Where?
The Place

The Navy Yard

Philadelphia
TNY During World War II
Deliverable: CityEngine Webscene

Link: http://goo.gl/YQUefG
How?
Measuring the Guiding Principles
Map the human experience
The Navy Yard Experience:
Asset Density

Map the site’s assets
Resources are infrastructure, experiences, ecology, or economy.
Interdisciplinary Charrette
Measuring the Success of Design

```plaintext
ColorUpper(usage) -->
case usage == "Residential" :
  #color("#ff0000")
  report("Total Residential Area", geometry.area)
  report("Number of Units", geometry.area/122.5) $1919 sf units
  report("Number Required Parking Spaces", geometry.area/122.5) $1 spot per ur

case usage == "Academic" :
  #color("#ff9900")
  report("Total Academic Area", geometry.area)
  report("Number Required Parking Spaces", geometry.area/92.8) $4 spots per 2

case usage == "Other" :
  #color("#ff0000")
  report("Total Mixed Use Area", geometry.area)

case usage == "Parking" :
  #color("#8B008B")
  report("Total Parking Garage Area", geometry.area)
  report("Number of Parking Spots", geometry.area/27.87) $300 sf per cp

case usage == "Commercial" :
  #color("#008000")
  report("Total Retail Area", geometry.area)

case usage == "Office" :
  #color("#ff0000")
  report("Total Office Area", geometry.area)
  report("Number of Employment", geometry.area/22.5) $250 sf per em
  report("Number Required Parking Spaces", geometry.area/92.9*3.5) $3.5 spots

else:
  X.

ColorGround(usage) -->
case usage == "Residential" :
```

The Geodesign Paradigm
Feedback loops manage data & facilitate good, sustainable design.
Iterative Design With Feedback Loops
Value Map

- Society
  - Involvement
  - Complexity
  - Security
  - Identity
  - Accessibility
  - Composition
  - Flexibility
  - Processes
  - Communication
  - Services
  - Activity
  - Financial Structures

- Ecology
  - Aesthetics
  - Land Use
  - Biodiversity
  - Bioclimatic Design
  - Material Cycles
  - Water Cycles
  - Energy
  - Transport
  - Health
  - Costs
  - Functionality

- Economy
  - Activity
  - Financial Structures
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- Economy
Geodesign is sustainability in practice, not theory.
Ecodistrict Framework

Grocery Accessibility

West AOI

East AOI
Solar Suitability
Set Baselines for Measurement
Why?
Sustainability Precedents

- Central to public life, freely open to visitors
- Structurally expressive architecture
- Transit/transportation connections
- Ecologically self-sustaining
- Historically monumental
- Proximity increases property values
- Gathering place; artistic, educational, economic, etc.
30%...the increase in rentable square feet using feedback loops during design,

PLUS a visibly more sustainable experience.
Thank you!
Guiding Principles = Sustainability (& Success)

Ecology: accept the ebbs and flows of nature ... accentuates the river, sky ... symbiotic relationship with built environment ...

Education & Experience: landscape and public art as a tool for education ... Navy Yard as a cultural landmark ...

History & Connection: historical identity ... multi-scale ... connecting the stakeholders to its past ...

Infrastructure: green infrastructure ... the model for future sustainable development ... economic value ...

Connection & Access: interactive waterfront ... varied modes of transit for everyone ...

≡ Our version of “sustainability”
References

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11: Source: Esri CityEngine, Redlands Building Construction Rule
12: Diagram concept: Matthias Buchler
15: Diagram concept: Dr. Christopher Butters, Netherlands
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   Photo 5: Photo by Google Earth Accessed 7/31/2015