

Transilvania University of Brasov
Integrated Education, Research and Innovation
Genius Campus and Green Data Center



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Efficient Resources Use and Development

A novel structure for advanced research on Sustainable Energy

The Green, Energy Independent University Campus

GENIUS



What is the GENIUS Campus? The GREEN Data Center

The GREEN Data Center

-Based on Green Technologies:

-Hardware:

- Low energy consumption
- Efficient cooling solutions

-Software: optimal process management

July 2009:

Pilot project - MiniData Center
Collaborative environment for
Content and Flow
Management of Documents

-Functions:

- Data acquisition, monitoring and management
- Communication (internal, external, multimedia, video-conference)
- Complex data processing and storage
- Remote applications
- Security (data, buildings)
- Safety (fire, CO2)
- Habitat comfort
- Advanced training tool
- Services delivery to the entire university and 3rd party

May 2012:

Data Center
Multimedia Infrastructure
Telecommunications trunks



What is the GENIUS Campus? The GREEN Data Center

DESIGN PRINCIPLES TO BE TAKEN INTO ACCOUNT

- Centralize computing resources
- Reduce electricity consumption
- Reduce operating costs



What is the GENIUS Campus? The GREEN Data Center

BladeCenter servers





What is the GENIUS Campus? The GREEN Data Center

Information system components

- Large computing infrastructure (High Performance Computing)
- Mathematical libraries for analysis and modeling
- Management software for parallel or sequential processing of tasks
- Specific software for application development
- Project Management Software
- Databases (history and simulation)
- Subsystem for presentation and reporting based on an application portal for communication
- Virtual library component required for academia
- Specific applications of different research areas



What is the GENIUS Campus? The GREEN Data Center

Expected features and performance

- Improving access to scientific information and increasing the scientific research
- Improved understanding of very large and complex mathematical models at higher resolutions, and the development of new scientific applications
- Lower times for solving simulation problems
- Decreased response time to complex problems and simulations
- Access to the scientific community who provide some free computer applications in certain areas
- Stimulate electronic exchange of information
- Accelerate the exchange of information between the partners and reduce administrative activities in scientific collaboration
- Ability to participate in national and European projects .



What is the GENIUS Campus? The GREEN Data Center

CONCEPTS

- Virtualization
- Cluster
- Cloud computing
- Consolidation
- Grid computing



What is the GENIUS Campus? The GREEN Data Center

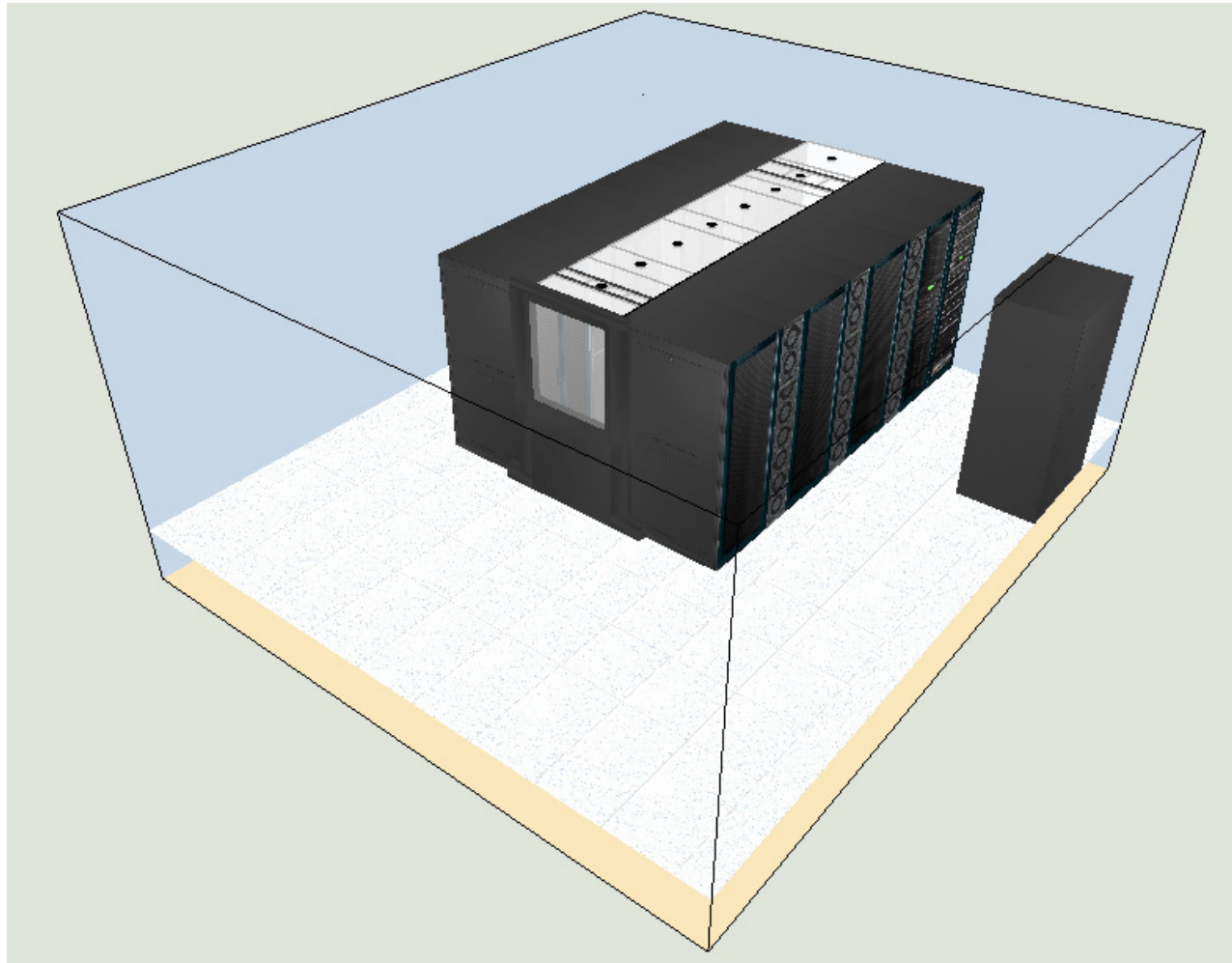
Server room cooling solution

- **Solution is based on Hot Air Containment System (HACS)**
- **It involves closing the hot air passage between two rows of racks with a transparent ceiling and a door access to hot aisle**
- **In this way you can install racks with high power, up to 20 KW / rack**



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Server room cooling solution





It takes time, **will and competence** to attend excellence;

It takes a **careful planning and a sound management** to implement the actions foreseen;

It takes **partnership and networking** to build a **sustainable future**.

