Crowd Cartography:

Mobile crowdsourcing of university facilities mapping

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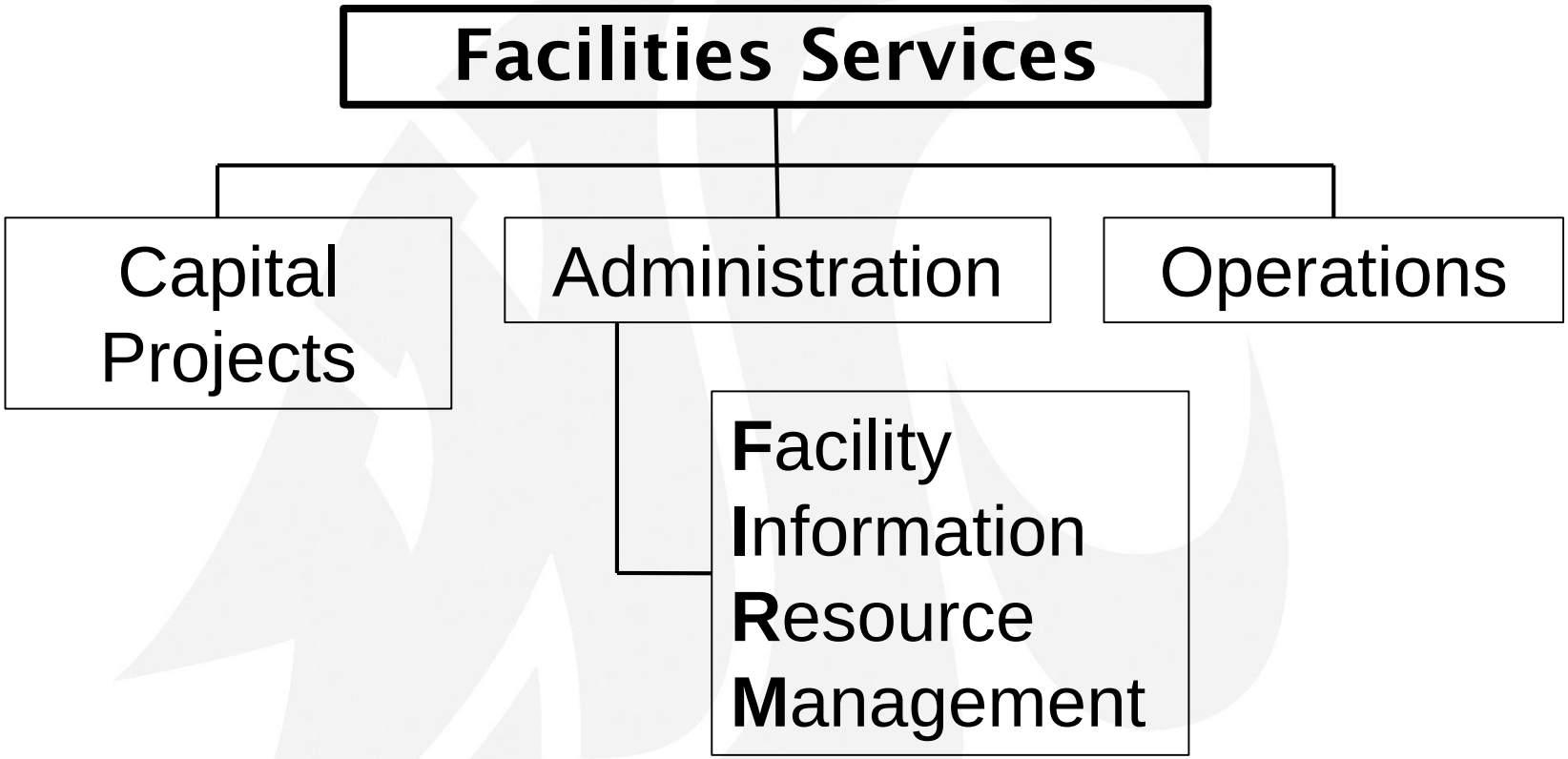
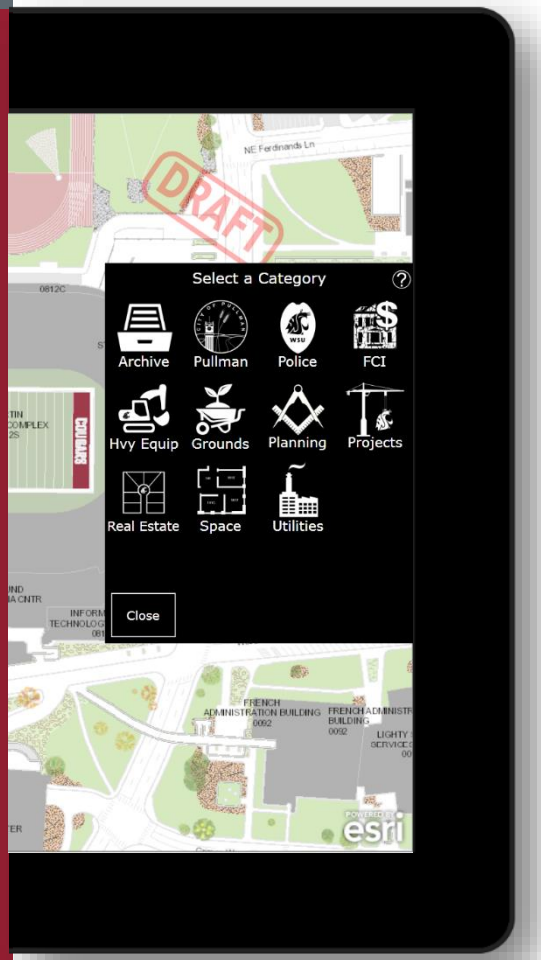
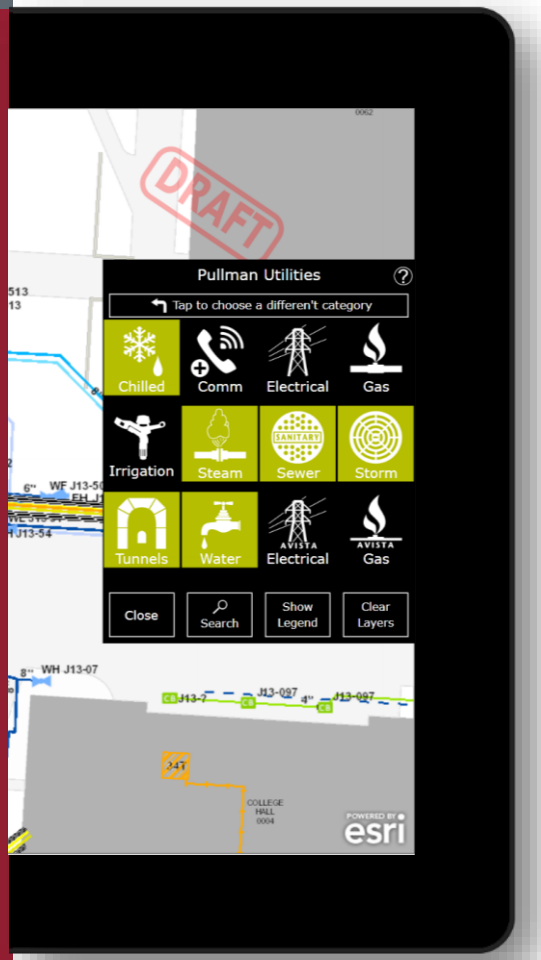


Facility Information Resource Management (FIRM)



- Campus & Space Planning
  - 2 FTE
- Spatial Information and Technology
  - GIS: 1 FTE and 1 time slip student employee
  - Campus Mapping: 1 FTE and multiple student employees
  - Drafting & Engineering Services: 2 FTE
  - Archive: 1 FTE
  - Space Management: 2 FTE

WSU Infrastructure Stats



Real Estate

- 21,550 acres owned & leased worldwide

Facilities

- 1,000 owned facilities
- 1,400 floorplans
- 12 million square feet of interior space

Utilities (Pullman)

- 27 miles of streets
- 50 miles of sidewalks
- 2700 outdoor lighting fixtures
- 42+ miles of electrical lines
- 22 miles of steam lines
- 30 miles of fresh water lines
- 6 miles of chilled water lines

Washington State University

- Founded 1890
- Land Grant Institution
- Over 29,000 undergraduate, graduate,
- and professional students
- PAC 12

WSU Locations

- 4 Campuses (Pullman, Spokane, Tri-Cities, Vancouver)
- 5 Research and Extension Centers
- 4 Research and Extension Units
- 1 Research Station

Problem

Maps for land, facilities, and utilities were not properly maintained over the last 40 years of expansion

Previous Mapping Technology

- CAD based utility maps
- ArcGIS Server 9.3
  - Used for real estate only
- Basic real estate viewer using ESRI Silverlight API v2.4

Solution:
Mobile Crowd Cartography App

Goal: Create an easy-to-use mobile application so that *all* staff can view and query the *same* geospatial data as well as *contribute* information back into the university's GIS.

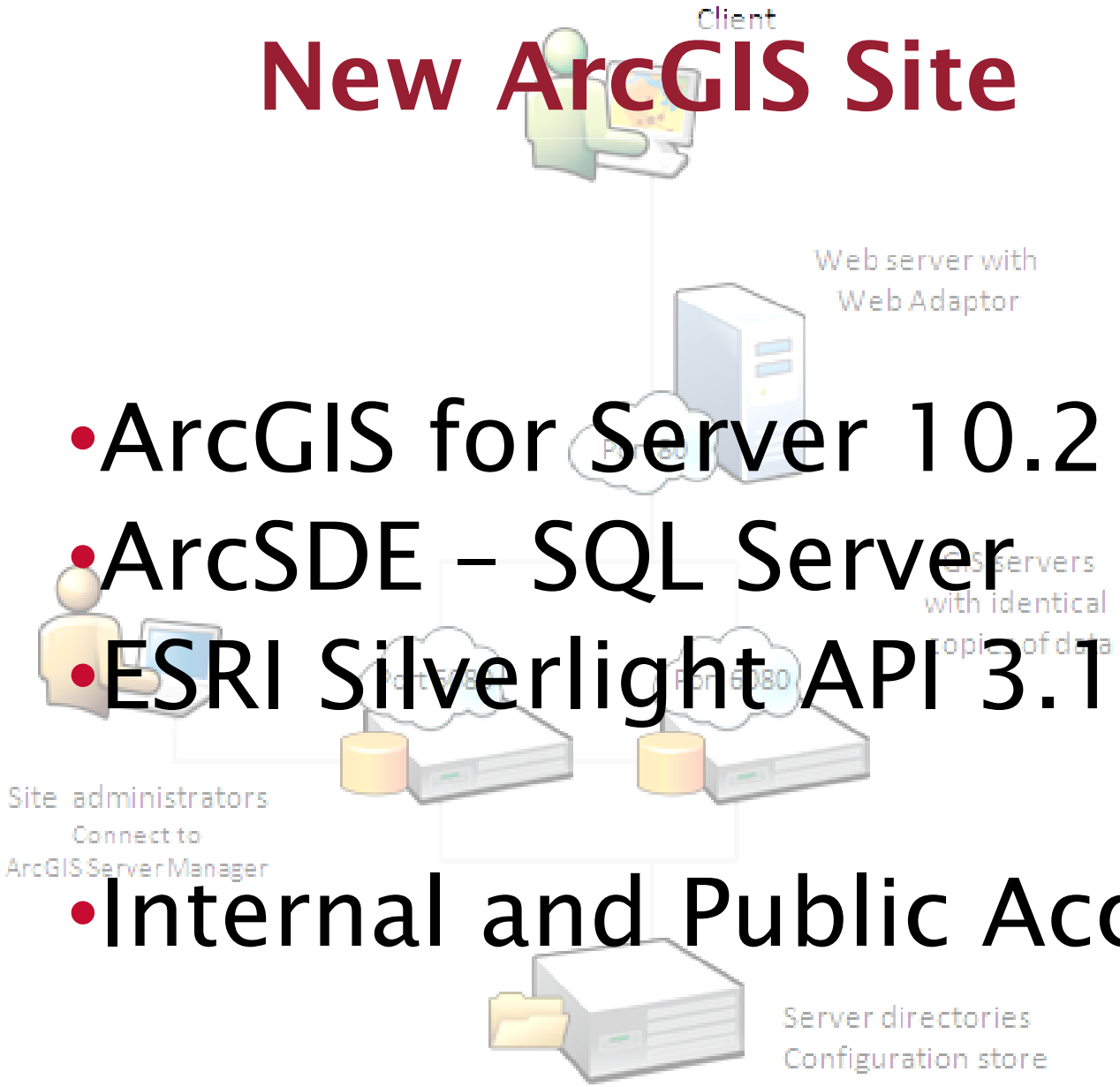
Critical Needs

- Easy and intuitive to use
- Allow users to submit corrections or additions to existing data

Critical Needs

- Must support current users of the GIS
  - Real Estate
  - Planning
  - Capital Projects
- Support expanded department workflows and users

New ArcGIS Site



- ArcGIS for Server 10.2
- ArcSDE – SQL Server
- ESRI Silverlight API 3.1
- Internal and Public Access

App Design

Menu Layout

- Easy to interact with while holding a tablet

Menu Card Stacks

- Allows for expansion of content and/or app functionality

App Highlight Color

- Makes it easy to distinguish apps from each other

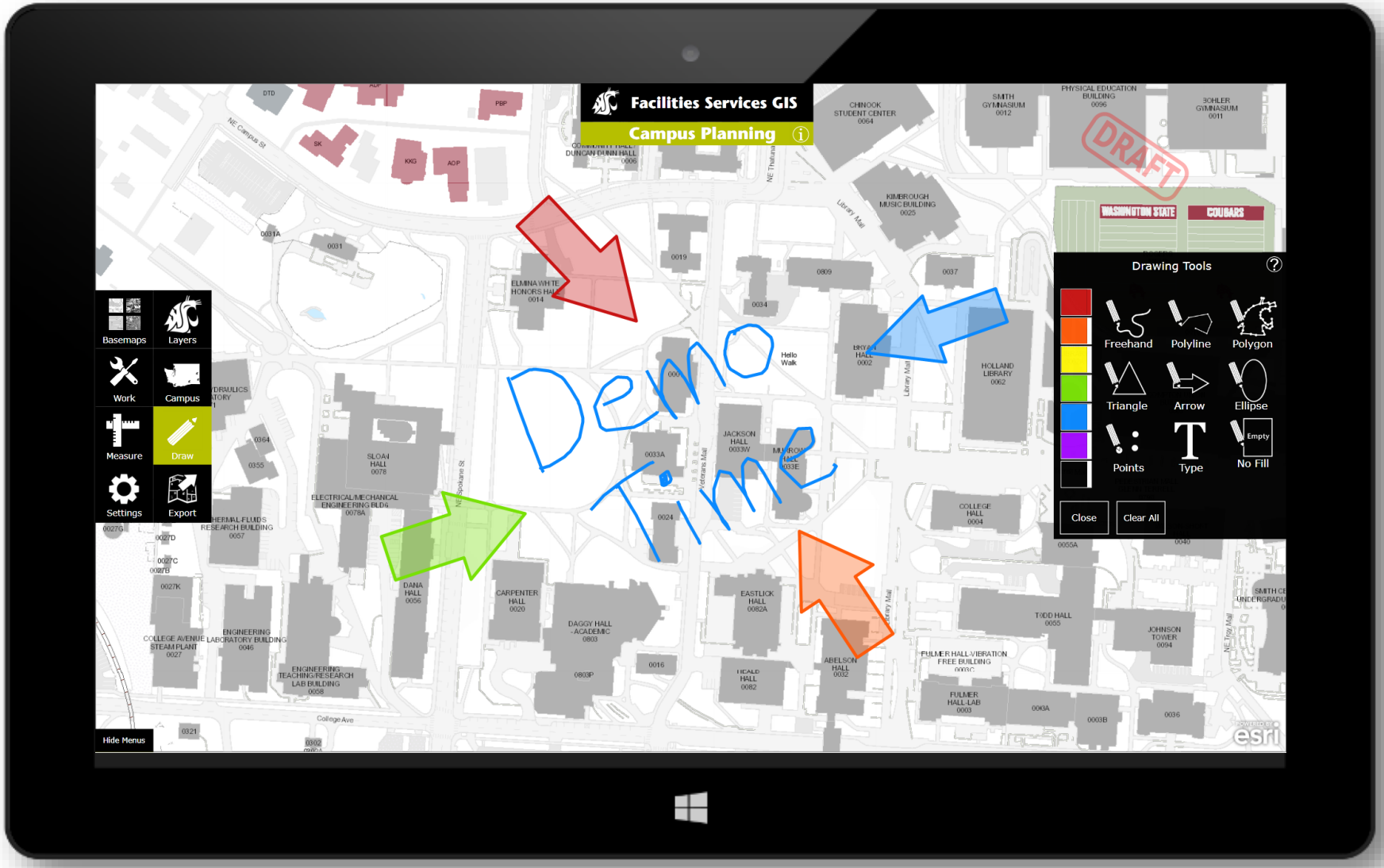
Layout


Facilities Services GIS
Campus Planning
Overview Map
Close
DRAFT
Pullman Utilities
Tap to choose a different category
Chilled
Comm
Electrical
Gas
Irrigation
Steam
Sewer
Storm
Tunnels
Water
Avista Electrical
Avista Gas
Close
Search
Show Legend
Clear Layers
Basemaps
Layers
Measure
Draw
Settings
Export
esri

Redlines


Facilities Services GIS
Campus Planning
DRAFT
Basemaps
Layers
Work
Campus
Measure
Draw
Settings
Export
Hide Menus
REDLINE
Selected System: STORM
Save
Delete
ID
CB L13-089
Type
Catch Basin
Notes
Found during inspectio
Added By
Bob
Date
11/10/2015 12:0C
created_user
created_date
11/10/2015 5:35:56 P
Close
Add More
NE Stadium Way
MH L13-183
CB L13-191
CB L13-055
CB L13-089
CB L13-088
MH L13-167
MH L13-078
CB L13-113
CB L13-115
MH L13-054
MH L13-053
MH L13-056
esri

Demo

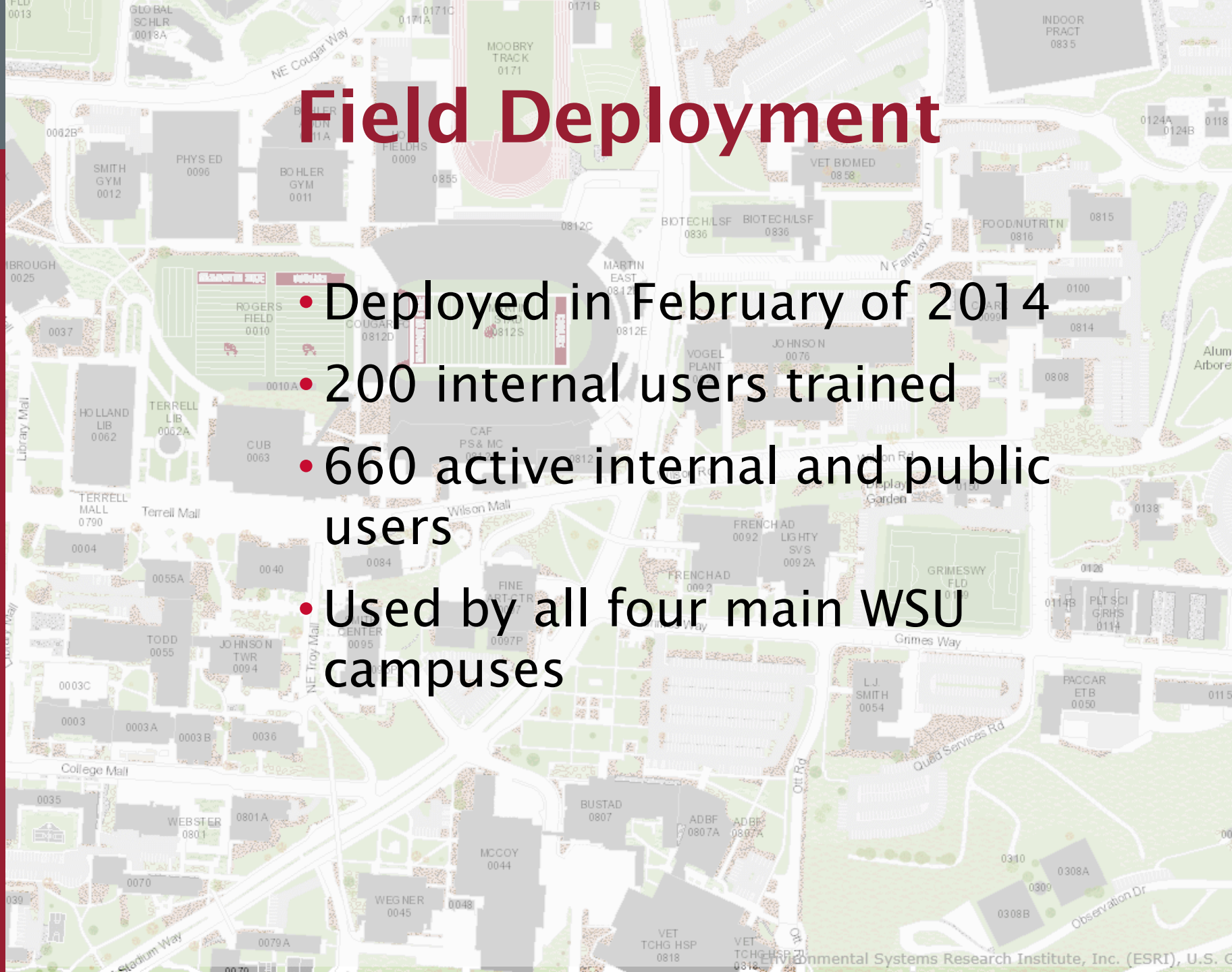

Facilities Services GIS
Campus Planning
DRAFT
Drawing Tools
Freehand
Polyline
Polygon
Triangle
Arrow
Ellipse
Points
Type
No Fill
Close
Clear All
Basemaps
Layers
Work
Campus
Measure
Draw
Settings
Export
Hide Menus
Demo Time
Hello Walk
College Ave
esri

Archive Maps

Civil Drawings

Field Deployment

- Deployed in February of 2014
- 200 internal users trained
- 660 active internal and public users
- Used by all four main WSU campuses

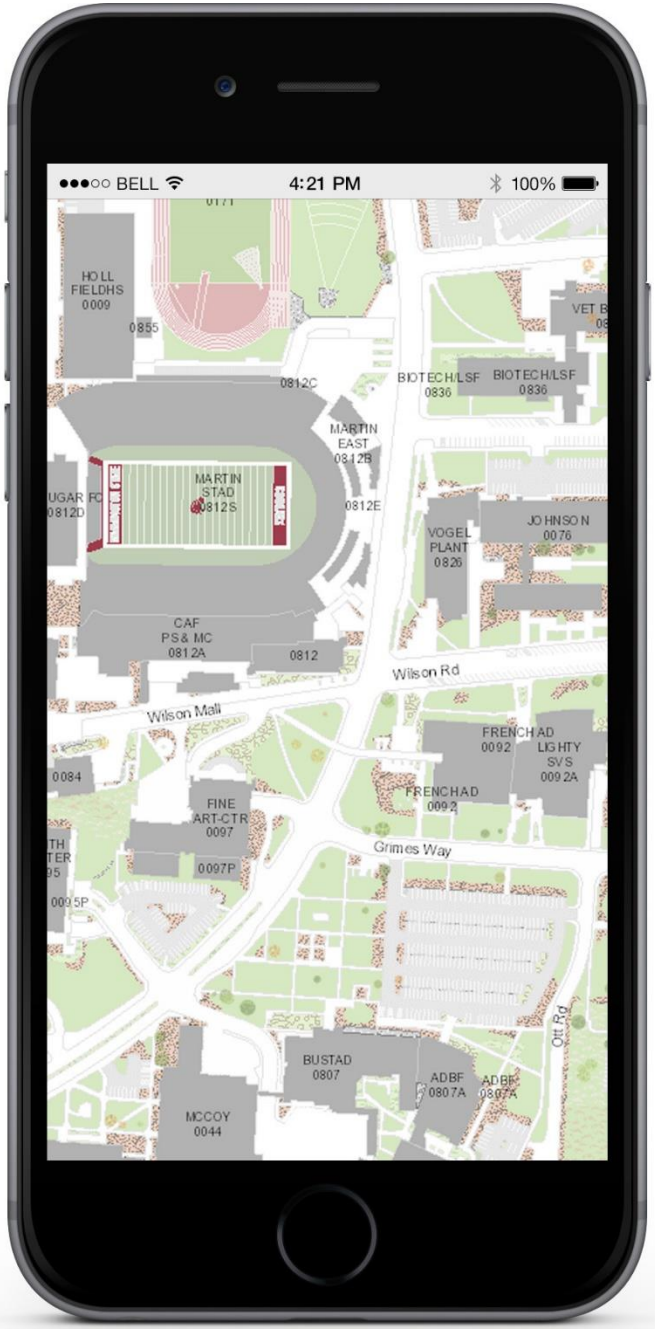


Results

- Multiple departments now updating their own map layers
  - E.g., 118 redlines collected in 4 days for the storm water system
- Complete systems being mapped using the redline utility
  - Irrigation by grounds crews
  - Electrical distribution
- The GIS is now the single source for digital mapping data
- Created discussions on workflows of project information
- Used during all planning meetings

Lessons Learned: User Experience

- Encourage Training!
- Get users excited, make it fun
- Add elements to make the transition easier, i.e. old scanned maps
- Get your users to take ownership in their data
- Spend the extra time on your UI/UX
- IT Support ☺



Future Development

- All new web-based application using the ESRI JavaScript API
  - Mobile first design strategy
- New ArcGIS for Server Site
  - Multi-machine deployment
  - Geoevent Processor
- Streamline data collection and integration into GIS from current CAD based campus mapping workflows

Questions?

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