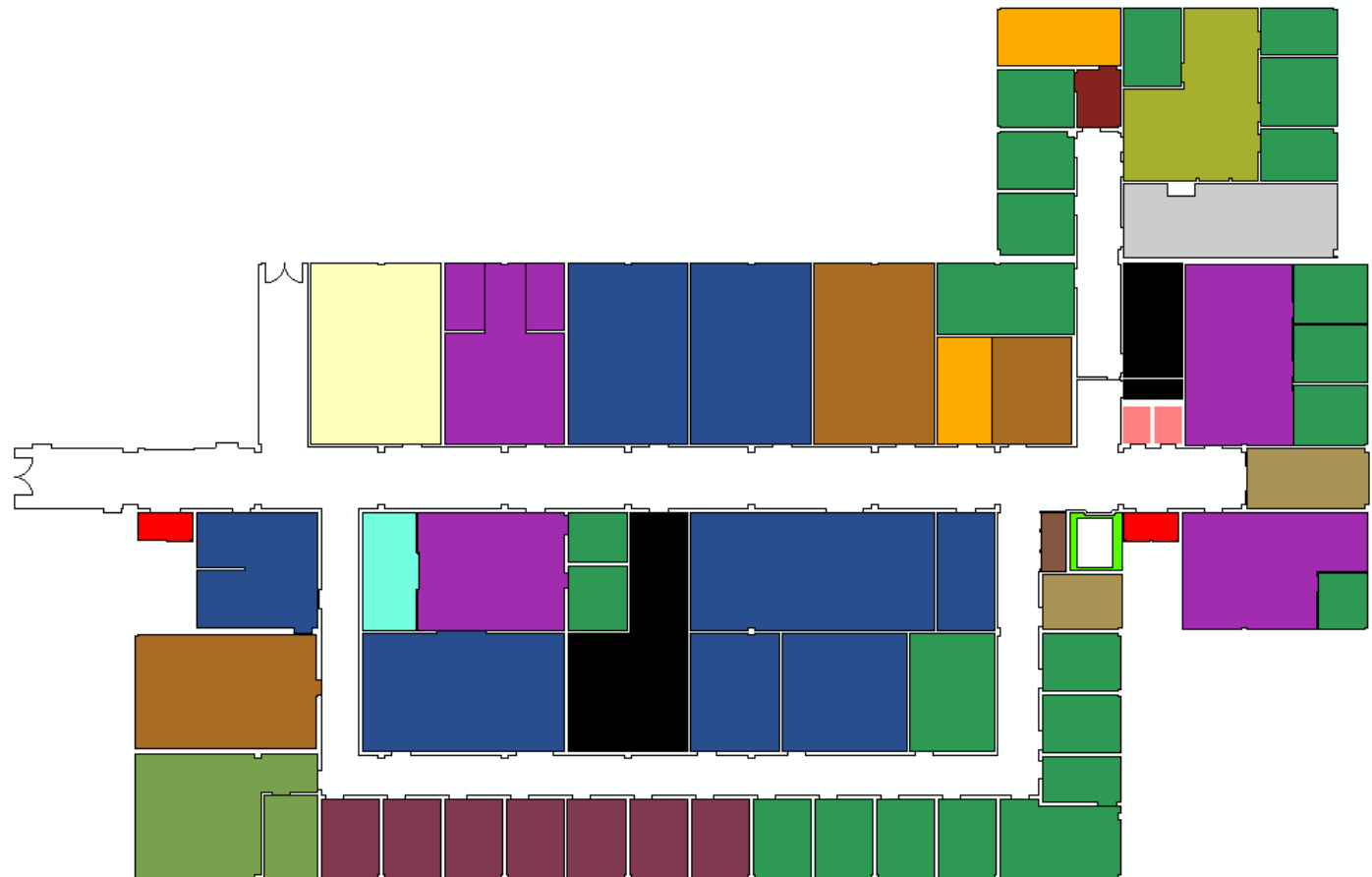
Stairway

Storage

UNB Servers

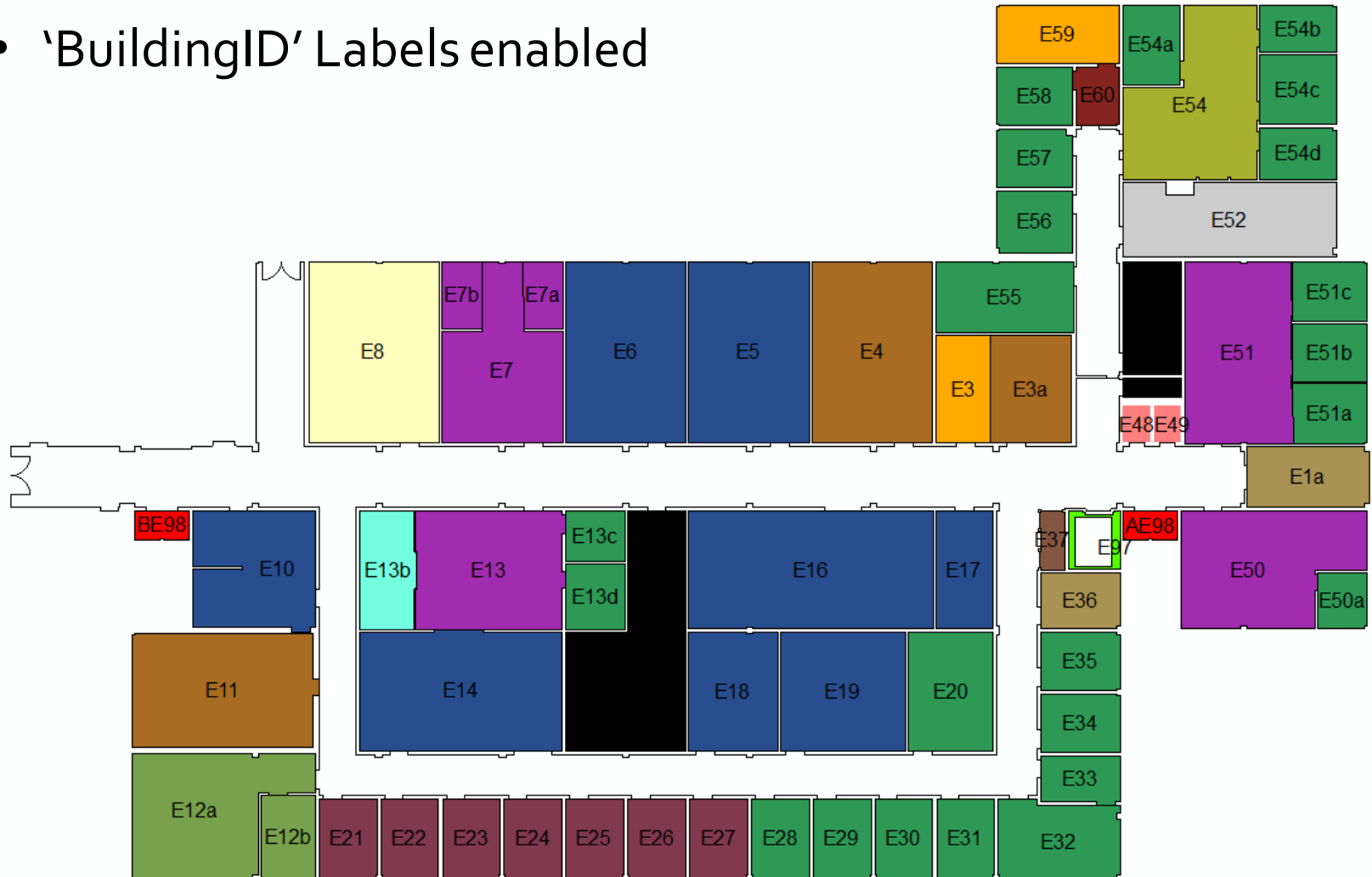
Undergraduate Lounge

Utility



# Implementation

- 'BuildingID' Labels enabled



# Implementation

- Attributes attached by hyperlinks:
  - Class schedules (via Google spreadsheet)
  - Graduate student lab occupancies (via Google spreadsheet)
  - Photo references (via Imgur)
  - Operated within ArcMAP by selecting 'hyperlink' tool, which launches the website, document or script that was linked

# Results

- Final desired application design not completed at time of this report
- Many tangible results still achieved that reflect and accomplish the goals of this project
  - Upload to ArcGIS Online
  - Operation within ArcMAP
  - Printable layers

# Results – ArcGIS Online

- ArcMAP floor plan design uploaded to ArcGIS Online and shared publicly

[HOME](#) [GALLERY](#) [MAP](#) [SCENE](#) [GROUPS](#) [MY CONTENT](#) [MY ORGANIZATION](#)

Adam ▾

UNB



## Search Results

### Show

#### All Results

[Maps](#)  
[Layers](#)  
[Scenes](#)  
[Apps](#)  
[Tools](#)  
[Files](#)

Show ArcGIS Desktop Content

Only search in UNB

### Related Searches

Find items published by Esri related to "UNB"

Find groups related to "UNB"

### 1 result

[Relevance](#) [Title](#) [Owner](#) [Rating](#) [Views](#) [Date](#)



[Open](#) ▾ [Details](#)

FloorMapApplication

Map Document by adampainer

Last Modified: March 27, 2015

☆☆☆☆☆ (0 ratings, 0 comments, 0 downloads)

### More Information

What types of items can I find here?

Advanced search options

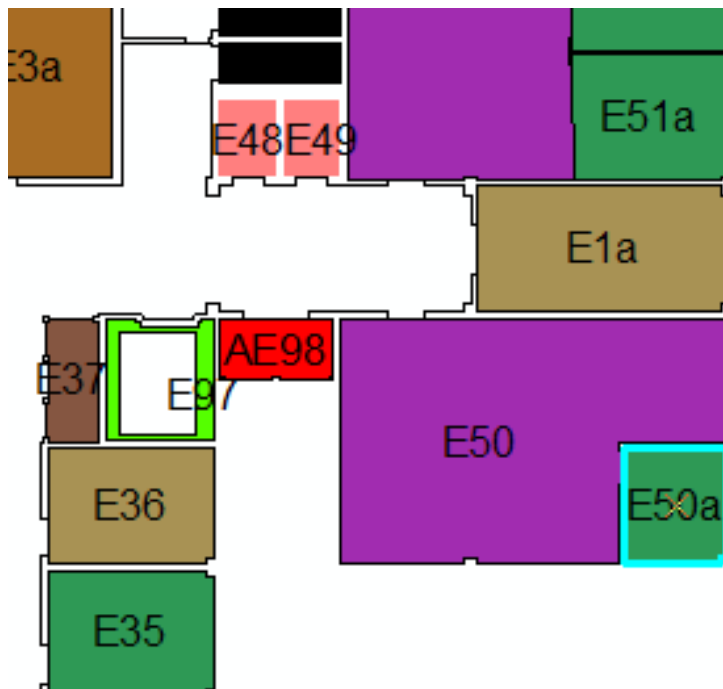
Finding layer packages and other ArcGIS desktop content.

PREVIOUS

NEXT

# Results – Operation within ArcMAP

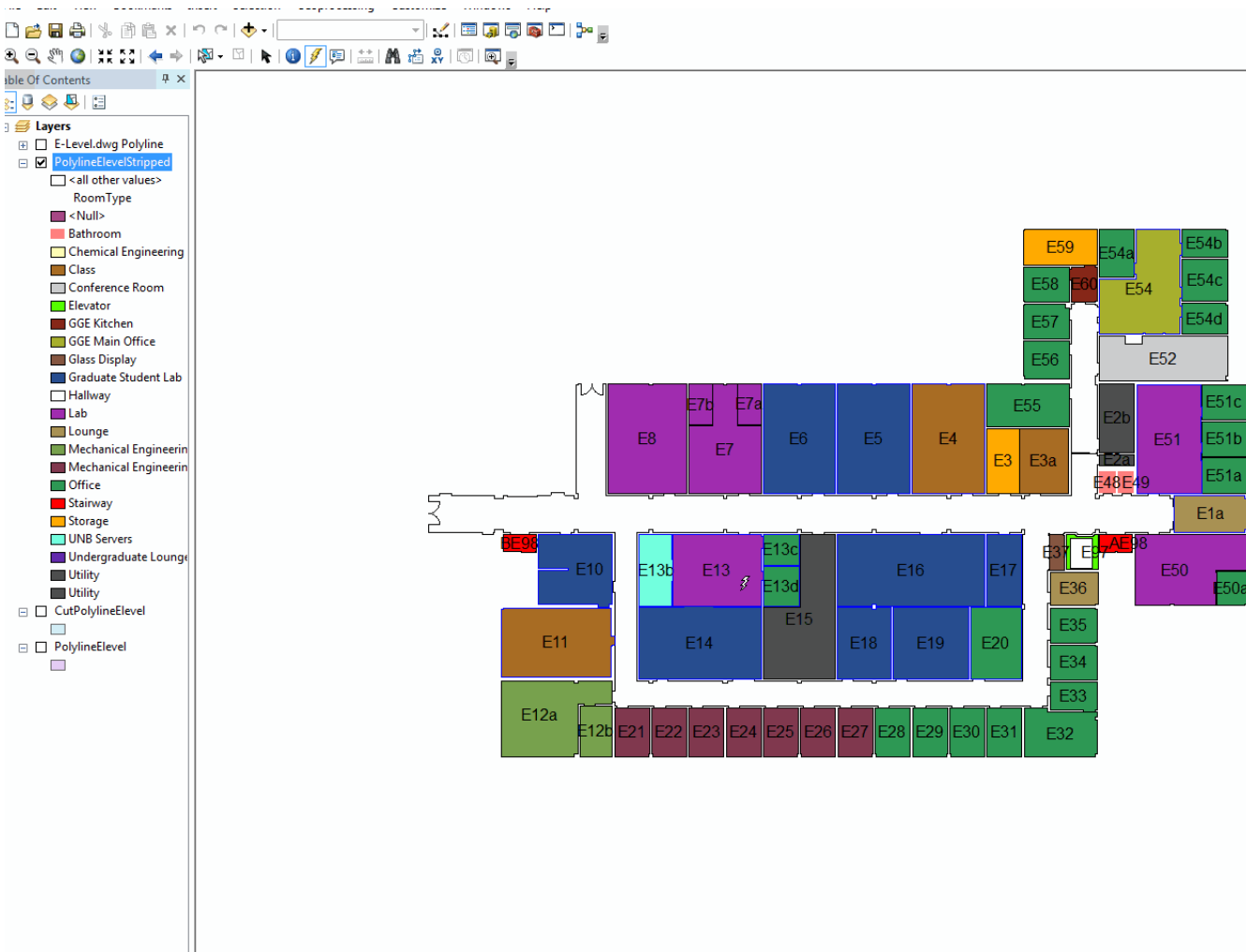
- Selecting attribute table in ArcMAP



|              |                      |
|--------------|----------------------|
| OBJECTID     | 69                   |
| Layer        | <Null>               |
| Shape_Length | 10417.003662         |
| Shape_Area   | 6739132.441534       |
| RoomType     | Office               |
| BuildingID   | E50a                 |
| Occupant     | Dr. Monica Wachowicz |
| Schedule     | <Null>               |

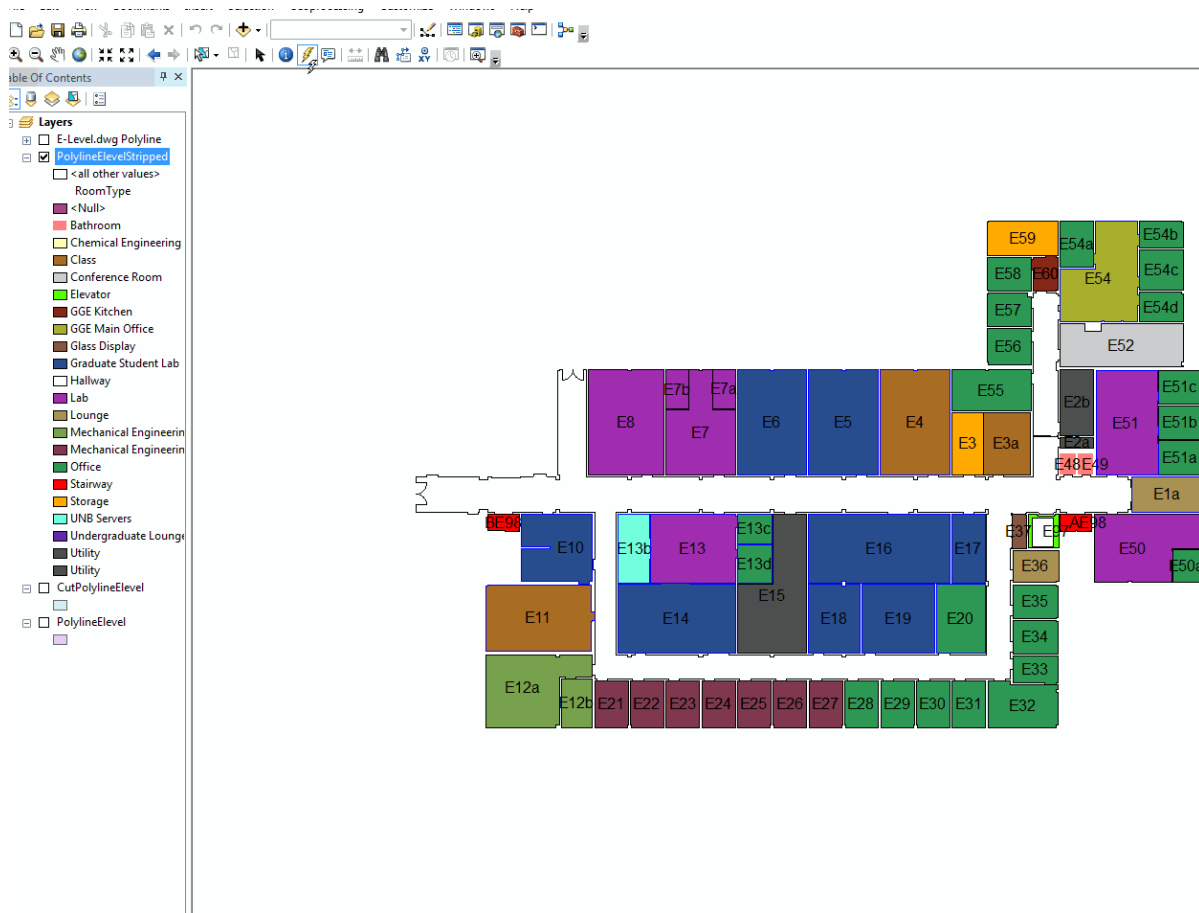
# Results – Operation within ArcMAP

- Operating the hyperlink tool to activate the E<sub>4</sub> class schedule



# Results – Operation within ArcMAP

- Operating the hyperlink tool to activate a photo reference





# Results – Printable Layers

- Full attribute table listing each rooms 'type' and 'occupant' also available

| RoomType                      | BuildingID | Occupant   |
|-------------------------------|------------|--|
| Hallway                       | <Null>     | <Null>   |
| Hallway                       | <Null>     | <Null>   |
| Stairway                      | AE98       | <Null>   |
| Stairway                      | BE98       | <Null>   |
| Graduate Student Lab          | E10        | Dr. Langley & Dr. Vanicek Students: GNSS & Geodesy |
| Class                         | E11        | David E. Wells Multimedia Room                     |
| Mechanical Engineering        | E12a       | Research Lab                                       |
| Mechanical Engineering        | E12b       | Research Lab                                       |
| Lab                           | E13        | Lab & Meeting Room                                 |
| UNB Servers                   | E13b       | <Null>   |
| Office                        | E13c       | Rakesh Mishra                                      |
| Office                        | E13d       | William Liu  |
| Graduate Student Lab          | E14        | Dr. Zhang Students                                 |
| Utility                       | E15        | Not Ours   |
| Graduate Student Lab          | E16        | Dr. John Hughes Clarke Students: Ocean Mapping     |
| Graduate Student Lab          | E17        | Course Based Research                              |
| Graduate Student Lab          | E18        | Course Based Research                              |
| Graduate Student Lab          | E19        | Dr. Santos Students: Geodesy & GPS Research        |
| Lounge                        | E1a        | GGE Main   |
| Office                        | E20        | Research Library                                   |
| Mechanical Engineering Office | E21        | Dr. E. Biden                                       |
| Mechanical Engineering Office | E22        | Dr. G. Holloway                                    |
| Mechanical Engineering Office | E23        | Dr. R. Dubay                                       |
| Mechanical Engineering Office | E24        | Dr. T. Jeans                                       |
| Mechanical Engineering Office | E25        | Dr. A. Simoneau                                    |
| Mechanical Engineering Office | E26        | Dr. D. Lyon  |
| Mechanical Engineering Office | E27        | Dr. J. Carretero                                   |
| Office                        | E28        | Dr. Kingdon  |
| Office                        | E29        | Dr. John McLaughlin                                |
| Utility                       | E2a        | Janitor  |
| Utility                       | E2b        | Ventilation  |
| Storage                       | E3         | Ocean Mapping Equipment Room                       |
| Office                        | E30        | Dr. Petr Vanicek & Dr. Raid Al-Tahir               |
| Office                        | E31        | Dr. David J. Coleman                               |
| Office                        | E32        | Dr. John Hughes Clarke                             |
| Office                        | E33        | Leo-Guy Leblanc                                    |
| Office                        | E34        | Dr. James Secord                                   |
| Office                        | E35        | Dr. Peter Dare                                     |
| Lounge                        | E36        | Graduate   |
| Glass Display                 | E37        | <Null>   |
| Class                         | E3a        | Ocean Mapping Visualization Room                   |
| Class                         | E4         | <Null>   |
| Bathroom                      | E48        | Men  |
| Bathroom                      | E49        | Ladies Staff                                       |
| Graduate Student Lab          | E5         | Dr. Stefanakis & Coleman Students                  |
| Lab                           | E50        | People in Motion                                   |
| Office                        | E50a       | Dr. Monica Wachowicz                               |
| Lab                           | E51        | Undergraduate                                      |
| Office                        | E51a       | Greg Smith   |
| Office                        | E51b       | David Frasor                                       |
| Office                        | E51c       | Terry Arsenault                                    |
| Conference Room               | E52        | <Null>   |
| GGE Main Office               | E54        | <Null>   |
| Office                        | E54a       | Dr. Santos   |
| Office                        | E54b       | Lori Hunt  |
| Office                        | E54c       | Sylvia Whitaker                                    |
| Office                        | E54d       | Michelle Ryan                                      |

# Future Prospects

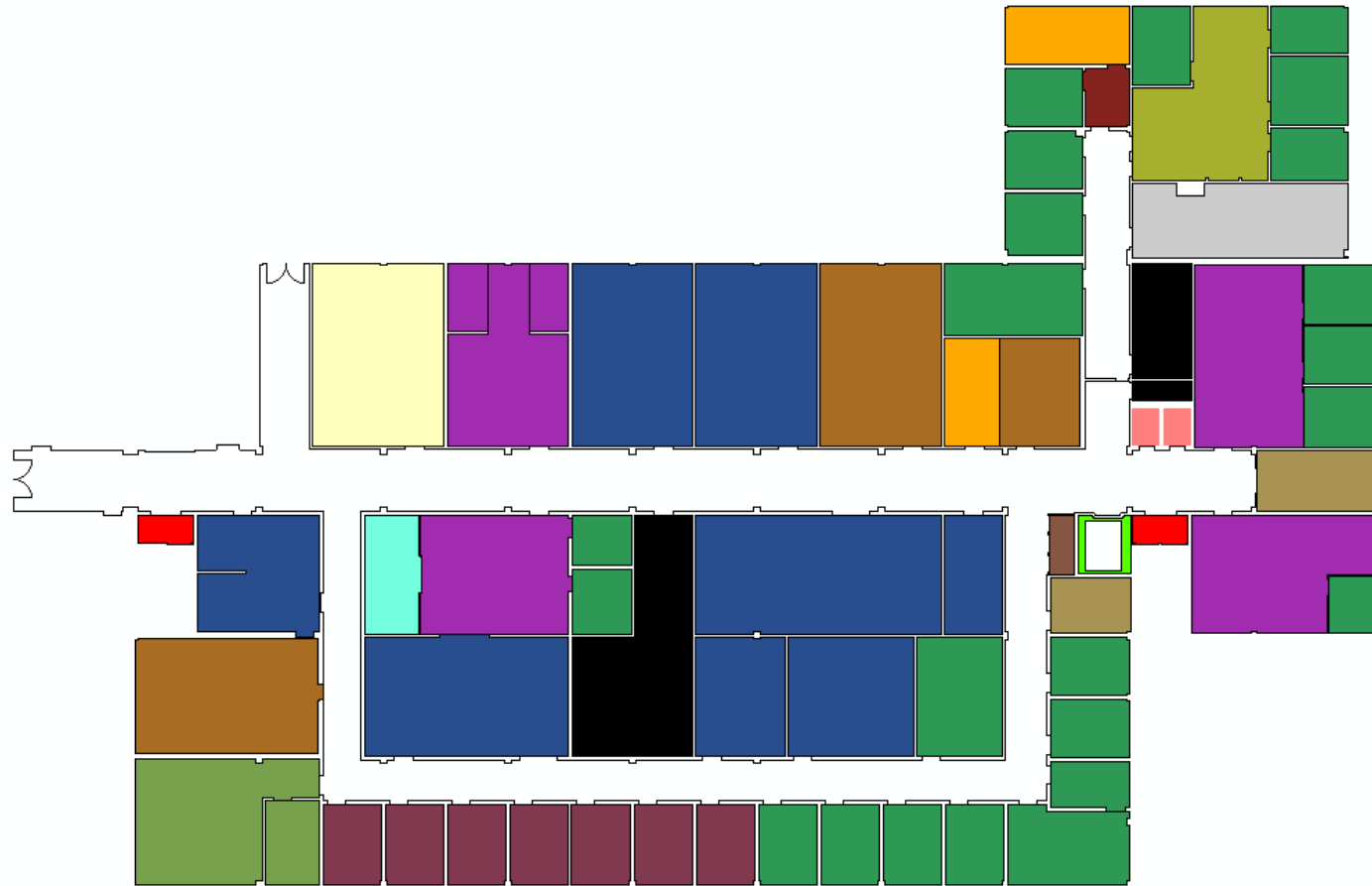
- 3D walkthrough tool, similar to Google maps feature
- Expanded use of application on broader scale
  - Interactive map of head hall
  - Interactive map of entire campus
  - Other applications involving spatially referenced information

# Summary

- Production of a clean, aesthetically pleasing base design for application
- Application could provide massive assistance to students, professors, and administrators in any educational setting.
- Ease of use (No need of GIS background)
- It has the ability to be continuously optimized, and never 'finished'
- I will continue work on the project as I develop my knowledge in this field

# Acknowledgements

My supervisor Dr. Stefanakis, David Fraser, and Michelle Ryan



Submitted by: Adam Paine