

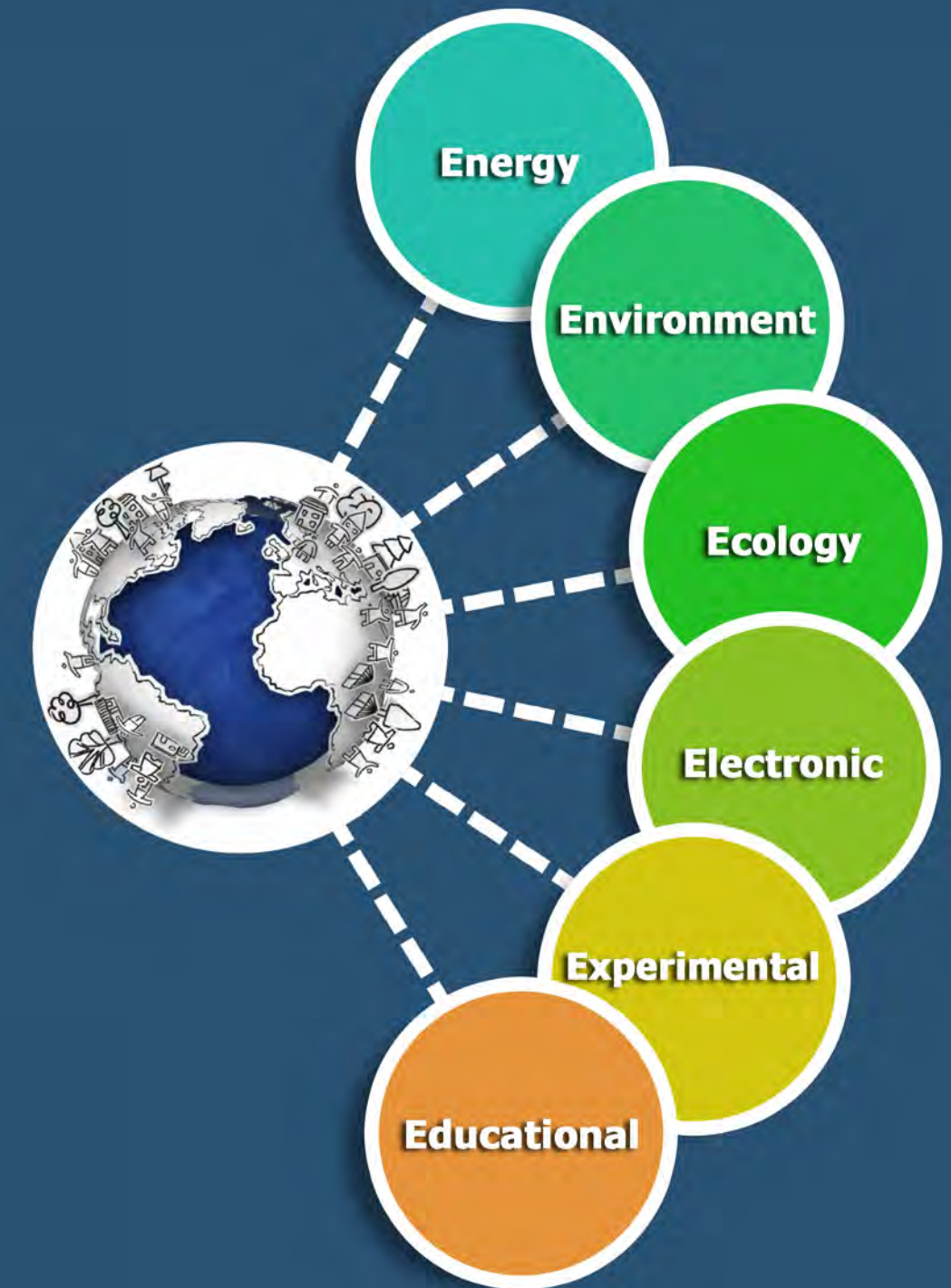
E-Town: City of Tomorrow

ETown is a visionary city of tomorrow. It is a thoughtful response to the grand challenge of substituting information and human knowledge for energy and matter. With looming peak oil, growing environmental concerns, and a rapidly urbanizing world, the conception, creation, and operation of ETown would epitomize transition to a new era of clean energy and sustainable development.

Salient Features:

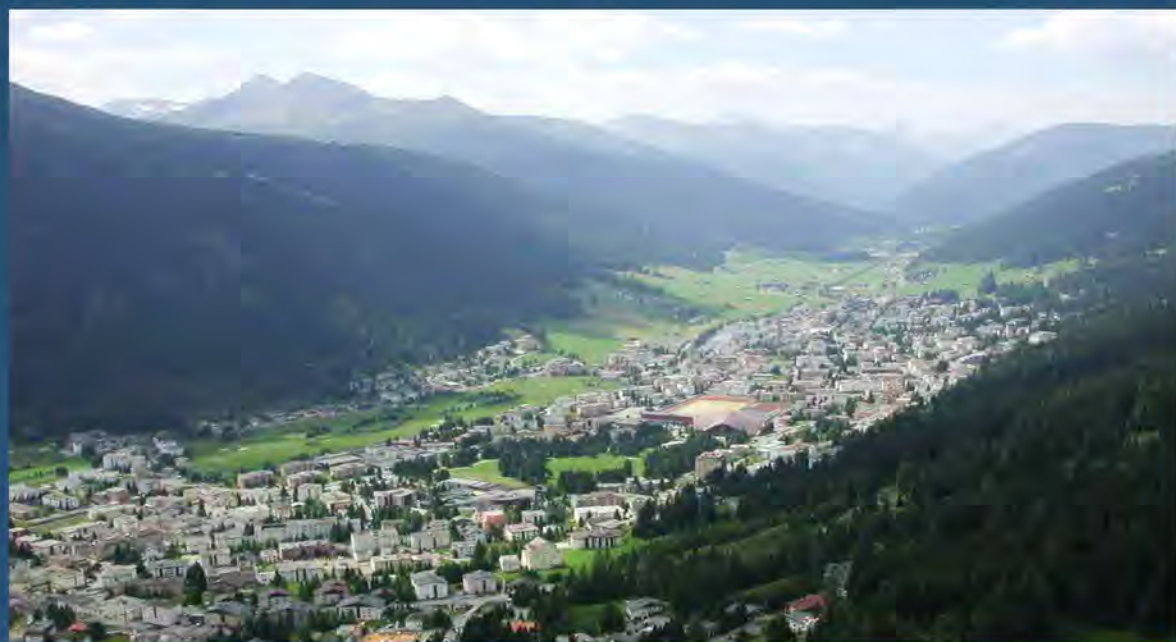
6 Es: **E**nergy, **E**nvironment, **E**colgy, **E**lectronic, **E**xperimental, **E**ducational

- A combination of a **Science Park** and a **Smart City**
- A City as a **Laboratory**: dedicated to "living experimentation" of a truly sustainable development
- A **Research Nexus** for energy, environment, economic development, engineering, and design
- A setting for **Lifelong Learning** for all ages
- A City of tomorrow to live, work, learn, and play in **harmony with nature**
- An Energy sufficient-Environmentally responsive, knowledge-based economy **Technopole**



Real ETown

A Private-Public-Academia Partnership project with national and international Significance; rebranding the region and putting it on the world map.



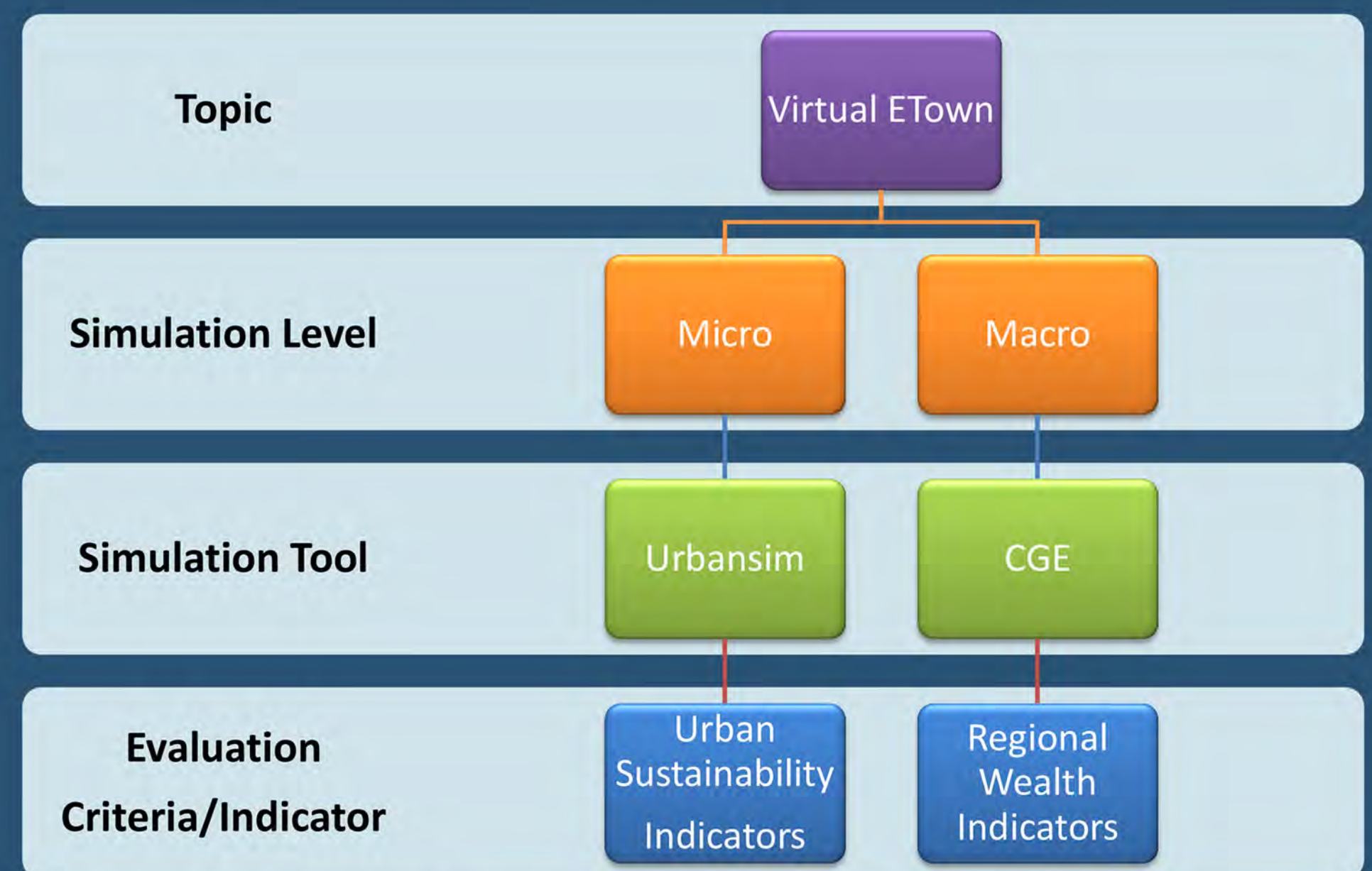
Inventiveness, a great deal of organizational work and the obsessive persistence of the locals put Davos, a small city in Switzerland, on the world map.



ETOWN:
An Energy Davos around Cheat Lake

Virtual ETown

A modeling and simulation tool for analyzing technology-energy-built environment-economy interaction at community and regional levels.



Research Projects

Integrated Modeling, Simulation, and Visualization for Interdisciplinary Research in Microgrid Technologies and Sustainable Environments

WVU Advanced Energy Initiative Concept Paper
Submitted April 12, 2011

Interdisciplinary Research Team
PI – Project Coordination and Administration, Randall Jackson, RRI
Co-PI Microgrid – Oupeng Phi Zheng, IMSE, CEMR
Co-PI Microgrid – Sarika Khushalani-Solanki, LCSEE, CEMR
Co-PI ETown – Hodjat Ghadimi, Design and Merchandising, Davis College
Co-PI Modeling and Simulation Support – Don McLaughlin, CEMR-LDCSEE-CERC
Co-PI Virtual Environment Models – Peter Butler, Landscape Architecture, Davis College

National Laboratory Partner
U.S. Department of Energy's National Energy Technology Laboratory
Steve Bossart and Keith Dodrill

Advisory Panel
Dr. Timothy Phipps, Dr. Barbara McFall, Dr. Brian Woerner, Dr. Wafik Iskander

Other Participants
The interdisciplinary team has had initial discussion with ABB regarding participation in ETOWN, and two individuals have been nominated for participation. The details of participation will be established during exchange visits between ABB and WVU.

Contacts for the following organizations are also in varying stages of development: IBM, CISCO, Google, and Microsoft.

Virtual ETOWN: Linking Urban Sustainable Design and Development
Hodjat Ghadimi, West Virginia University, Morgantown, USA

ABSTRACT
With looming peak oil, growing environmental concerns, and a rapidly urbanizing world, there is a need for a new paradigm of development. This paper presents a conceptual framework for a new paradigm of development, the Virtual ETown. The Virtual ETown is a conceptual framework for a new paradigm of development, the Virtual ETown. The Virtual ETown is a conceptual framework for a new paradigm of development, the Virtual ETown.

OBJECTIVES
The Virtual ETown is a conceptual framework for a new paradigm of development, the Virtual ETown. The Virtual ETown is a conceptual framework for a new paradigm of development, the Virtual ETown.

METHOD
The Virtual ETown is a conceptual framework for a new paradigm of development, the Virtual ETown. The Virtual ETown is a conceptual framework for a new paradigm of development, the Virtual ETown.

RESULTS
The Virtual ETown is a conceptual framework for a new paradigm of development, the Virtual ETown. The Virtual ETown is a conceptual framework for a new paradigm of development, the Virtual ETown.

Modeling, Simulation & Visualization for Microgrids and Sustainable Communities
West Virginia University

Regional Research Institute, Power Electronics, Lane Department of Computer Science and Electrical Engineering, Industrial Management Systems Engineering, College of Engineering and Mineral Resources; Extension Service; Landscape Architecture/Environmental Design, Design & Merchandising Division, Davis College of Agriculture, Natural Resources & Design; U. S. Department of Energy's National Energy Technology Laboratory. Facilitation Contact: Floyd K. (Rusty) Russell – West Virginia University rusty.russell@mail.wvu.edu or 304.293.1637

Conceptual Approach:
The virtual/physical development concept for sustainable communities is based on the E-Town framework, a conceptual interdisciplinary, university-based initiative that integrates six interrelated concepts of community life and economic enterprise - energy, environment, electronic, experimental, education, and ecology - to model and simulate sustainable communities of the future.

Technical Approach:
Develop complementary virtual and physical urban/regional community models and demonstration testbeds with initial focus on the energy, environment, and economy nexus and how microgrid implementation can help communities become more sustainable and resilient. This approach provides both a virtual modeling, simulation and visualization environment and a real-world demonstration testbed for issues of national significance in the energy/environment/economy nexus in urban and regional planning and development.

Partnerships: Partnerships with industry, utilities, and communities are essential for performing research and development in the E-Town program. The research team welcomes inquiries about participation in research, support for the program, and for contracted analysis work. For additional information, please contact: Rusty Russell, 304.293.1637 or rusty.russell@mail.wvu.edu

ETown Interdisciplinary Research Environment
Interdisciplinary Projects:

- Cost-benefit analysis for utilities and local/regional government microgrid technology deployment
- Sustainability economic development planning for a built or re-built "sustainable" community (energy use/microgrid analysis) (e.g., near ASU high-architecture camp)
- A university-affiliated academic/research community (energy use/microgrid analysis) (e.g., adjacent to research park or a sustainable, multi-generation residential community)
- A military installation microgrid (e.g., energy cost reduction, mission assurance)

Eco-town: An integrated modeling framework for simulating the effects of urban morphology on sustainable development

Ali Abutalebpur

Dissertation Submitted to the Davis College of Agriculture, Natural Resources and Design at West Virginia University
in partial fulfillment of the requirements for the degree of
Doctor of Philosophy in Human and Community Development

Hodjat Ghadimi, Ph.D., Chair
Randall W. Jackson, Ph.D.
Peter V. Schaeffer, Ph.D.
Barbara McFall, Ph.D.
Michael P. Strager, Ph.D.
Chris Haddon, Ph.D.

School of Design and Community Development
Morgantown, West Virginia
2015

Keywords: Sustainable Development, Urban Morphology, Genuine Progress Indicator, Eco-town
Copyright 2015 Ali Abutalebpur