CITE – Center for Innovation Testing and Evaluation

An Integrated “Vacant Village” Test Environment

May 2012

NATIONAL SECURITY • ENERGY & ENVIRONMENT • HEALTH • CYBERSECURITY

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Overview

- What is CITE?
- CITE operation
- Start-up infrastructure
- Summary and benefits

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What is CITE?

- A slice of American civilization
  - 20th century, unpopulated city of 35,000 with urban, commercial, industrial and suburban centers and beyond to remote rural areas
  - Outlying mock airport, interstate highway and road networks, all relevant transportation infrastructure
  - Self sustaining – energy (including green) and water production as well as data center resources
- Fully instrumented T&E "harness" for prototypes in any technical domain of client need
- Provides integrated operating civilization as a T&E environment

Intelligent Transportation Systems (ITS)

Energy production, including green energy

Desalination and wastewater treatment

Smart grid

Advanced telecommunications and wireless

Physical security

Cyber security

Other

CITE = Center for Innovation Test and Evaluation
T&E = test and evaluation

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CITE Operation – Functional Diagram

CITE policy & procedures

- Outreach
- Client engagement
- Quality survey
- FFRDC for FED interface

- Monitor performance
- Design/plan improvements
- T&E output
- Prototype assessment

- 20th century infrastructure
  - Urban
  - Commercial
  - Suburban
  - Rural
  - Roads
  - Energy
  - Water
  - Airport
- Builds
  - Initial
  - Evolutionary

CITE WORLD

CITE CAMPUS

- Commercialization
- Collaboration
- O&M
- Security

CITE BACKBONE

BRACKISH WATER

WATER ON GRID

ENERGY ON GRID

GREEN ENERGY ON GRID

DATA ON GRID

- Commercialization needs
- Test goals and objectives
- FFRDC for FED interface
- Feedback

- Test design
- IP requirements

CITE LABS

- Test Planning
- Operations
- Implementation
- Control & monitoring
- Recording & reporting

O&M = operation and maintenance
FFRDC = Federally Funded Research and Development Centers

FED = federal
IP = Internet Protocol

T&E = test and evaluation
CITE = Center for Innovation Test and Evaluation

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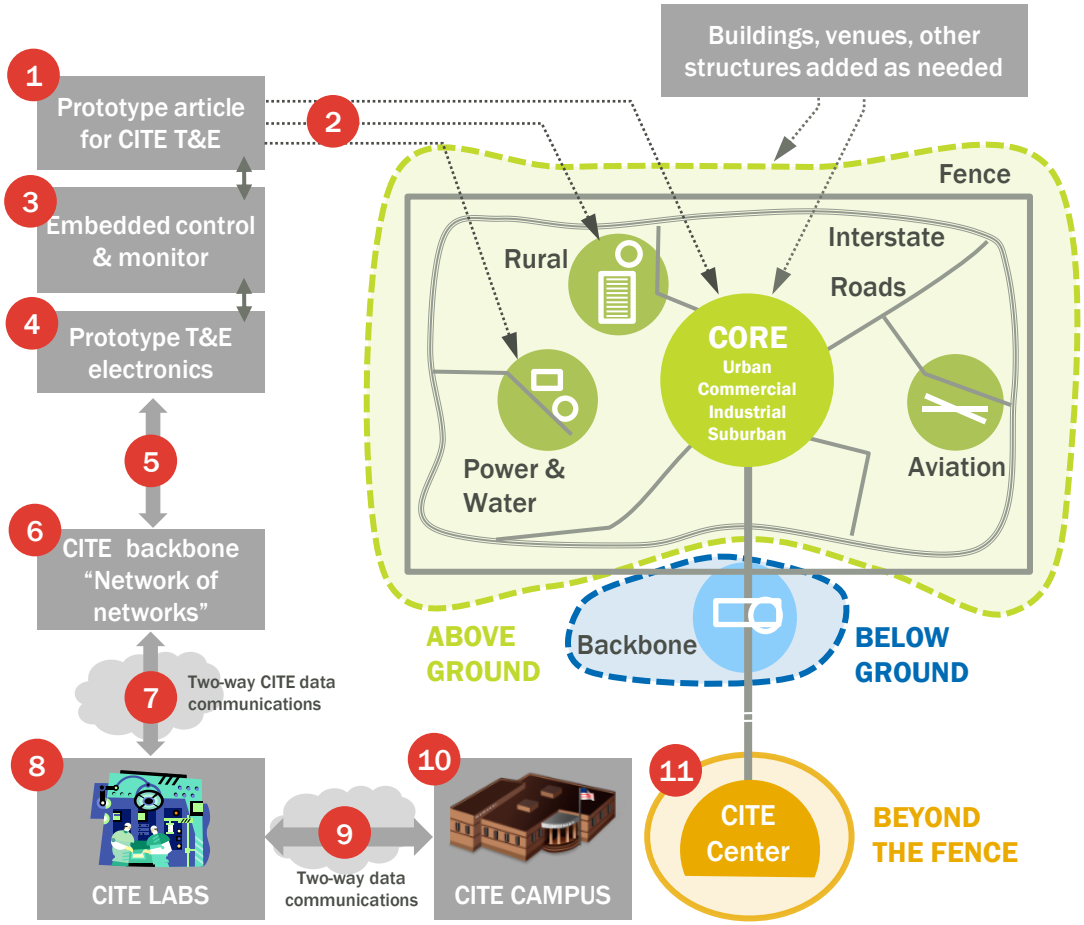
CITE Operation – Data Flows

1. Prototype(s) under test
2. Prototype deployments
3. Prototype electronics, if any
4. Prototype monitoring and control interface
5. Prototype data flows
6. "Net of nets"
7. CITE "harness" cloud
8. Campus labs
9. CITE campus cloud
10. CITE assessment
11. Packaged results to client



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CITE Operation – CITE Customers

Offering	Description
CITE as a shared facility	Pay fees to use the CITE facilities with the support from CITE personnel
CITE as a service provider	Employ CITE staff to design and execute to prototype measurement campaign
Build-out bolt-on clients	Addition of major facilities for energy, water, etc.
Resource sales	Resource production: energy, water, data center
Miscellaneous	Office/lab tenants, branding, entertainment, facility services

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Initial Build – CITE Layout

CITE is organized around three unique functional components

ABOVE GROUND ZONES

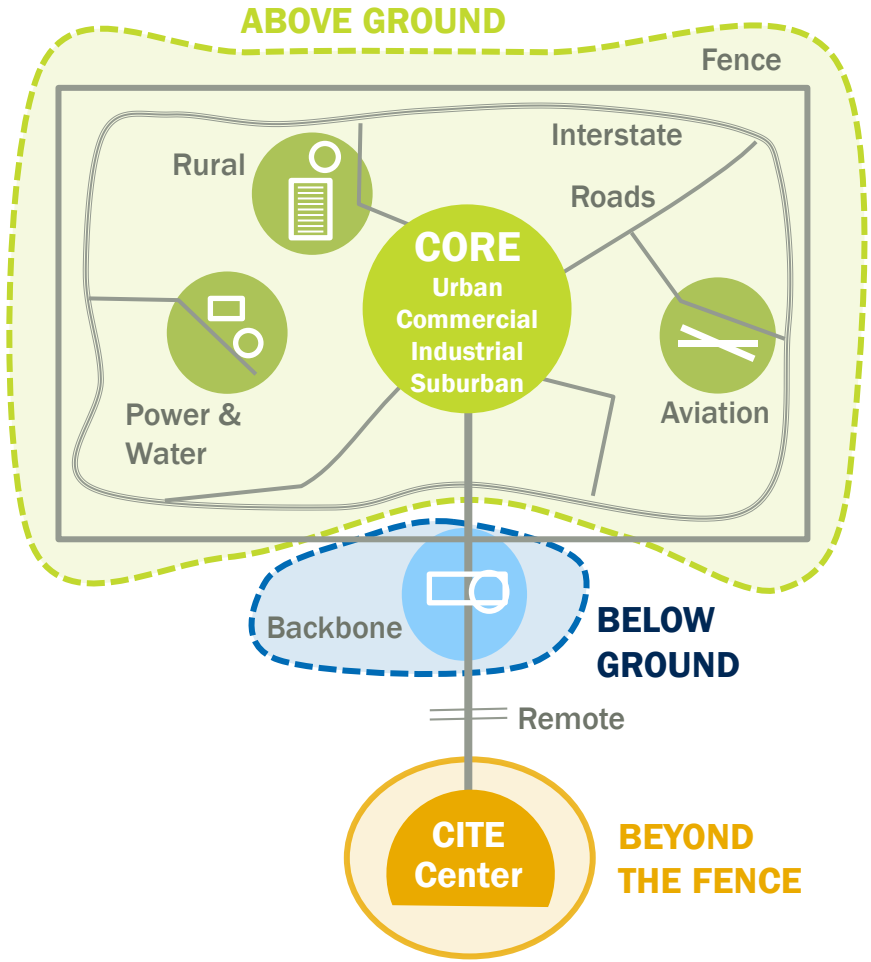
- Core - Urban, commercial, industrial and suburban
- Rural Zone
- Aviation
- Plant
- Water – wastewater treatment plus desalination plant

BELOW GROUND

- Secure network backbone

BEYOND THE FENCE

- CITE Center/campus



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Initial Build – CITE Layout

- "Above Ground" represents typical community infrastructure
- 15-square-mile area (5 miles x 3 miles) was deemed as an appropriate test bed area
- Connected internally by a traditional network of roads and conduit
- Roadways
  - Two-lane elevated highway bisects the site
  - Continuous service road that runs along the site's perimeter

URBAN

COMMERCIAL

INDUSTRIAL

SUBURBAN

RURAL

AVIATION

POWER PLANT

WATER

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Initial Build – City Zones

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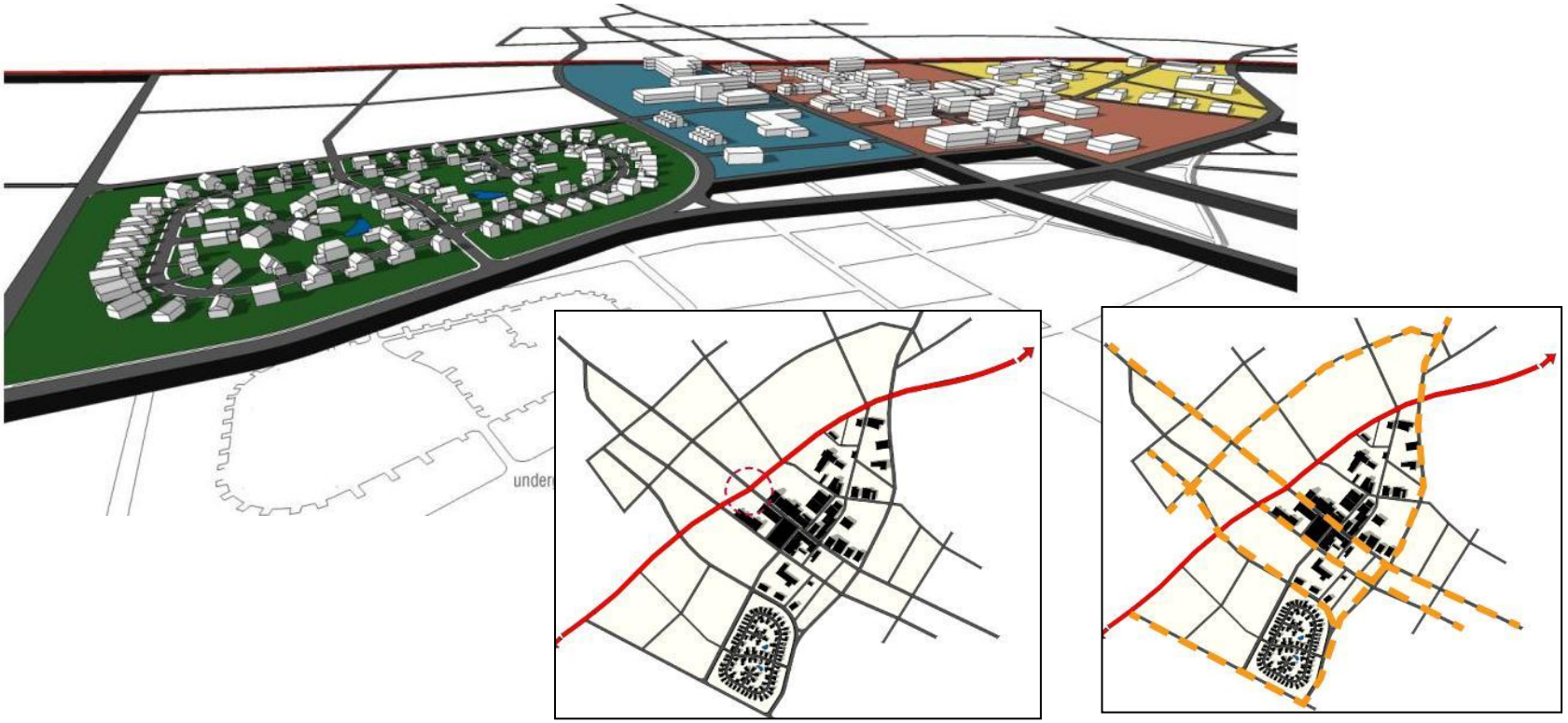
Initial Build – Road Network



Elevated highway will traverse the 15-square-mile site

- This stretch of highway will be single-lane in each direction (24’ wide)
- On and off ramps for testing and accessibility

Street network

- Highway
- Primary street
- Secondary street

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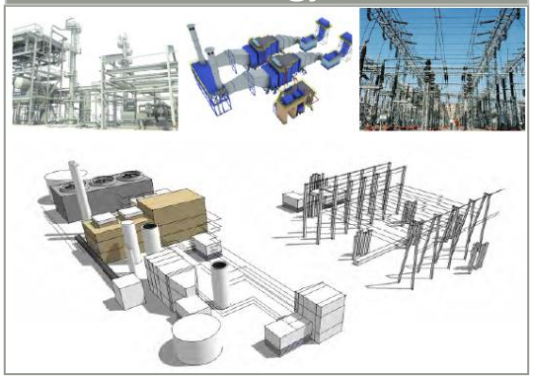
Initial Build – Rural, Energy and Water Zones

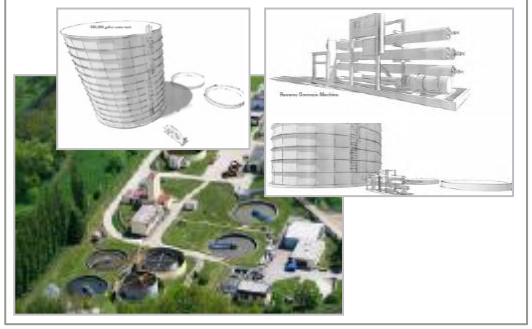
Rural

Energy



Mock Airport

Water



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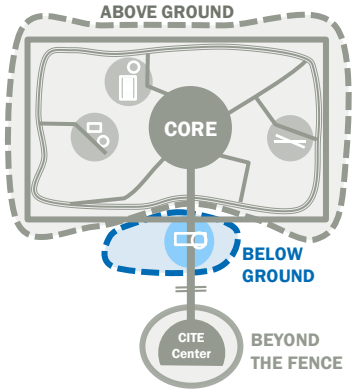
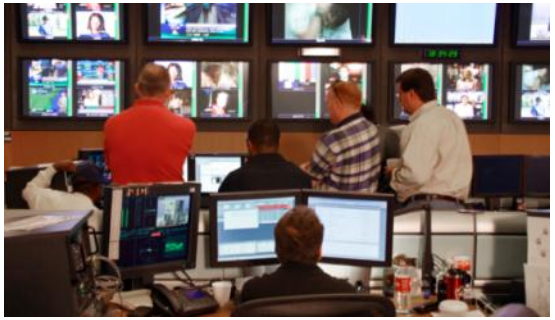
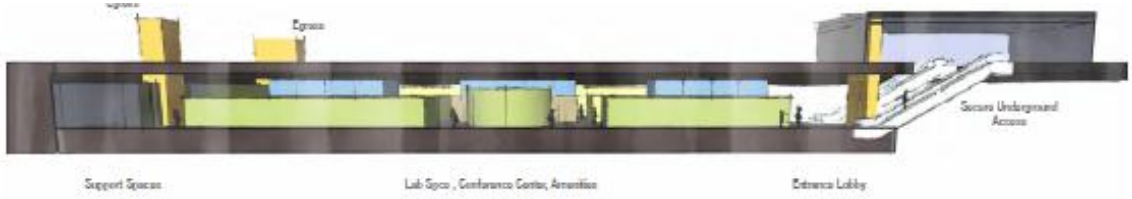
Initial Build – CITE Backbone

- The command center ties together the “above ground” system of systems
- Hardened 75,000-square-foot facility located below ground
- Network and Security Operation Centers
- Data Center
- Operations and maintenance activities







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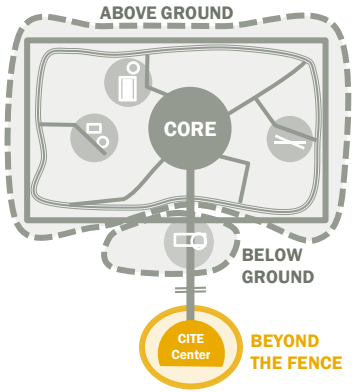
Initial Build – CITE Campus

- 188,000 square feet
- Sustainable campus
- Administrative functions
- Research labs
- Meeting spaces
- Support spaces



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Summary and Benefits

- Privately held – increases freedom to support small as well as large businesses, labs, and university T&E needs
- Realistic integrated slice of American civilization for prototype T&E
  - No population means no risk to public
  - Energy, water, and data center resources
- Several means of engaging CITE to support your unmet T&E needs
  - Organizations may use facilities for their own testing or sponsor third-party (CITE staff) tests, or both
- Specific New Mexico land site in final selection process
- Expected completion in 2014

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