NASA Human Health and Performance Center: A Model for Collaboration

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Collaborative Innovation: Strategy to Results
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Discussion Topics

- **Visioning Workshop** (2006)
- **Space Life Sciences Strategy** (2007)
- Risk Management
- Collaborative Innovation Projects
- **NASA Human Health and Performance Center (NHHPC)** (2010)
- **NHHPC Outcomes** (2011)
- **Summary of Strategy to Results**

Visioning Workshop

HQ lead office for life sciences

- Assumption:
  - Low likelihood of returning in next 10 years
- Characteristics
  - Central budget, Fundamental research, NRA's, grants
  - NASA funded partnerships
  - Some institutional costs provided by program

Current state (2006)

- Assumptions
  - Current resources, no growth
- Characteristics
  - Focused R+D on TRL/CRL 4-6
  - Inflation, escalation erode content
  - Little low TRL/CRL work

Partner/shared services model

- Assumptions
  - Core capabilities not funded by institution
  - Rapid external pace of change
- Characteristics
  - Consulting, high-end expertise,
  - Partners fill in low CRL/TRL work
  - Leverage with partners

Minimum necessary services

- Assumptions
  - Program need to reduce costs
  - Program buy it by the yard
- Characteristics
  - Outsourcing
  - Minimal R&D
  - Few partners

Visioning Workshop

- Workshop Outcomes
  - A shift from traditional strategies and philosophies to a new model of partnerships and collaboration is required
    - Novel strategies to extend our network of experts to remain competitive and at the cutting edge
    - Improve research and operations integration
    - Enhance internal and external communication
  - Impossible to "own" all the experts
    - Resource intensive
    - Cost prohibitive

Space Life Sciences Strategy

Mission

To optimize human health and productivity for space exploration

Vision

To become the recognized world leader in human health, performance and productivity for space exploration

Strategic Goals

- Optimize internal/external portfolio through collaboration
- Drive health innovations for spaceflight and Earth
- Drive human system integration innovations for spaceflight and Earth
- Educate and inspire

Space Life Sciences Strategy

- Key strategies to drive innovation
  - Adopt an integrated human system risk management approach
  - Develop/implement an improved business model (collaborative approaches and tools)
  - Establish strategic alliances/collaborative efforts
  - Enhance internal and external communications
  - Establish a virtual center to achieve the vision

Strategic Alliances Benchmark

- Assessed best practices for identifying, establishing, and managing alliances and collaborations in 20 organizations
  - Government agencies, industry, academia
- Responses: Why Collaborate?
  - 100% response: critical to innovate
  - Enhance portfolios by supplementing internal core capabilities with external capabilities
  - Find innovative solutions quickly and efficiently in a rapidly changing environment
- Biggest barrier? Culture change

NASA Human Health and Performance Center (NHHPC)

- Established October 18, 2010
- Global convener of government, industry, academic, and non-profit organizations to support the advancement of human health and performance innovations for space flight, commercial aviation, and for challenging environments on Earth

NASA Human Health and Performance Center (NHHPC)

- Addresses Space Life Sciences key strategies
  - Develop and implement new business model/collaborative approaches to achieve goals
    - Expands our network of experts
    - Provides a platform for data and best practices sharing
    - Facilitates identification of prospective partners
    - Benefits all member organizations to supplement core capabilities and close gaps in portfolios
    - Leverages resources of all members to achieve what none could do alone
  - Enhance communications
    - Provides a new vehicle to communicate NASA needs in an open forum to attract potential collaborators early on in the development process
  - Establish a virtual center to achieve vision

NHHPC Overarching Goals

- Integrate human health and performance efforts across member organizations
- Advance human system research and technology, process, and practice innovations
- Facilitate collaborative projects that enable and advance human spaceflight capabilities, and address national and global human health and performance needs
- Provide resource for integration of NASA proposals, risk assessments, and requirements to inform the human exploration missions and technology needs

NHHPC Themes

- Address human health, human factors and performance, habitability, and environmental health risks and issues
- Projects include collaborative efforts or advances in the areas of research and technology development, education and outreach, social entrepreneurship, and collaborative innovation methodologies
- Best practices in each of these areas are shared among member organizations

NHHPC Membership

- Membership has grown to 99 government agency, corporate, academic, and non-profit organizations
- To be accepted as a member, organizations must be willing to interact collaboratively to advance the goals of the NHHPC
  - Human health and performance innovations
  - Innovation methodologies that advance any technology or approach, including human health and performance

Member Organizations

NHHPC
collaborate · innovate · educate

Institute of Aerospace Medicine
DLR
PEPSICO
JAXA
wyle
USAID FROM THE AMERICAN PEOPLE
ONR Office of Naval Research
PHILIPS
P&G
RICE ALLIANCE for TECHNOLOGY and ENTREPRENEURSHIP
IBM
Health & Human Performance
cause SHIFT
ENGINEERS WITHOUT BORDERS USA
Center for Devices and Radiological Health CDRH
GSA
Massachusetts Institute of Technology
IFDC
DYNAMAC
XARC Architecture for New Worlds® EXPLORATION ARCHITECTURE CORPORATION
charles river accelerating drug development. exactly.
mozilla
open.NASA
Opportunity International
ASTROWRIGHT SPACEFLIGHT CONSULTING
Dr. Patricia Hilliard Robertson, MD Center For Aviation Medicine at Indiana Regional Medical Center
BRAIN MAPPING FOUNDATION
Pitney Bowes
Southeast Texas Biomedical Research Institute
Tufts UNIVERSITY Center for Engineering Education and Outreach
UNIVERSITY of HAWAI'I MĀNOA
Biomātrica THE BIOSTABILITY COMPANY
TERAPIO
INTERNATIONAL SPACE UNIVERSITY ISU
CLEMSON UNIVERSITY
CALIFORNIA HEALTHCARE FOUNDATION
ulron
OrionsQuest Authentic Research For Today's Youth
UnitedHealth Group
The National Center for Human Performance Texas Medical Center SPACE · THE ARTS · SPORT THE MILITARY · HEALTH
LAUNCH Collective Genius for a Better World
SECONDmuse
GE imagination at work
Cazneau Group
SOCIETY FOR WOMEN'S HEALTH RESEARCH
SPACE CENTER HOUSTON
SAN DIEGO ZOO GLOBAL
Wright Brothers Institute
TecAEdge
TEXAS LIFE-SCIENCES Collaboration Center
utmb Health Aerospace Medicine
NATIONAL SPACE BIOMEDICAL RESEARCH INSTITUTE NSBRI
PUBLIC-PRIVATE PARTNERSHIP PROGRAM
Center for Nano-Bio-Electronics National
TIPS Texas A&M Institute for Preclinical Studies TEXAS A&M UNIVERSITY
Committee for Action Program Services
ASU BIODESIGN INSTITUTE ARIZONA STATE UNIVERSITY
CHCS Global Center for Health, Culture, and Society (CHCS) Scaling Up Mental Health Services and Research in Africa
BAY AREA HOUSTON Economic Partnership
INNOCENTIVE
girlstart
Centre of Human & Aerospace Physiological Sciences
manna energy limited
EMBRY-RIDDLE AERONAUTICAL UNIVERSITY
DRAPER LABORATORY
USRA
CST CENTER OF EXCELLENCE COMMERCIAL SPACE TRANSPORTATION
National Center for Research Resources
TIETRONIX
SwRI
yet2.com
COSAT Corporate Office of Science & Technology
sma
NASTAR CENTER
GENERAL MILLS
Lincoln Center | institute
PRIZE4LIFE
Kimberly-Clark
GSAPP
THE FIRE ATHLETE Fitness Program
APTIMA HUMAN-CENTERED ENGINEERING
SQUARE ONE EDUCATION NETWORK the future starts with us

NHHPC Events and Activities

NHHPC Workshop – Collaborative Innovation: Strategies and Best Practices, January 19, 2011, NASA Johnson Space Center

- Focus: how does collaborative innovation fill the gaps in human health and performance knowledge or technology
- Keynote speakers, a panel discussion detailing how to run effective challenges through open innovation methodologies and tools , networking sessions
- Break out Sessions
  - Healthcare Delivery Innovations
  - Collaborative Tools and Social Media
  - Social Entrepreneurship Innovation
  - Human Factors
  - Biotechnologies and ISS Utilization
  - Challenges
  - Projects
  - Innovation and Education Outreach
  - Scientific Risk Communications
  - Business Practices in Public-Private Partnerships

NHHPC Events and Activities

Outcomes of Collaborative Innovation: Strategies and Best Practices Workshop

- Ideas for multiple collaborative projects among multiple members
- Development and launch of a member secure wiki with discussion boards, project rooms, and a searchable member directory based on recommendations from the collaborative tools break-out session participants
- Microbiology Workshop hosted by NASA MSFC to evaluate existing and emerging microbial monitoring technologies to inform a framework for selecting and evaluating microbial monitoring technologies for microgravity or partial gravity environments

Collaborative Projects

National Aeronautics and Space Administration
NASA Human Health and Performance Center
NHHPC
collaborate · innovate · educate

- Government
- Non-Profit
- Collaborative Innovation
- Global Knowledge
- Health and Performance
- Corporate
- Academia
- Partnerships
- Social Entrepreneurship
- Human Spaceflight

Visit us at: www.nhhpc.nasa.gov

- Space Act Agreement (SAA) between NASA and GE for collaborative projects, SAAs with Philips and Nike in work
- NASA technical needs and solutions workshops with the DoD Defense Venture Catalyst Initiative (DeVenCI)
- Tufts University and NASA student teacher education pilot (STOMP) to inspire students in STEM disciplines
- NASA and the San Diego Zoo joint competitive challenge in biomimicry
- Education and Outreach break-out session evolved into working group that is developing an open innovation challenge for students
- NASA and the FAA Center of Excellence Commercial Space Flight for five collaborative projects

NHHPC Events and Activities

Member to Member Connect—ongoing

- Member organizations present their organization's innovation successes, project plans, collaboration ideas, and needs to each other via WebEx (US Office of Naval Research, Harvard Medical School)

Connecting Through Collaboration Workshop – October 18, 2011

- Hosted by NASA Ames Research Center
- Keynote speakers and a panel discussion by the Education and Outreach Working Group on linking STEM to healthy organizations
- Talks on the NASA Tournament Lab and innovative ISS utilization
- Networking and break-out sessions on collaborative web tools, education and outreach, medical technology development, performance and human factors, innovative methodologies, and social entrepreneurship

Summary

- SLSD Strategy Implementation: The NHHPC as a new business model for collaborative innovation
  - Anchored in visioning exercise (2006) and Space Life Sciences Strategy (2007)
  - Informed by benchmarking (2008 – 2010)
  - Enabled by successes in SLSD open innovation initiatives (2009-present)
  - Realized by: establishment of the NASA Human Health and Performance Center

nhhpc.nasa.gov