



From Visiting a Cool Conference Booth to Saving \$400,000 While Improving the Student Experience

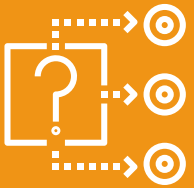
NCTCOG Regional GIS Meeting

May 3, 2023

J. Scott Sires



My Purpose



Upskill the workforce.
Innovative solutions using emerging technologies.
Real-world technology as used in the workplace.
References and connections.

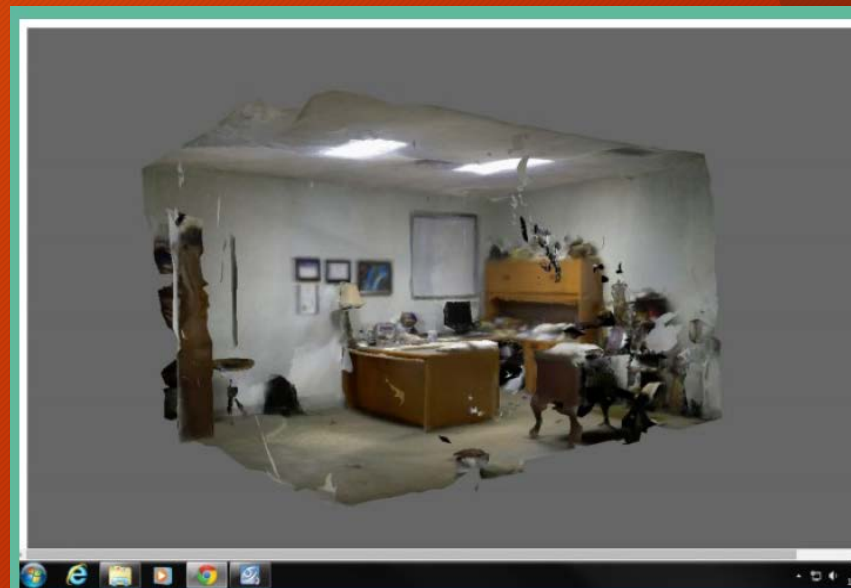
A bit of background

Conference participation and geeking out on the innovations

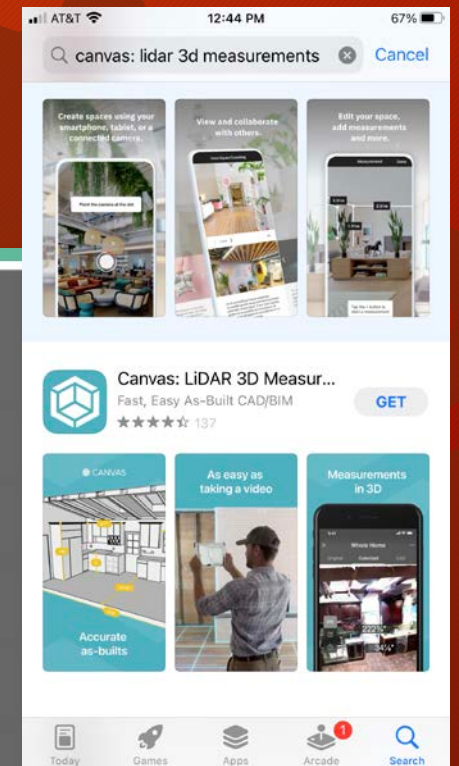
Concept for innovations in our field to be applied in the college GIS program

Drones

Highschool kid interest but lack of workforce demand for drone operators (at scale)



Actual Scan results. Every point has XYZ, RGB.





A bit of background

Conference participation and geeking out on the innovations

Concept for innovations in our field to be applied in the college GIS program

Drones

Highschool kid interest but lack of workforce demand for drone operators (at scale)

Concept that innovations in our field are narrowed to focus on emerging imaging technologies

Grant from NSF

Innovations acquired, applied, instructional content developed

Equipment experienced and grant objectives met, exceeded in many aspects



Grant Experience Afforded Rethinking and Improving Program

Parallels in field application techniques lead to curriculum structure fitting for program

Industry advocates through minitern projects and advisory contributions

Highschool dual credit path conceived

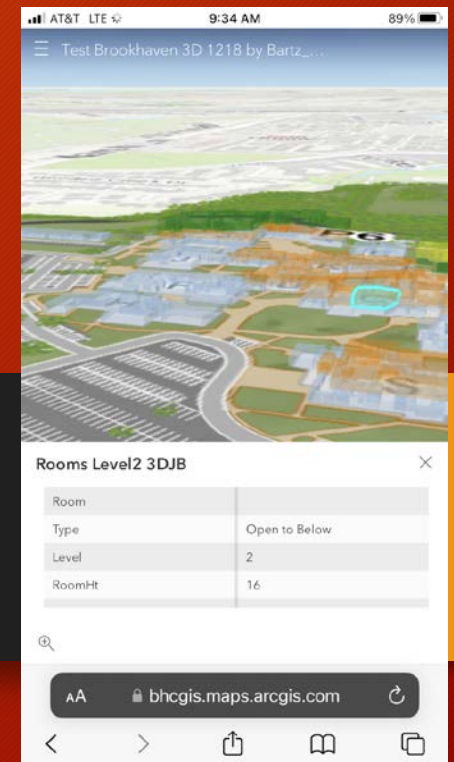
Advanced sequence conceived to better cover the workforce opportunities

TAKEAWAY: Curriculum changed, student experience improved, opportunities increased



Concepts proven,
executed by students,
for Brookhaven campus.
Validated us.
Drove further ideas.
Replicable at scale.

Web App of BHC Interior Spaces





Beyond the NSF Grant

Coffee time conversation in the president's suite

Colleagues talk together and discuss our program and the grant and skills

Meeting with deputy chief of facilities

TAKEAWAY: Discuss our solutions and relate that to making better decisions and to working smarter.



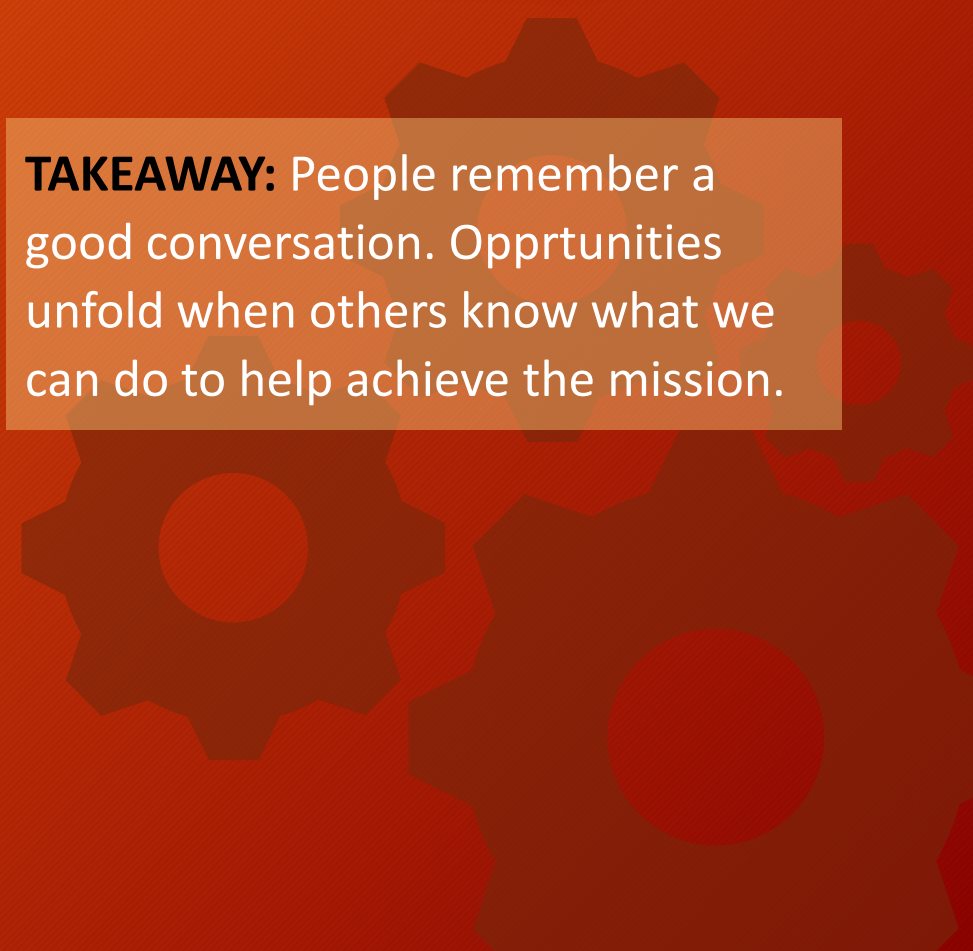
Service-Learning Opportunity Project

Project contract \$800k and scope of work

Scope 99 buildings and 4.8 million square feet of interior space on 1316 acres in Dallas County

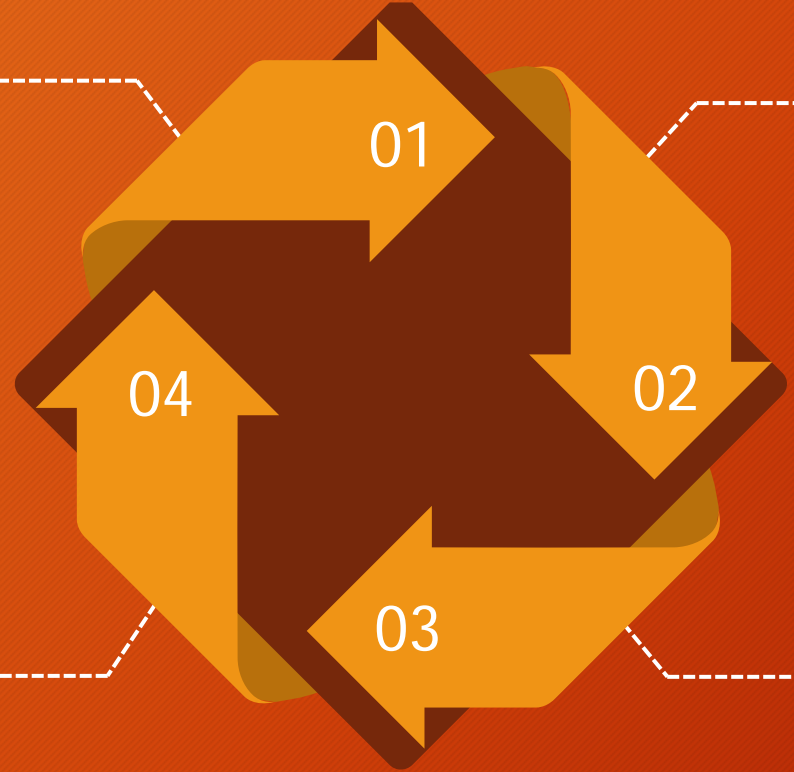
Must have attributes and features data models

TAKEAWAY: People remember a good conversation. Opportunities unfold when others know what we can do to help achieve the mission.





Innovations applied with students in several courses across multiple semesters



Outcome data objectives, field processes, project lifecycle management

Processes: ArcGIS Indoors, Survey123, Lidar, Dashboards



Identify needed resources: tasks, equipment, staff

GIS Program Actions





Collection

- Smart form for attributes
- Lidar for 3D point cloud datasets

Processing

- Native SLAM to .las
- .las to floor slice raster
- PNG to vector features (polygon and polyline)
- Joining of attributes on key field in ArcGIS Indoor information model

Consumption

- Updated floor plan features
- Configured app tailored to facilities users
- Scripts to export dwg datasets
- Update and maintenance via apps



Developments to date

- Project task list
- Data design
- Survey123 smart form
- Lidar protocols
- Processing protocols
- QA/QC protocols
- ArcGIS dashboard

TR_RoughDraft_PM_v54 - Saved

Search Excel

File Home Insert Draw Page Layout Formulas Data Review View Automate Help Comments Share Close

Calibri (Body) 11 B

B217

A B C D E F G H I J K L

1

2 **DALLAS COLLEGE** Brookhaven Campus Floor Plan Project

3

4 Information Row Created by Tanda Rasco Latest Update: Fr/4/7/23

5

6 Legend Row: Planned Start Planned End Actual Start Continue Actual End

7

8

9

Academic C Week 1

Spring Semester Starts Tu, Jan 17 >

Plan Start	Actual Start	Plan Duration	Actual Duration	Percent Complete	Sun	Mon
------------	--------------	---------------	-----------------	------------------	-----	-----

estCenter Budget ProjectBreakdown +



AT&T LTE 10:04 AM 86%

DC Facilities Room Report

Survey Purpose
This survey is designed for the collection of facilities data such as window size, door openings, images of rooms, and to be added to Lidar collected data for the same location.

Contact information: ssires@dallascollege.edu

Room Details

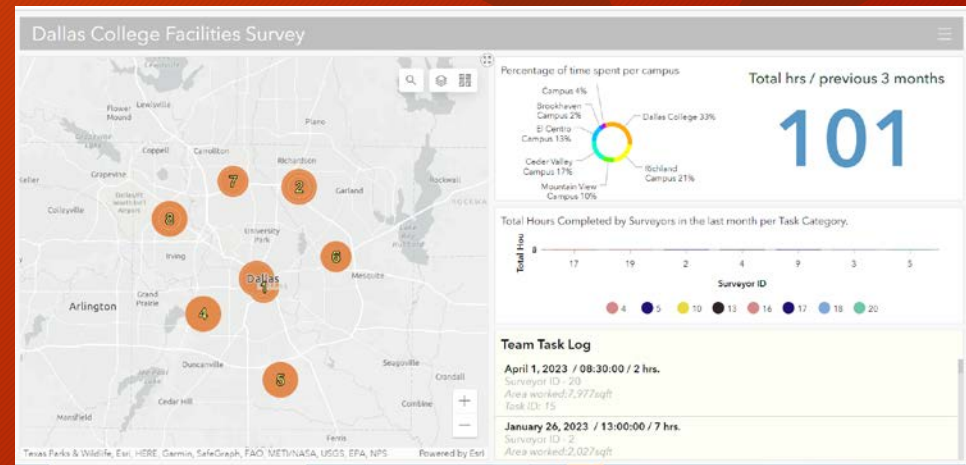
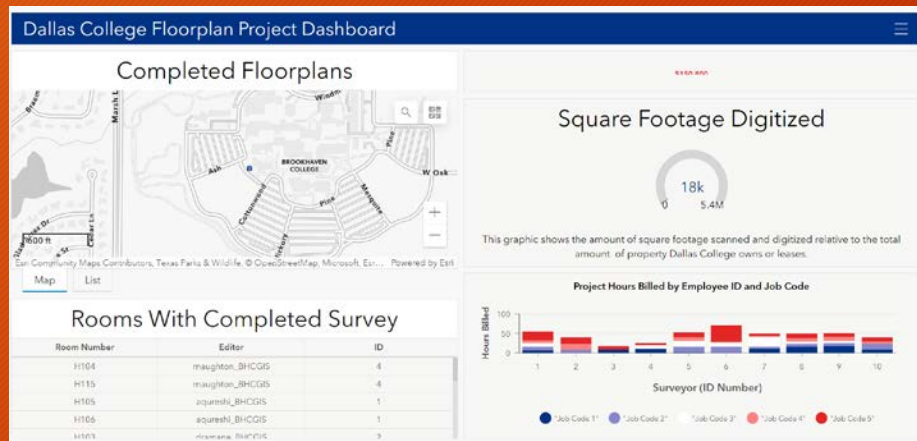
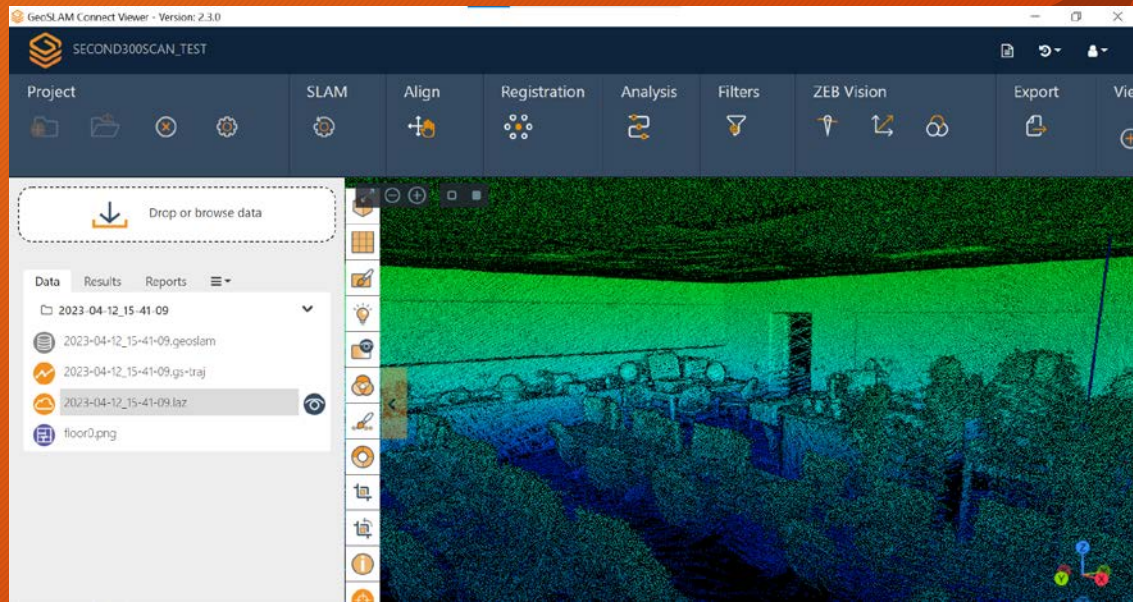
Facility*
Brookhaven Campus

BHC Building*
...

Floor Level*
1

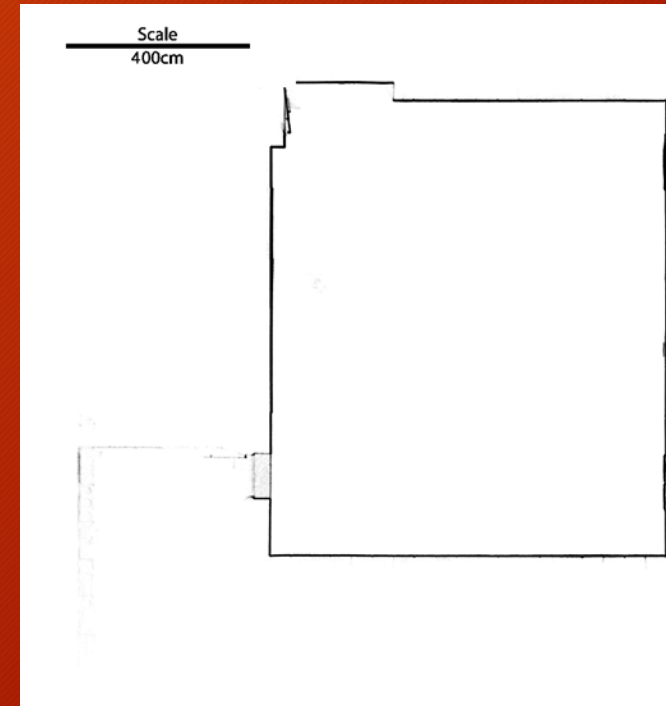
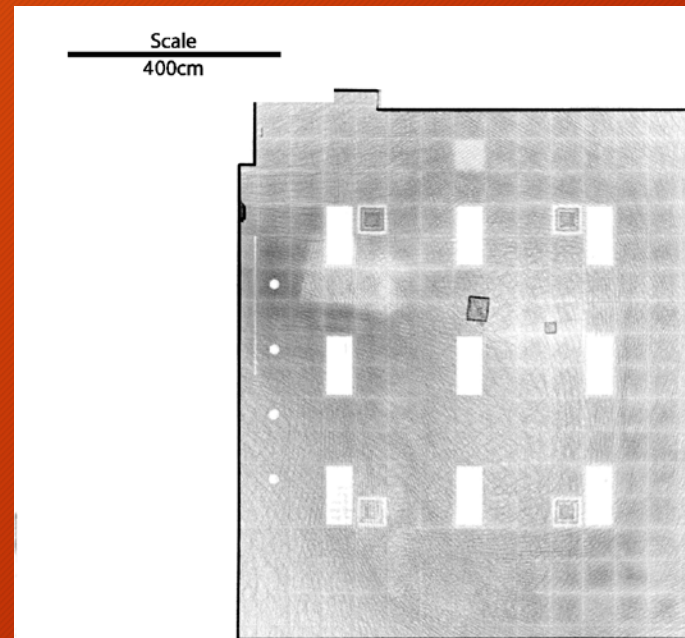
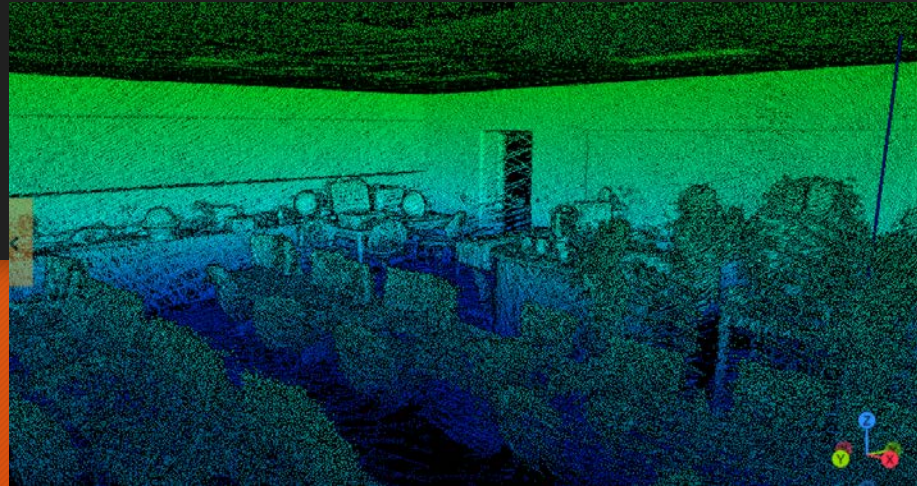
Room Number*

survey123.arcgis.com — Private



Who knew?

- I'll be darn if it didn't actually work out?!
- Plans and accidents to date have all added together to results in capacity and opportunity (Innovations that alter career paths).





Anticipated Outcomes

Expected to expend \$400k of the budgeted \$800k thus **saving the college \$400k**

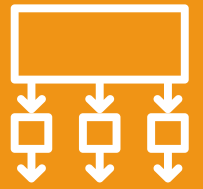
Student gains:

- contextualized lessons in a project resulting in improved learning in a cross-course team experience,
- real world work experience,
- resume content,
- portfolio content,
- reference potential,
- funds to sustain while in school

Dallas College gains: richer data product, access and working applications, a renewed understanding of geospatial technologies and related solutions



What are our next steps?



- Lidar units



- Hire students - active task



- Execute at scale

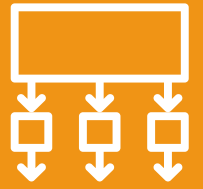


- Data governance and stewardship





What are further scopes?



- AI feature extraction from lidar



- ArcGIS Indoor Implementation



- Smart campus operations



- Modeling student engagement based of the GIS Program





Audience Engagement

Thank you for attending

J. Scott Sires

Professor, Geospatial Technology

Dallas College

Email: ssires@dallascollege.edu

Office: 972-860-4362

Web: www.dallascollege.edu/gis

Brookhaven Campus

3939 Valley View Ln., Farmers Branch, TX, 75244