Empire State STEM Learning Network

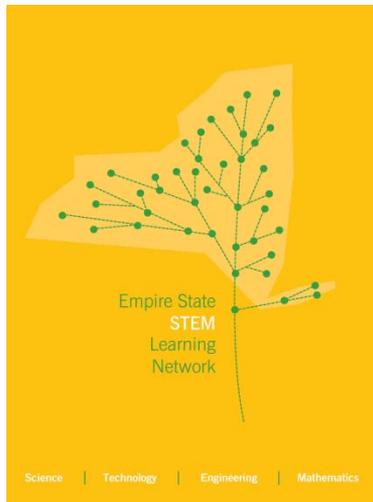Science | Technology | Engineering | Mathematics

Long Island STEM Hub

Community Advisory Council

February 9, 2012

Ken White

Founding Director, Portal to Discovery
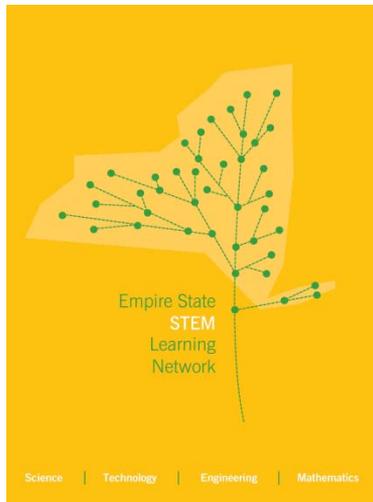
Manager, Office of Educational Programs

Empire State STEM Learning Network

STEM – Science, Technology, Engineering and Mathematics

Statewide initiative forming a network of 10 regional Hubs focused on STEM education

Sponsored by Battelle Memorial Institute, Bill and Melinda Gates Foundation and more recently, State University of New York
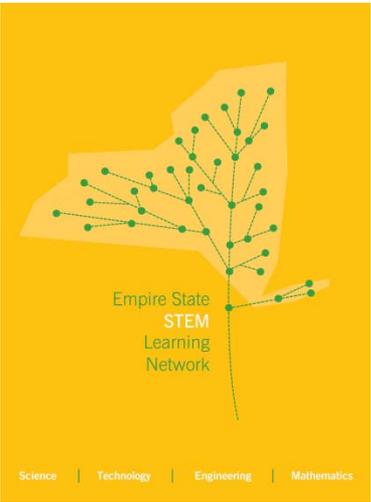
Hub Structure

Network
- Statewide Network – advocacy, sharing, though leadership
- School Platforms – participants, demo sites, etc.
- Capacity Builders – organizations committing support
  - Partners: bring resources to enable work to be carried out
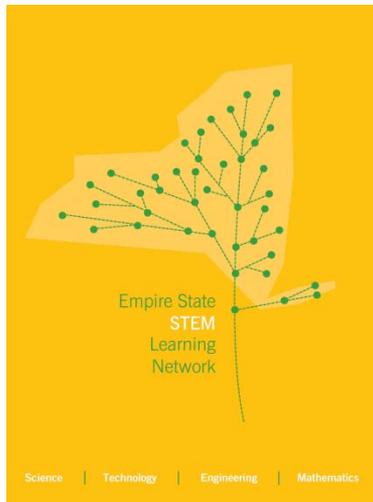 - Sponsors: bring financial support directly or indirectly to sustain the Hub

Management
- Board of Champions – group of influential chief executives who support and help guide Hub activities
- Core Team – Individuals and organizations who manage the ambiguity of the Hub during its emergence phase
- Hub Steward – helps initiate the hub, fiscal agent, steward of the statement of work
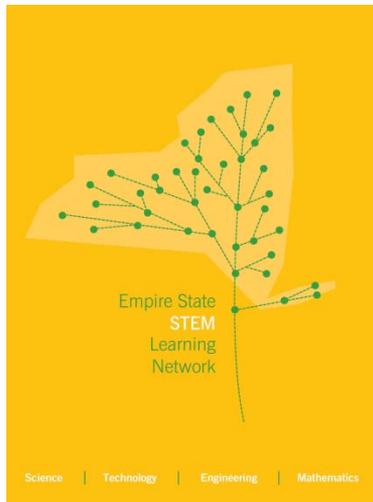
The Long Island Hub Challenge

Develop an integrated and effective systemic regional partnership between industry, academia and not-for profit organizations to increase the number of Long Island students interested in and prepared for careers in the high tech and global businesses of Long Island.
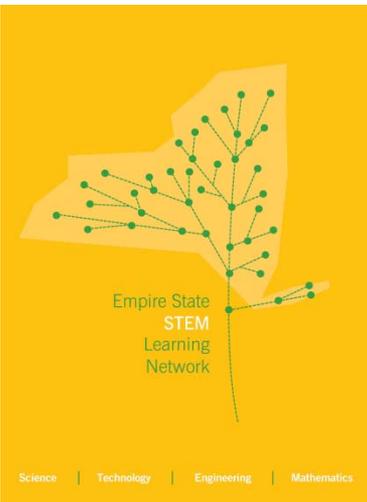
Long Island STEM Hub Goals

- **Provide STEM education for ALL students,** regardless of academic or socioeconomic standing
- **Create a pipeline of skilled and STEM literate students -** Early connections to business to help students identify career opportunities in high wage/growth industries on Long Island
- **Engage committed stakeholders** – Business, K-12, higher education, informal education, government, parents, students share resources, communications and best practices
- **Facilitate collaboration between stakeholders** so that STEM education will flexibly adapt to changing industry needs
- **Develop a systemic model for the Hub** that is cost effective, scalable and inclusive, and centralizes resources while retaining individual identities.
- **Use data-driven analysis** -- leveraging reports from the NYS Department of Labor, the LIA Chief Economist, etc., to identify the high growth industries and STEM workforce skills.
- **Evaluate success and identify areas for continuous improvement** by developing metrics to determine the effectiveness of programs and LI STEM Hub
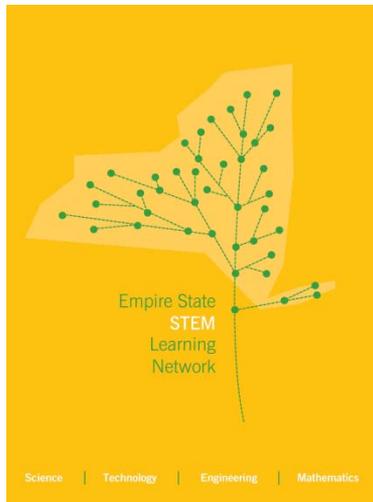
Core Focus of the Hub

- Make it easy for businesses to engage with school and university systems
- Integrate non-academic settings such as museums, research labs, and not-for-profit programs
- Collaborate to develop a cohesive one-stop source/starting point for STEM based activities in the region

Partner (Capacity Builder) Activities

- Our numerous school districts – what they do every day
- Long Island Regional Advisory Council on Higher Education (LIRACHE) – collectively they serve 192,000 students and represent 39,000 employees on LI – many have the Science Technology Entry Program (STEP) and College STEP programs
- BOCES – many programs focused on technical training and skilled trades
- Long Island Forum for Technology (LIFT) (representing the IT/Tech industry) – partnerships with numerous organizations including Cradle of Aviation and Long Island Workforce Investment Boards
- Brookhaven National Laboratory – nearly 40,000 students and teachers in hands-on and research programs every year
- Cold Spring Harbor, Dolan DNA Learning Center – prolific programs in biological sciences with many satellite operations
- Stony Brook University - Center for Excellence in Science, Applied Math and Engineering (CESAME) and Louis Stokes Alliance for Minority Participation
- Farmingdale State University STEM Diversity Roundtable
- Suffolk County Community College – S-STEM Program and POWER program
- Cradle of Aviation – working with 180 high school students daily to build STEM capabilities
- Dowling College - Center for Minority Teacher Development and Training
- New York Institute of Technology – Entrepreneur preparation programs

Regionally Based

- BNL and the Cradle of Aviation serve as Hub anchors

- Formation of Regional Industry Councils (RIC)
  - identify the needs of industry
  - best ways to prepare a workforce that meets those needs

- Focus on industries cited as regionally significant for economic growth:
  - *Energy and Environment*   *Health Care and Life Science*
  - *Engineering*   *Global Business*
  - *Homeland Security*   *Advanced Manufacturing*
  - *Aviation*   *Information Technology*

Long Island Regional STEM Hub

Regional Industry Council: Energy and Environment
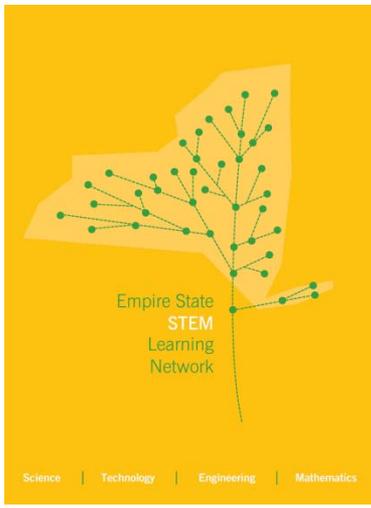
Regional Industry Council: Health Care and Life Sciences

Regional Industry Council: Advanced Manufacturing

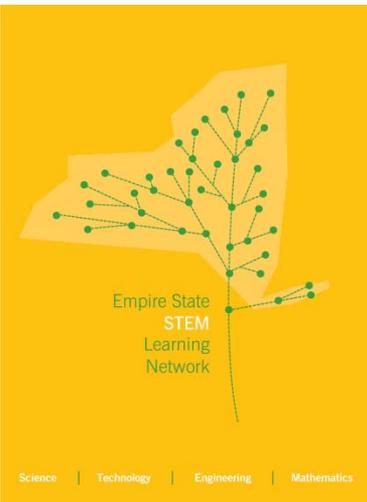**Regional Industry Council: Homeland Security and Information Technology**

- **Career Academies**
- **K-16 supportive activities**
- **High School Internships**
- **Undergraduate Internships**
- **Teacher/Faculty Experiences**
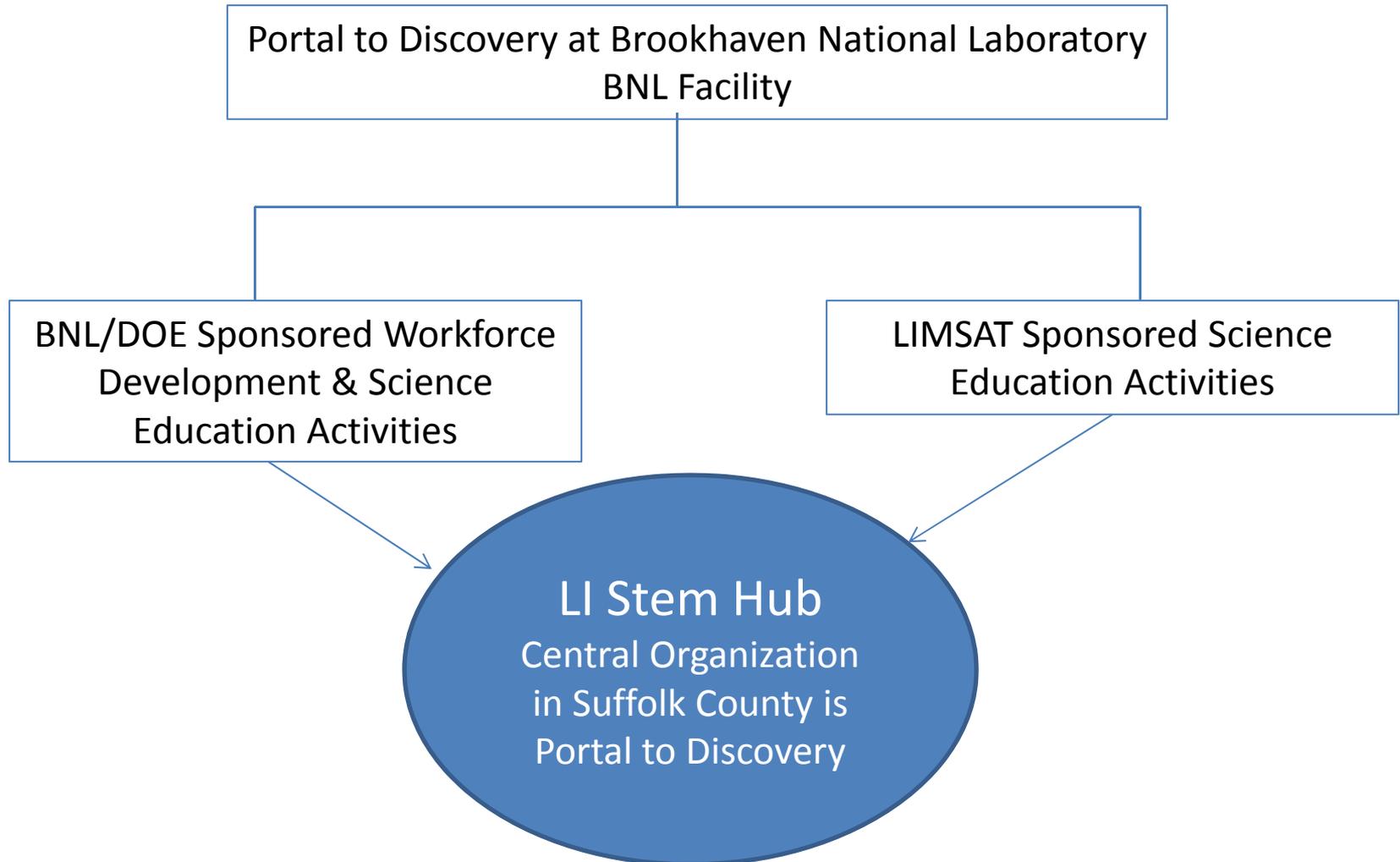- **Worker retraining/certification**

Early Actions

- ✓ Launch the Long Island STEM Hub
- ✓ Regional Economic Development Council - $320,000 award to support the STEM Hub
- ✓ Form the Core Team
- • Form the Board of Champions
- • Develop sponsorship guidelines
- • Conduct a gap analysis
- • Begin developing a clearinghouse of services
- • Initiate Regional Industry Councils
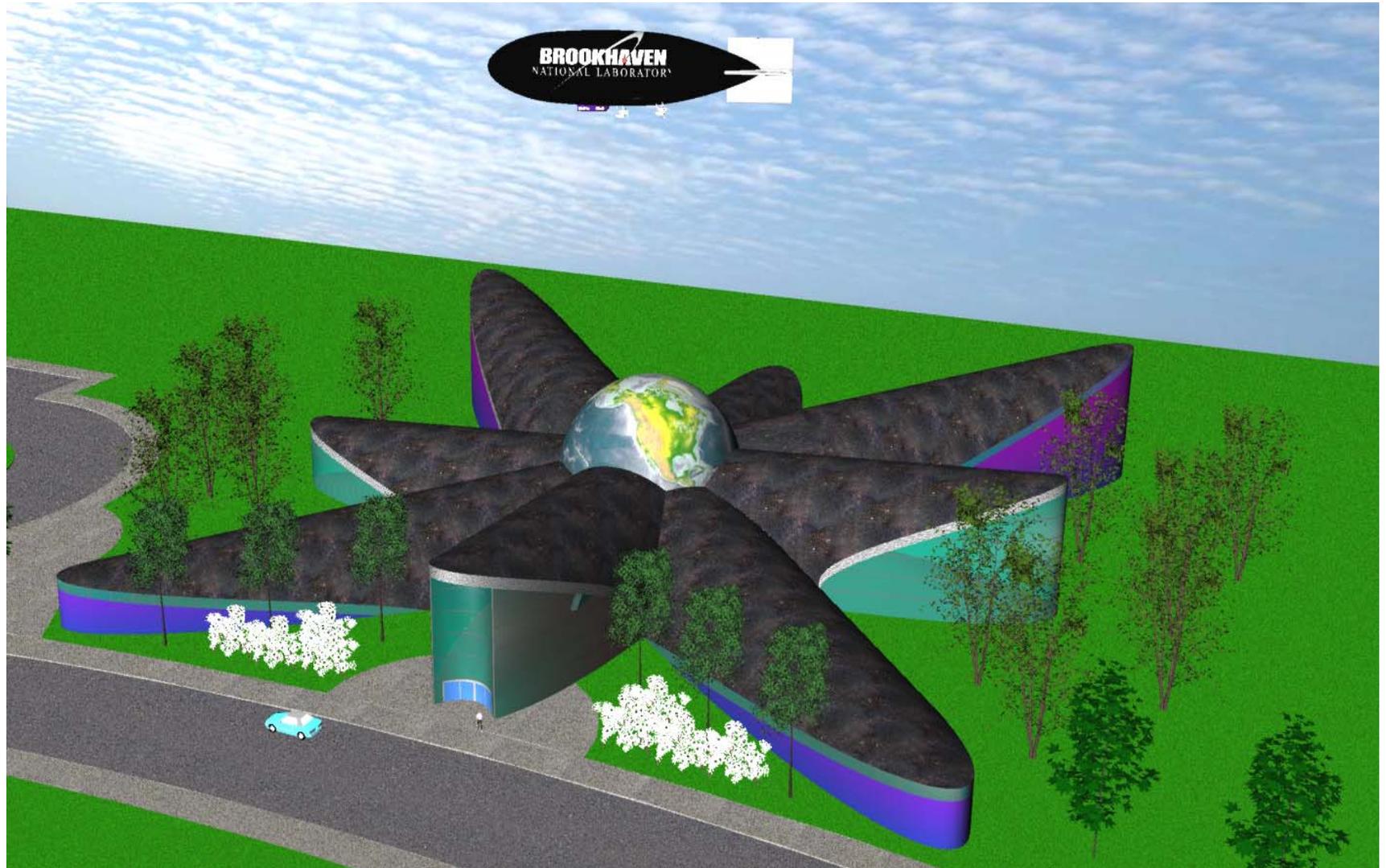
BNL Support for STEM and STEM Hub

- Provide hands-on activities, research experiences and science contests for nearly 40,000 students per year
- Provide stewardship to launch the Long Island STEM Hub
- Use BNL science education programs as models for expansion to industry
- Administer the $320,000 New York State grant
- The Portal to Discovery
  - Long term goal of developing a significant science center at the entrance to the Lab
  - Partnership with Long Island Museum of Science and Technology (LIMSAT), a not-for-profit organization
  - Expand capacity through alternative funding sources
  - Received a $45,000 award from the Long Island Community Foundation to support the STEM Hub and programming for underserved districts
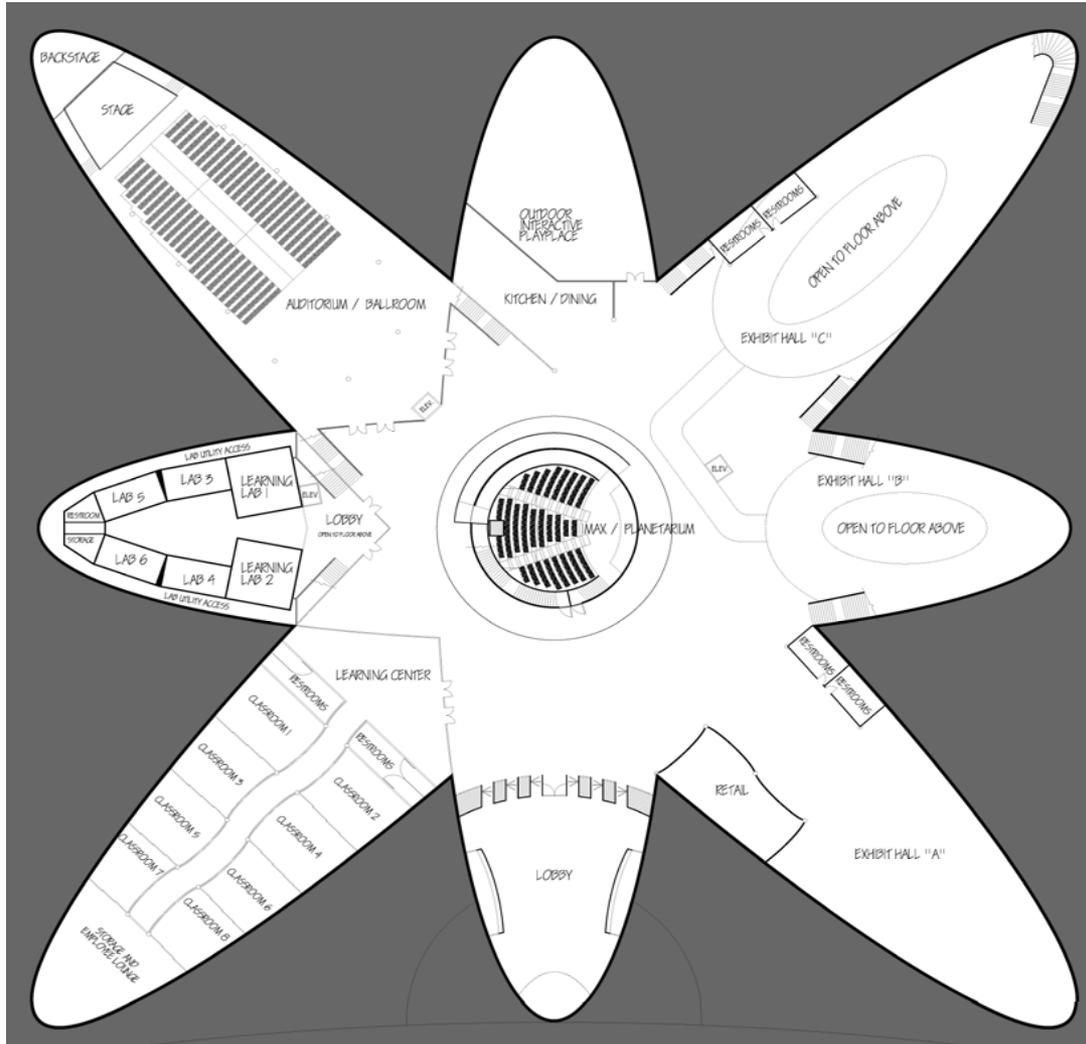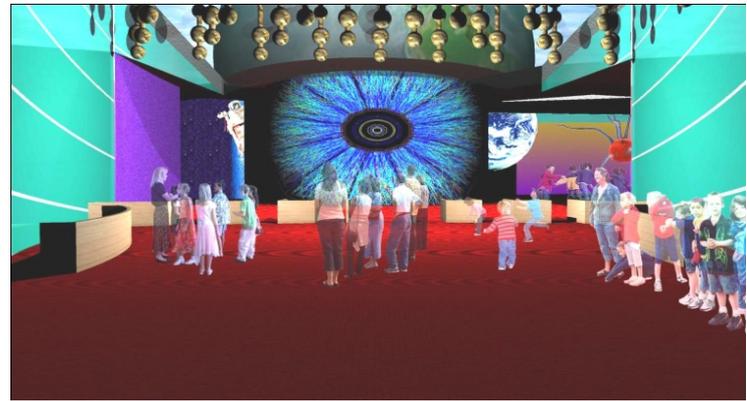
Portal to Discovery

Portal to Discovery at Brookhaven National Laboratory
BNL Facility

BNL/DOE Sponsored Workforce Development & Science Education Activities

LIMSAT Sponsored Science Education Activities

LI Stem Hub
Central Organization in Suffolk County is Portal to Discovery

Portal to Discovery

Portal to Discovery

Portal to Discovery

Long Term Goal

- Destination scale facility – tourist attraction
- Programs and exhibits
- Interactive research experiences involving BNL research machines/facilities
- Home for LI STEM Hub in Suffolk County
- Support student and teacher research for the Open Space Stewardship Program
- Visitor and conference center, contractor training, cultural events, science talks for general public, etc.
- Energy display center