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January 22nd, 2015

2015 GeoDesign Summit

Workflows to Support Geodesign:

ArcGIS Interoperability for Site Design, Engineering and 3D Visualization

- Generate Design Content (including proposed terrains)
- Convert to GIS
- Model in CityEngine
- Share via Web

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Client Based Design Studios

THE NAVY YARD PHILADELPHIA

PIDC

LIBERTY PROPERTY TRUST

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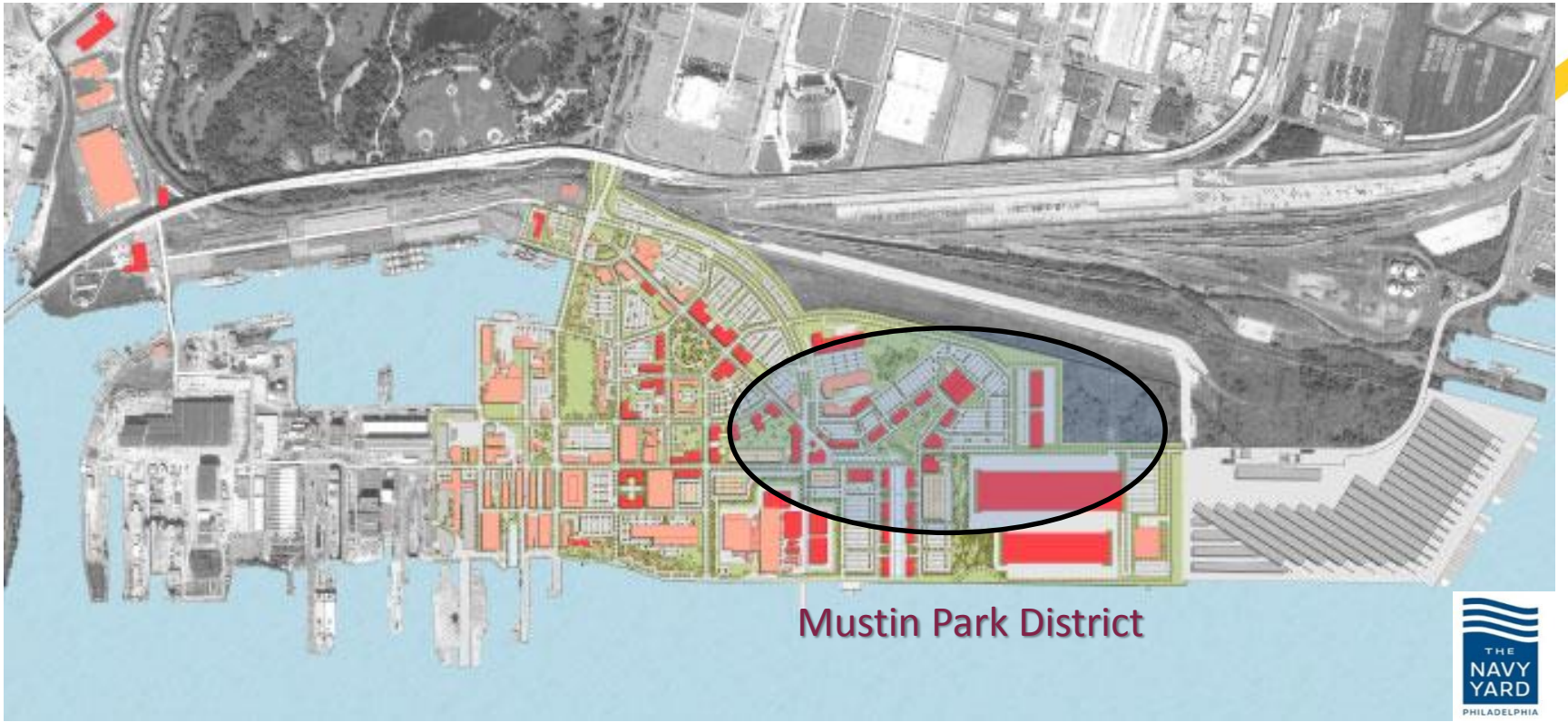
Mustin Park District

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Challenge:

- **Develop rich site design content (including terrains)**
- **Use ArcGIS to integrate and share design content with stakeholders**

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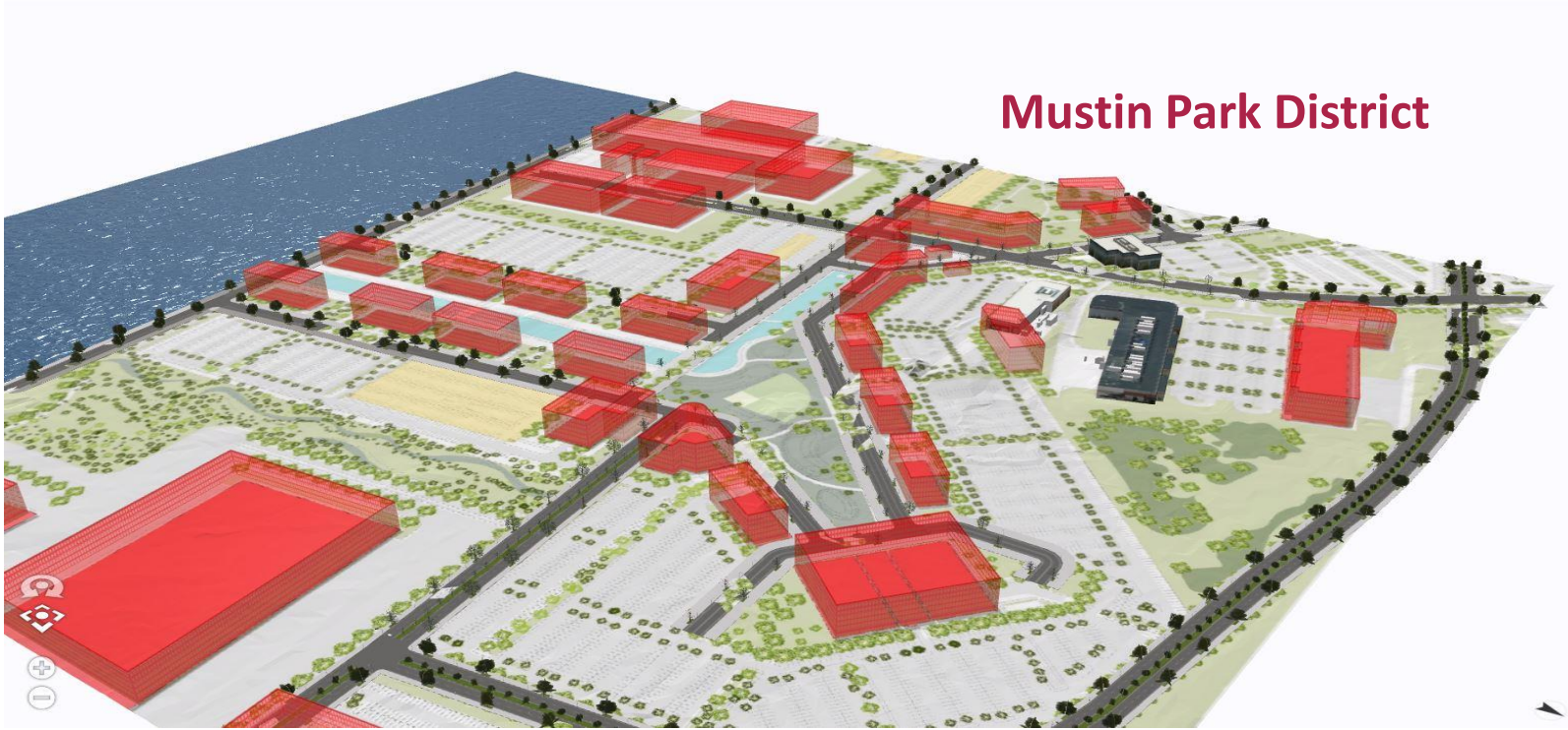
Mustin Park District



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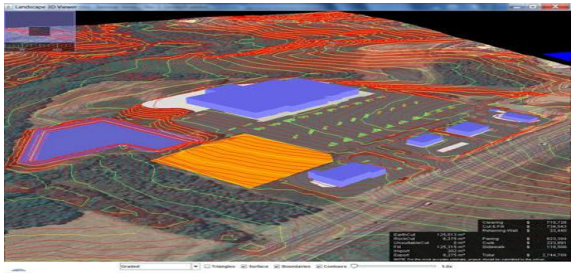
Geodesign Workflow Collaborators:

- **Patrick Gahagan:** Esri and Philadelphia University
- **Steve Lewis and Mike Kissinger:** Pennoni Associates



SITEOPS

ArcGIS® ArcMap™ 10.2

esri

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CityEngine®

2014

Initializing License...

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ArcGIS Online

Design Content Generation

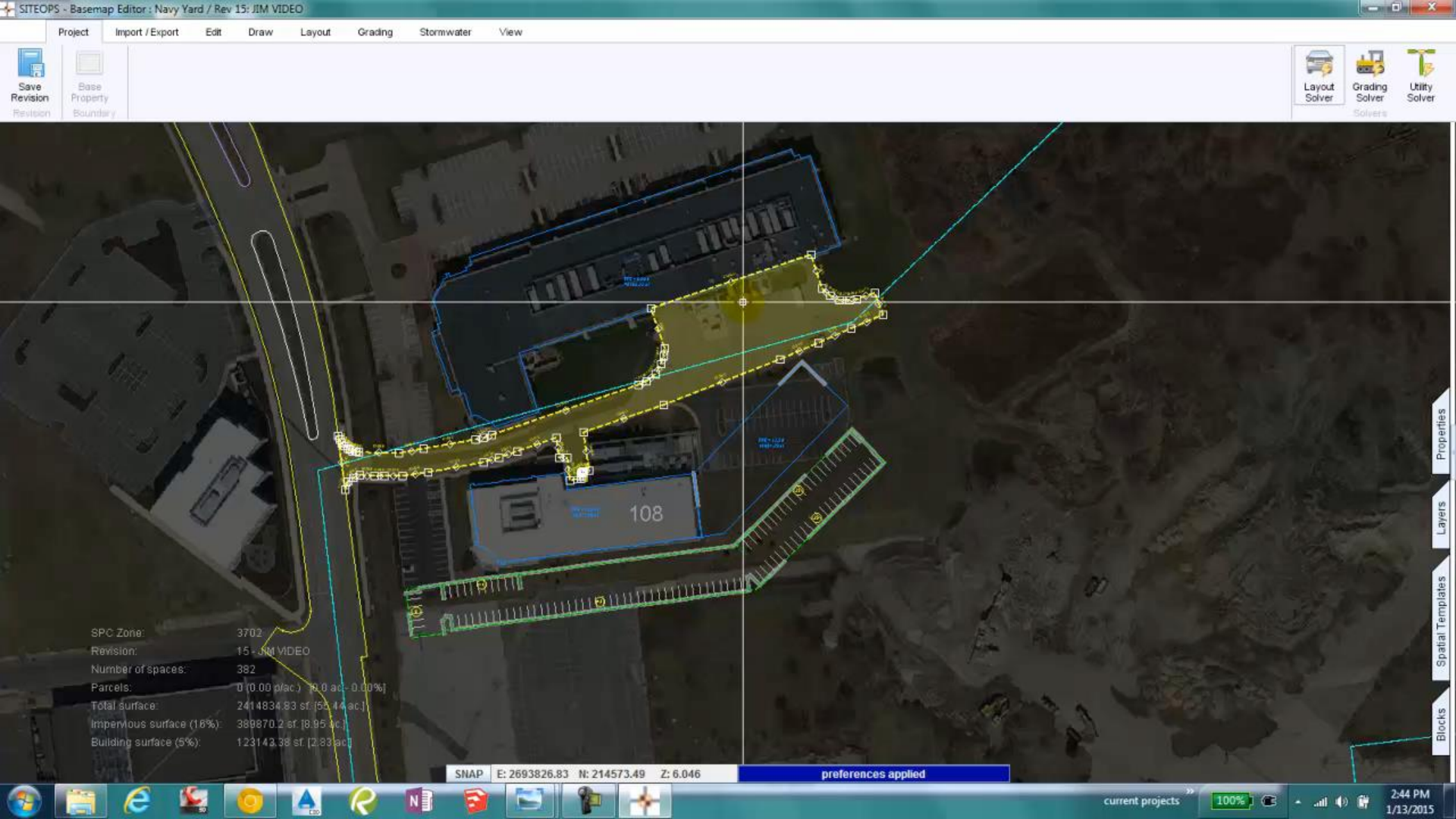
Conversion to GIS

3D Modeling

Web Collaboration

SiteOps

- SAAS solution uses existing GIS data and imagery
- Site design
  - Circulation
  - Parking lots (islands, spaces, drives, etc.)
  - Other landscape features (e.g., plazas, parks, etc.)
- Site engineering
  - Proposed contours and spot elevations
  - Proposed terrain
  - Stormwater management infrastructure
- Export to ArcGIS via DWG and LandXML


SITEOPS - Basemap Editor : Navy Yard / Rev 15: JIM VIDEO
Project
Import / Export
Edit
Draw
Layout
Grading
Stormwater
View
Save Revision
Base Property Boundary
Layout Solver
Grading Solver
Utility Solver
Solvers
108
Properties
Layers
Spatial Templates
Blocks
SPC Zone: 3702
Revision: 15 - JIM VIDEO
Number of spaces: 382
Parcels: 0 [0.00 p/ac.] [0.0 ac - 0.00%]
Total surface: 2414834.83 sf. [55.44 ac.]
Impervious surface (16%): 389870.2 sf. [8.95 ac.]
Building surface (5%): 123143.38 sf. [2.83 ac.]
SNAP
E: 2693826.83 N: 214573.49 Z: 6.046
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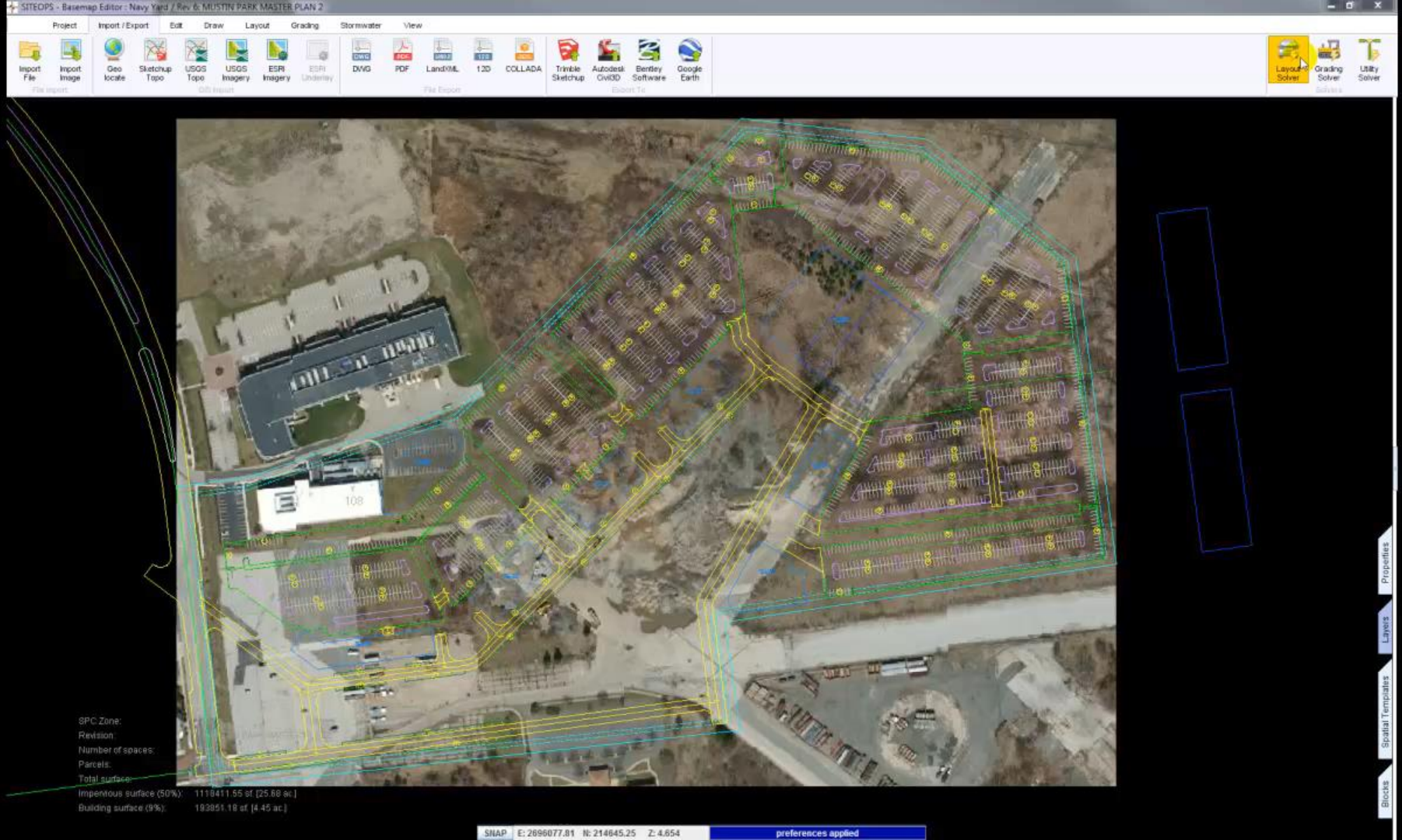
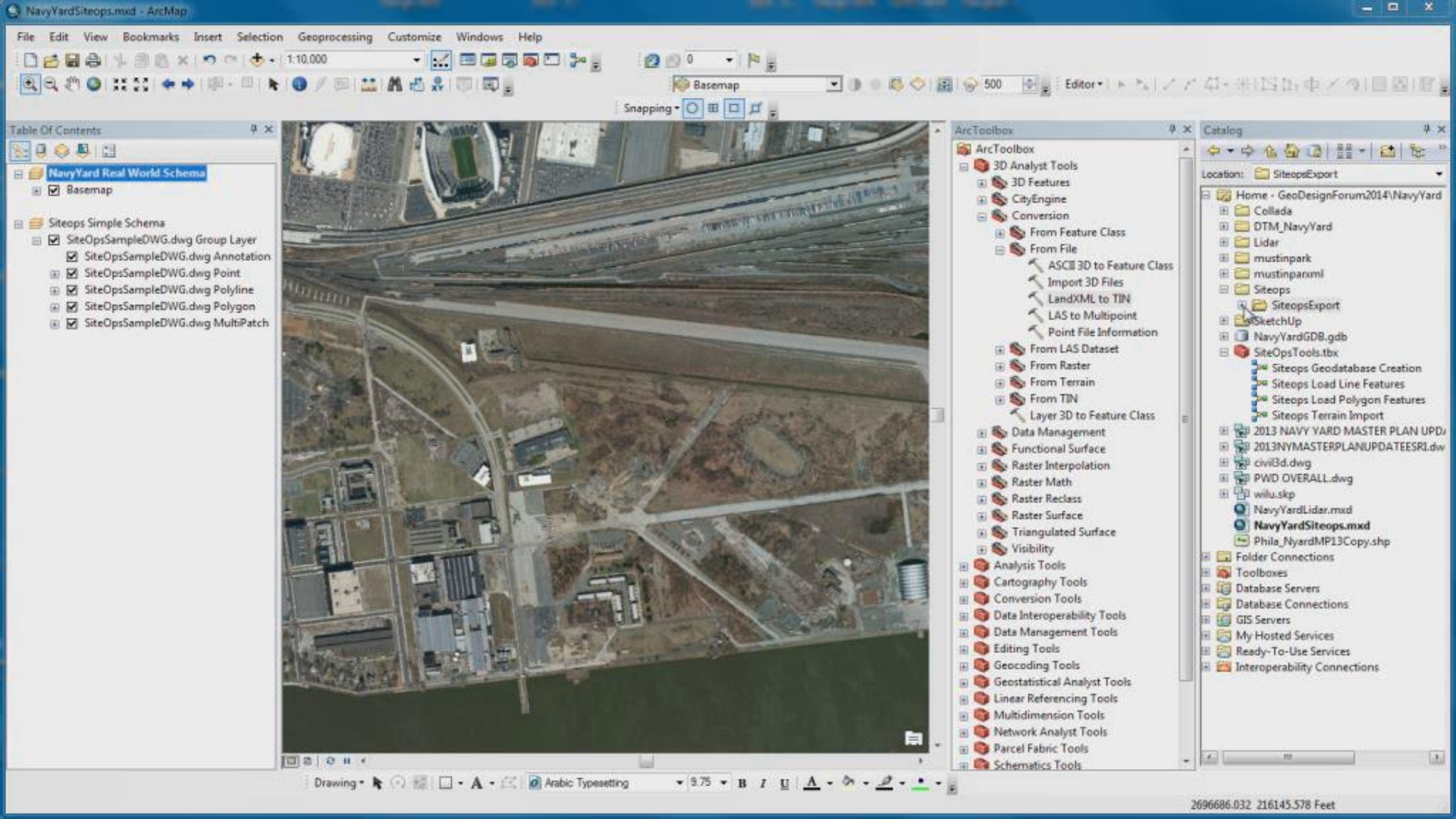
current projects
100%
2:44 PM
1/13/2015


SITEOPS - Basemap Editor : Navy Yard / Rev 6: MUSTIN PARK MASTER PLAN 2
Project
Import / Export
Edit
Draw
Layout
Grading
Stormwater
View
Import File
Import Image
Geo locate
Sketchup Topo
USGS Topo
USGS Imagery
ESRI Imagery
ESRI Underlay
DWG
PDF
LandXML
12D
COLLADA
Trimble Sketchup
Autodesk Civil3D
Bentley Software
Google Earth
Layout Solver
Grading Solver
Utility Solver
SPC Zone:
Revision:
Number of spaces:
Parcels:
Total surface:
Impervious surface (50%): 1118411.55 sf [25.68 ac.]
Building surface (9%): 193851.18 sf [4.45 ac.]
SNAP
E: 2696077.81
N: 214645.25
Z: 4.654
preferences applied
Properties
Layers
Spatial Templates
Blocks

ArcGIS Desktop

- Create geodatabase
- Import site design content into the geodatabase
- Add attributes and projection
- Import proposed terrain content
- Prep for CityEngine


NavyYardSiteops.mxd - ArcMap
File Edit View Bookmarks Insert Selection Geoprocessing Customize Windows Help
Table Of Contents
NavyYard Real World Schema
Basemap
Siteops Simple Schema
SiteOpsSampleDWG.dwg Group Layer
SiteOpsSampleDWG.dwg Annotation
SiteOpsSampleDWG.dwg Point
SiteOpsSampleDWG.dwg Polyline
SiteOpsSampleDWG.dwg Polygon
SiteOpsSampleDWG.dwg MultiPatch
ArcToolbox
3D Analyst Tools
3D Features
CityEngine
Conversion
From Feature Class
From File
ASCII 3D to Feature Class
Import 3D Files
LandXML to TIN
LAS to Multipoint
Point File Information
From LAS Dataset
From Raster
From Terrain
From TIN
Layer 3D to Feature Class
Data Management
Functional Surface
Raster Interpolation
Raster Math
Raster Reclass
Raster Surface
Triangulated Surface
Visibility
Analysis Tools
Cartography Tools
Conversion Tools
Data Interoperability Tools
Data Management Tools
Editing Tools
Geocoding Tools
Geostatistical Analyst Tools
Linear Referencing Tools
Multidimension Tools
Network Analyst Tools
Parcel Fabric Tools
Schematics Tools
Catalog
Location: SiteopsExport
Home - GeoDesignForum2014\NavyYard
Collada
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Lidar
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Siteops
SiteopsExport
SketchUp
NavyYardGDB.gdb
SiteOpsTools.tbx
Siteops Geodatabase Creation
Siteops Load Line Features
Siteops Load Polygon Features
Siteops Terrain Import
2013 NAVY YARD MASTER PLAN UPD
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PWD OVERALL.dwg
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NavyYardSiteops.mxd
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Folder Connections
Toolboxes
Database Servers
Database Connections
GIS Servers
My Hosted Services
Ready-To-Use Services
Interoperability Connections
Drawing
Arabic Typesetting
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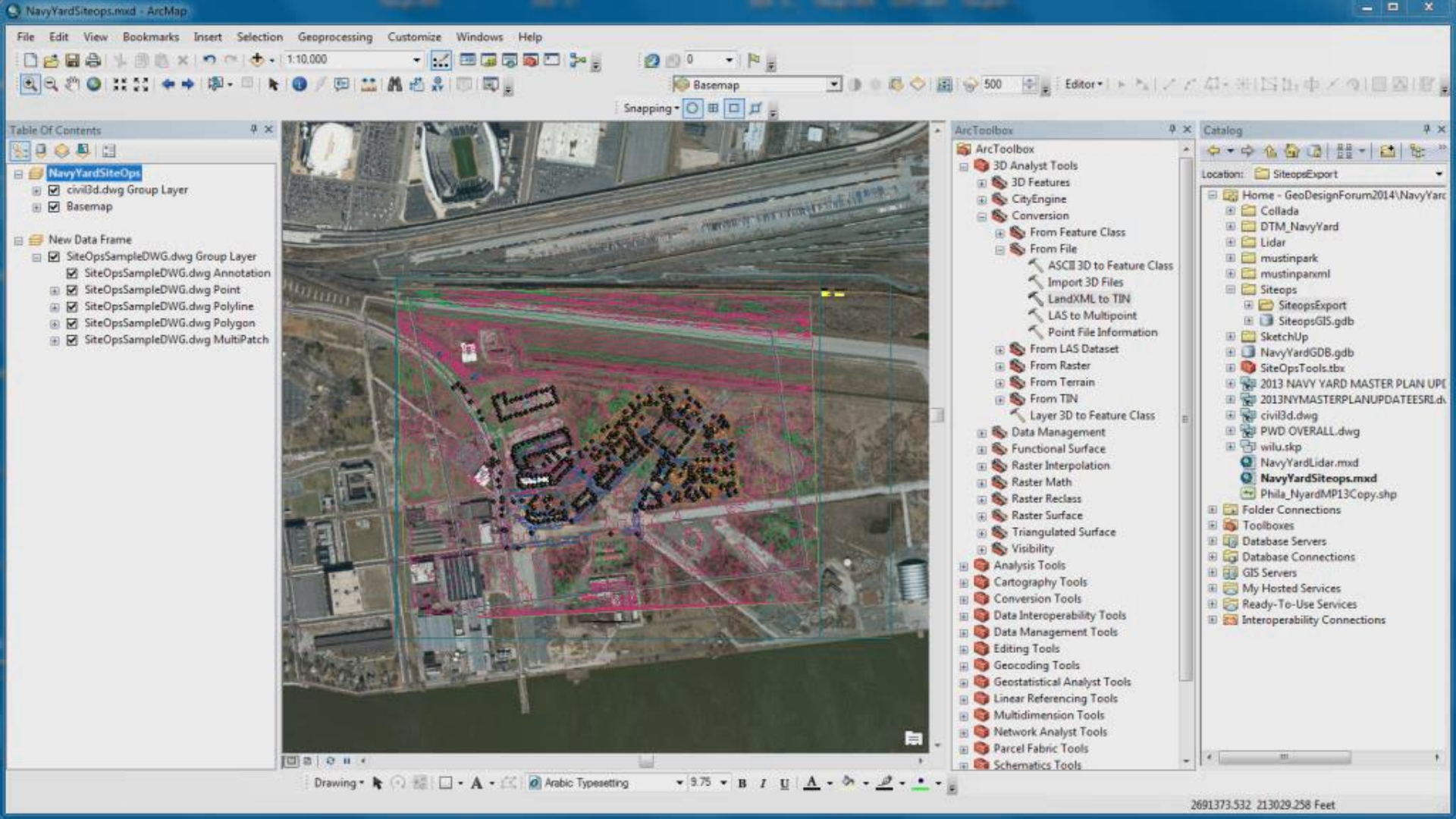
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Table Of Contents
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civil3d.dwg Group Layer
Basemap
New Data Frame
SiteOpsSampleDWG.dwg Group Layer
SiteOpsSampleDWG.dwg Annotation
SiteOpsSampleDWG.dwg Point
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Geocoding Tools
Geostatistical Analyst Tools
Linear Referencing Tools
Multidimension Tools
Network Analyst Tools
Parcel Fabric Tools
Schematics Tools
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DTM_NavyYard
Lidar
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mustinparxml
Siteops
SiteopsExport
SiteopsGIS.gdb
SketchUp
NavyYardGDB.gdb
SiteOpsTools.tbx
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PWD OVERALL.dwg
wilu.skp
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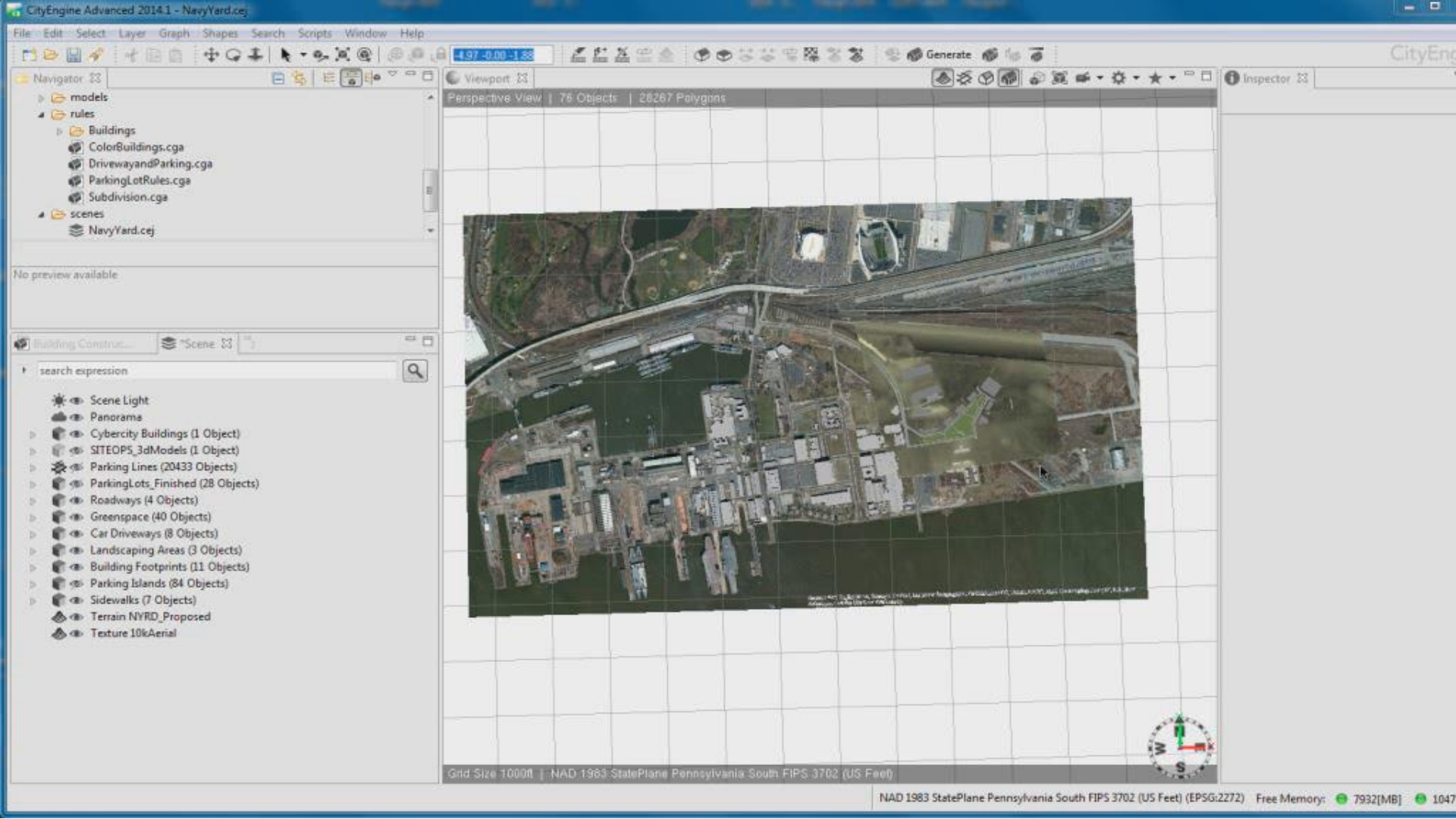
NavyYardSiteops.mxd
Phila_NyardMP13Copy.shp
Folder Connections
Toolboxes
Database Servers
Database Connections
GIS Servers
My Hosted Services
Ready-To-Use Services
Interoperability Connections
Drawing
Arabic Typesetting
2691373.532 213029.258 Feet

CityEngine

2015 GeoDesign Summit

Design Content Generation
Import to GIS
3D Modeling
Web Collaboration

- **Intuitive and realistic** 3D visualization of designs
- **Clear** representation of design goals
- **Report generation** to support design goals (e.g., sustainable design measures)


CityEngine Advanced 2014.1 - NavyYard.cej
File Edit Select Layer Graph Shapes Search Scripts Window Help
Generate
Navigator
models
rules
Buildings
ColorBuildings.cga
DrivewayandParking.cga
ParkingLotRules.cga
Subdivision.cga
scenes
NavyYard.cej
No preview available
Viewport
Perspective View | 76 Objects | 28267 Polygons
Inspector
*Scene
search expression
Scene Light
Panorama
Cybercity Buildings (1 Object)
SITEOPS_3dModels (1 Object)
Parking Lines (20433 Objects)
ParkingLots_Finished (28 Objects)
Roadways (4 Objects)
Greenspace (40 Objects)
Car Driveways (8 Objects)
Landscaping Areas (3 Objects)
Building Footprints (11 Objects)
Parking Islands (84 Objects)
Sidewalks (7 Objects)
Terrain NYRD_Proposed
Texture 10kAerial
Grid Size 1000ft | NAD 1983 StatePlane Pennsylvania South FIPS 3702 (US Feet)
NAD 1983 StatePlane Pennsylvania South FIPS 3702 (US Feet) (EPSG:2272)
Free Memory: 7932[MB]

Perspective View | 19980 Objects | 363722 Polygons
Grid Size 100ft | NAD 1983 StatePlane Pennsylvania South FIPS 3702 (US Feet)

Perspective View | 19980 Objects | 363722 Polygons
Grid Size 100ft | NAD 1983 StatePlane Pennsylvania South FIPS 3702 (US Feet)

CityEngine Web Scene

- Upload to CityEngine model to ArcGIS Online and share with stakeholders

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philauniv.maps.arcgis.com/apps/CEWebViewer/viewer.html?3dWebScene=83017016ddc84911a0ccf82b4f1c9eff
NavyYard
SHARE
HELP
SIGN OUT
(JIM QUERRY)
Layers
Cybercity Buildings
Buildings
Building Footprints
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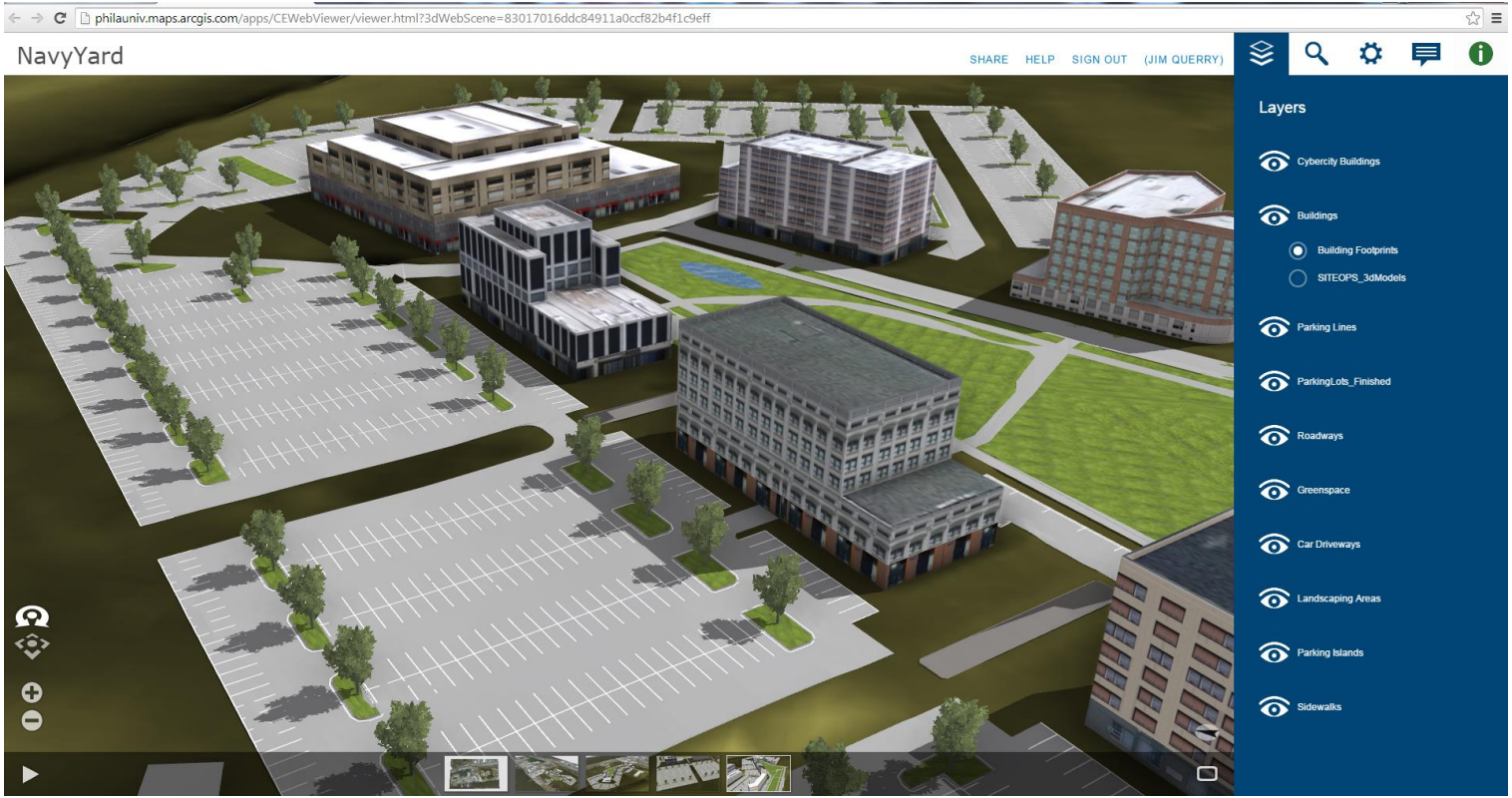

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