Advanced Research Projects Agency • ENERGY

GENI PROJECT

CORNELL UNIVERSITY

CLOUD COMPUTING FOR THE GRID

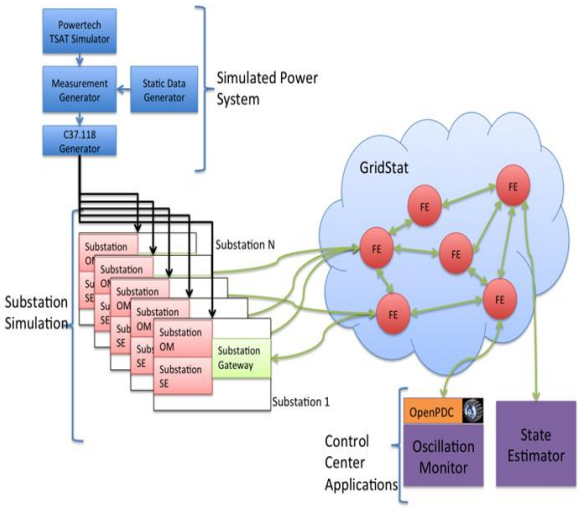
PROJECT TITLE:	GridControl: A Software Platform to Support the Smart Grid		
ORGANIZATION:	Cornell University	LOCATION:	Ithaca, NY
PROGRAM:	GENI	ARPA-E AWARD:	$1,300,000
TECH TOPIC:	Electricity Transmission & Distribution	PROJECT TERM:	2/8/12 – 2/7/15
WEBSITE:	www.cs.cornell.edu/Projects/Gridcontrol/		

CRITICAL NEED

The U.S. electric grid is outdated and inefficient. There is a critical need to modernize the way electricity is delivered from suppliers to consumers. Modernizing the grid's hardware and software could help reduce peak power demand, increase the use of renewable energy, save consumers money on their power bills, and reduce total energy consumption—among many other notable benefits.

PROJECT INNOVATION + ADVANTAGES

Cornell University is creating a new software platform for grid operators called GridControl that will utilize cloud computing to more efficiently control the grid. In a cloud computing system, there are minimal hardware and software demands on users. The user can tap into a network of computers that is housed elsewhere (the cloud) and the network runs computer applications for the user. The user only needs interface software to access all of the cloud's data resources, which can be as simple as a web browser. Cloud computing can reduce costs, facilitate innovation through sharing, empower users, and improve the overall reliability of a dispersed system. Cornell's GridControl will focus on 4 elements: delivering the state of the grid to users quickly and reliably; building networked, scalable grid-control software; tailoring services to emerging smart grid uses; and simulating smart grid behavior under various conditions.



IMPACT

If successful, Cornell would create an efficient and cost-effective way to build and control the smart grid, the advanced infrastructure that will replace today's outdated electric grid.

- SECURITY: A more efficient, reliable grid would be more resilient to potential disruptions from failure, natural disasters, or attack.
- ENVIRONMENT: Enabling increased use of wind and solar power would result in a substantial decrease in carbon dioxide (CO_2) emissions in the U.S.—40% of which are produced by electricity generation.
- ECONOMY: A more efficient and reliable grid would help protect U.S. businesses from costly power outages and brownouts that stop automated equipment, bring down factories, and crash computers.
- JOBS: Advances in grid software could result in new high-paying jobs in supporting sectors such as engineering and information technology.

CONTACTS

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