

# NC Plant Sciences Initiative Update

May 8, 2017



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Director, NCARS

# Agenda

- > Plant Sciences Building Design Process
- > Launch Director Search
- > Progress of PSI Task Forces

# NC Plant Sciences Initiative Update

May 8, 2017



**Plant Sciences Building  
Design Process**

# Plant Sciences Building

## To be located on NC State Centennial Campus



**Building Cost:**  
**\$160.2 Million**

- Building Planning and Construction Cost is **90% funded**
- Combination of support from NCSU (\$5M), Connect NC Bond (\$85), Golden LEAF Foundation (\$48M), 40+ NC stakeholder groups and foundations (\$6M)

# Vision

*Be the world's most foremost plant sciences enterprise*

**Partnerships to solve grand challenges for the health & welfare of the environment**

**Provide Global Reach for NC State & North Carolina**

**Support the evolution of science & solving complex problems**

# Guiding Principles

## *Synthesis*

**Provide a high-technology facility that anticipates the future of science**

**Provide & maintain healthy environments**

**Create an environment that reflects the Plant Sciences Initiative Goals**

# Objectives

## *Synthesis*

**Be a highly functioning facility that is an asset to the University & the State**

**Design & build to anticipate changes in the ways that we work**

**Create a PSI community that is a destination point**

# Advance Planning

**Purpose: To define the users' needs like number, size, functions and relationships / adjacencies of rooms or spaces.**

**100+**

stakeholders engaged in planning process

**12**

Unique surrogate users and advisory groups

**November 2016 – May 2017**

## Committees

Building Committee

External Advisory Committee

Interdisciplinary Advisory Committee

## Program Groups

Academic Research

External Partners

Growth Environments

Conference and Meeting

Community

University Architect

Academic Collaborators

Corporate Partners

Administration

Knowledge Management

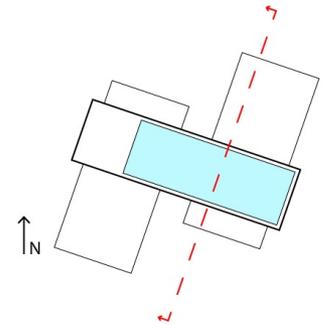
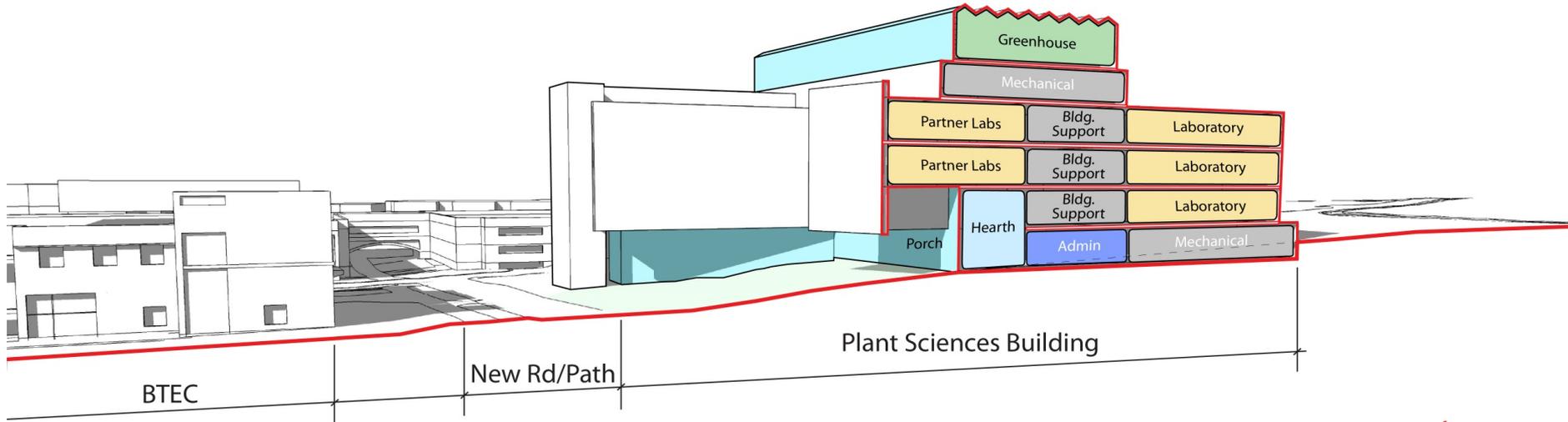
Maintenance and Operation

Capital Project Management

# Design Concept: "The Porch"



# Design Concept: "The Porch"



# Exterior Massing



LOOKING NORTH



LOOKING SOUTH



# Hearth

## Hearth / Check-in / Cafe

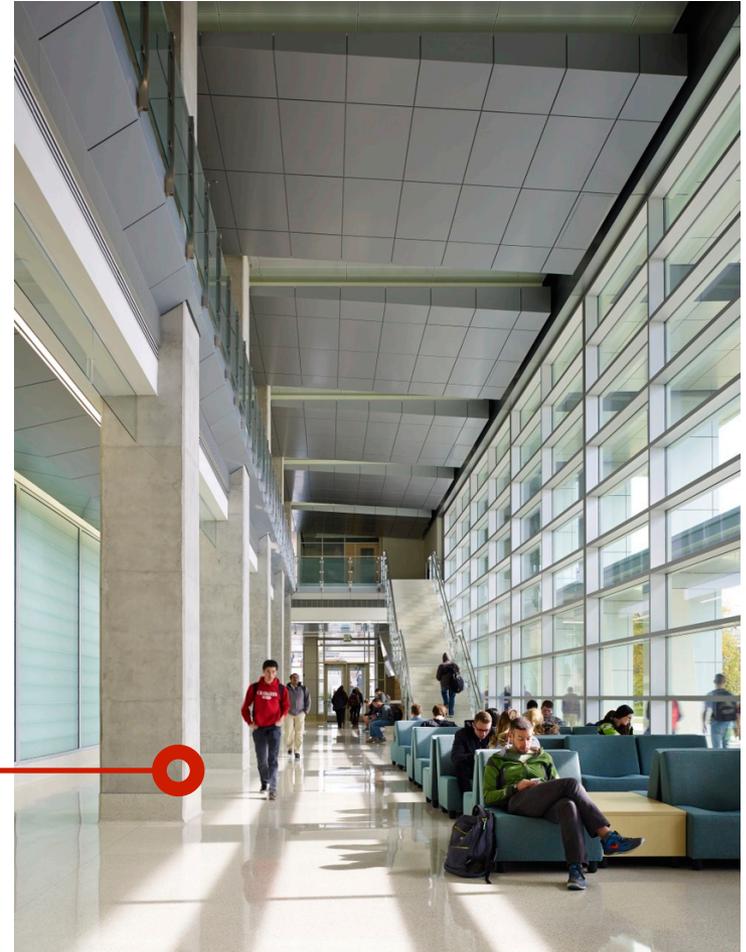
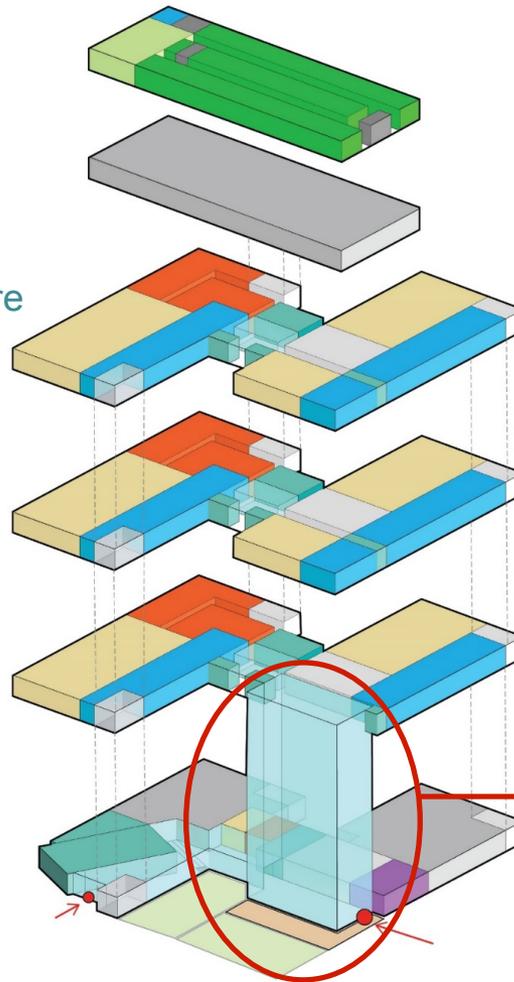
The story of NC Agriculture and the PSI

Celebrate the Donors

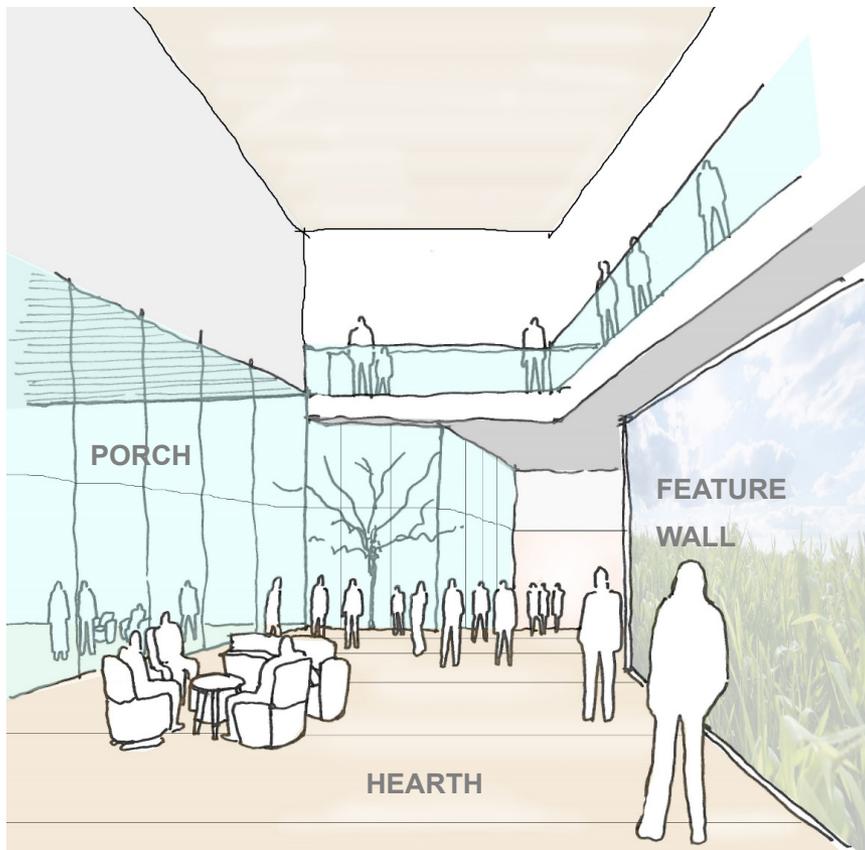
Agricultural history

Social Space

Opens to the Porch



# Hearth



# HUB & Circulation

## Field Laboratory

Agriculture in action  
 Field to bench connection  
 Overhead door connection to maker space and service area for max flex

## Makers Space / Demonstration Lab

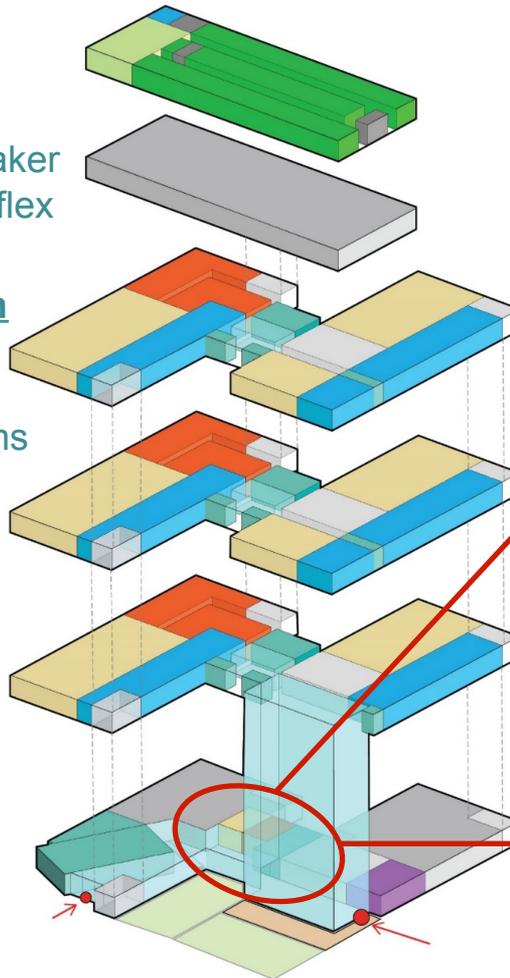
Science in sight  
 Outreach and extension programs  
 Maker space as magnet  
 Activated all the time

## Board Room

Home for visiting partners  
 Visual connection to demo lab  
 Multi-use for training

## Circulation

Open stair connects floors 1 & 2  
 Feature / link to message



# Seminar & Pre-function

## Education Area

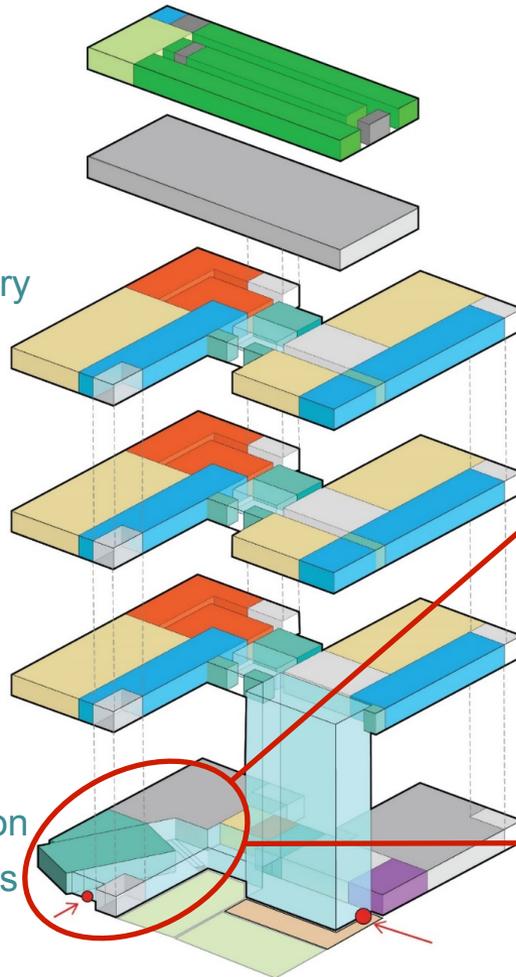
- Designed for tour orientation
- Activate perimeter of courtyard
- Feature wall to tell PSI story

## Pre-function

- Connection to terrace and courtyard
- Flex space for events / receptions
- Secondary entrance

## Seminar

- 150-person accommodation
- Divisible into three sections
- Break out space adjacent



EDUCATION AREA



SEMINAR ROOM

# Research Floors

## Research Labs

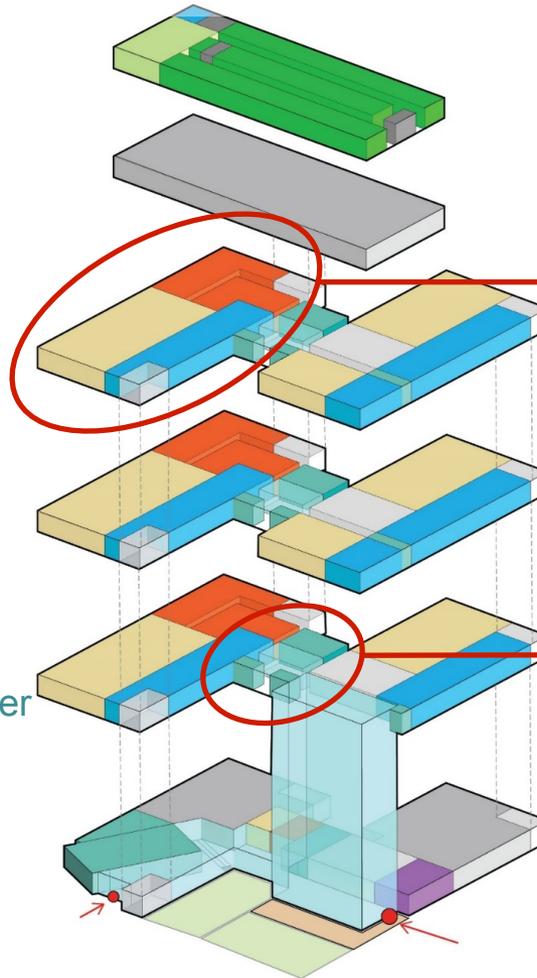
- Science in sight / tours
- Research neighborhood
- Flexible space assignm

## HUB and circulation

- Social destination on floorplate
- Neighborhoods connect vertically
- Science in sight
- Connection to terrace
- Shared conference cluster

## Terrace

- Overlooks garden
- Outdoor dining & collaborative space



# Core Labs

## PSB Support Labs

(e.g., Tissue culture, Transformation, Mass specs, Genotyping, Metabolomics, Soil Analysis, etc.)

Stacked across 3 floors

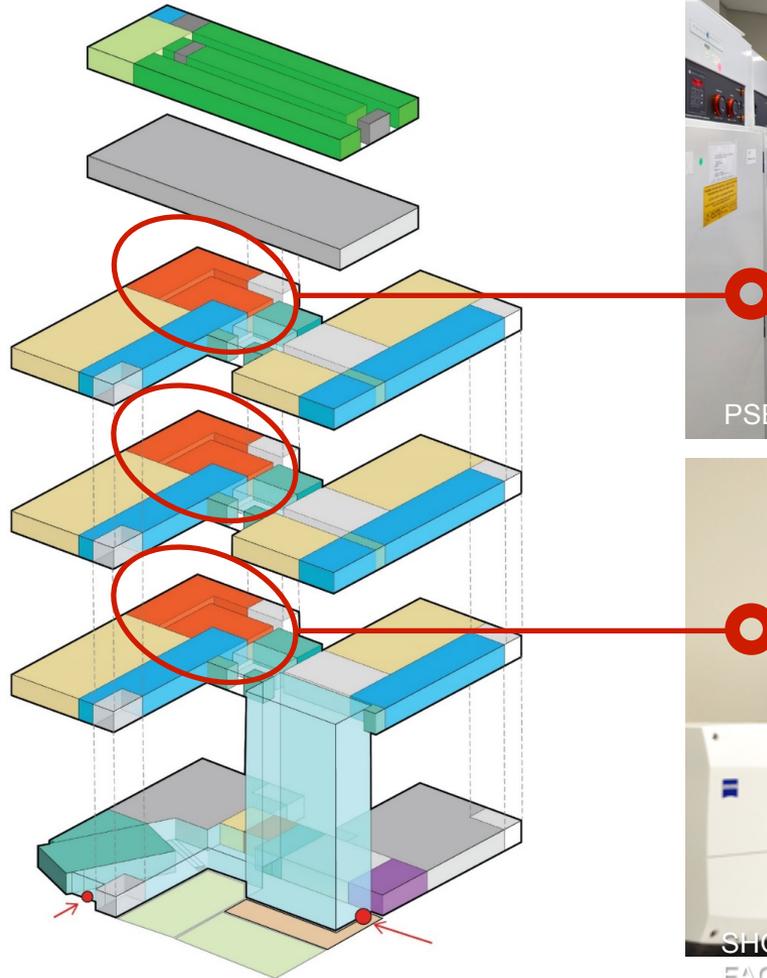
Science in sight

Service corridor connection

## University Core Labs

2<sup>nd</sup> Floor location

University resource



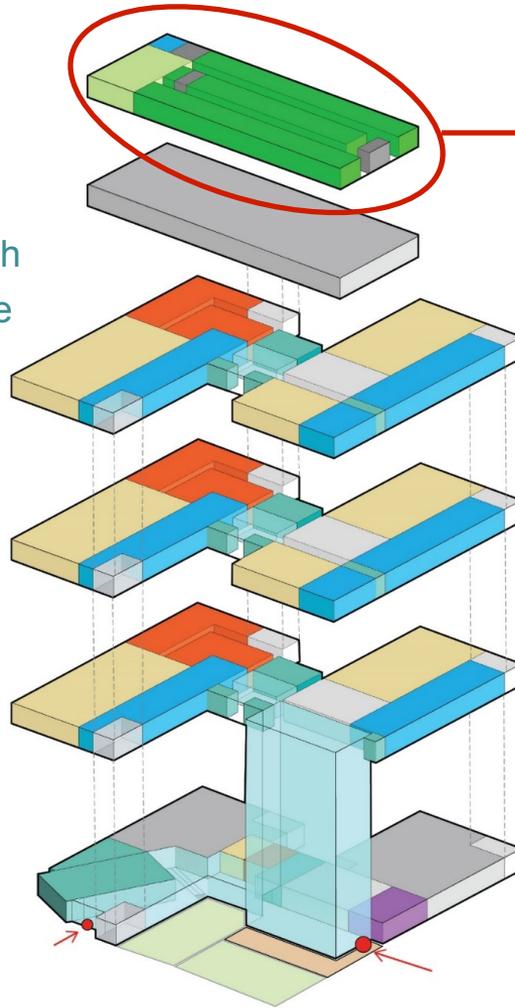
# Greenhouse

## Greenhouses

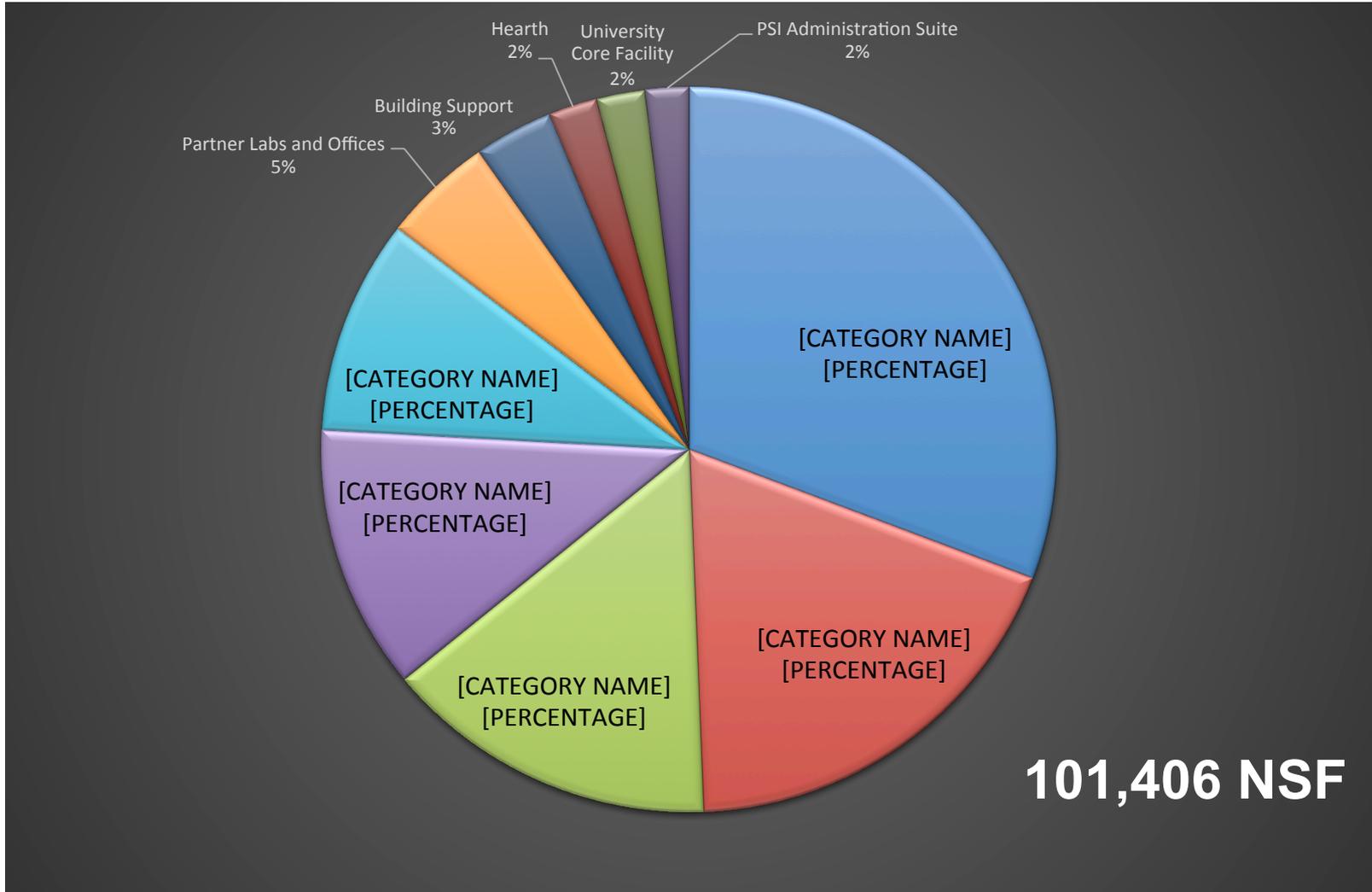
Used by academic and corporate

Science in sight / tour path

BSL-2 and BSL-3 capable



# Space Breakdown



# Plant Sciences Building

## Project Schedule



# Plant Sciences Building

## *Near Term Next Steps*

### May 19 Advanced Planning Report Submission

- AP report review by NCSU stakeholder group and SCO

### May 31 Begin Schematic Design Phase

- Detailed programming
- Building Committee involvement will continue
- Possible next BC meeting in July

# NC Plant Sciences Initiative Update

May 8, 2017



**Launch Director Search**

# NC PSI Launch Director Search

- The Launch Director will be the strategic lead for the NC PSI during the nascent pre-building phase of the project, paving the way for the eventual Executive Director
- Will lead the process of planning and implementing the Initiative's organizational structure, and contribute to the programming and development of the new Plant Sciences Building
- Position supported by a \$500K gift from **NC Farm Bureau**; NC Agricultural Foundation supporting as well
- External firm with specialized expertise in recruiting the agbio sector (Arris Partners) is engaged to lead the executive search process



# NC PSI Launch Director Search

- Arris Partners has conducted a global search extending into the highest levels of academia, industry and government
- The position has generated significant interest – nearly 200 individuals have been engaged during the search process
- The Search Committee has reviewed the materials for the top cluster of candidates and is in the process of conducting the first round of interviews
- Expectation is to hire the successful candidate by the end of the summer term



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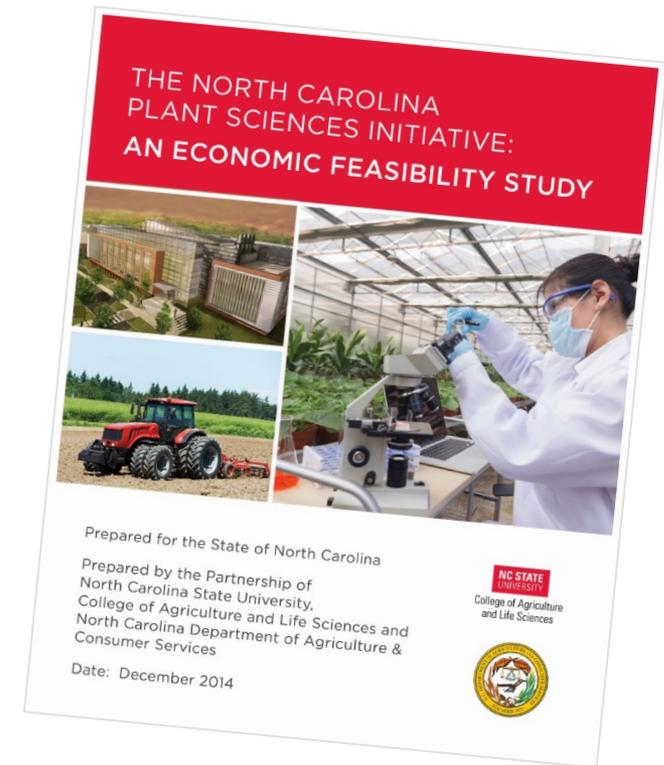
Progress of PSI Task Forces

# Overview

- In Q1 2016, CALS began the process of convening private and public sector thought leaders to provide guidance and direction for the NC PSI both internal & external to the University.
- 1st joint meeting in March 2016, the thought leaders were asked to think “outside-of-the-box” as they envisioned how best to establish the world’s foremost plant sciences research and training center.
- The upcoming Task Forces Report provide a set of **recommendations** which represents a “living document” that can help serve as a guide to CALS/NC PSI leadership as it moves forward with implementation.

# Task Forces Facilitation

- TEConomy Partners is a global leader in research, analysis and strategy for innovation-based economic development.
- They are the authors of the Economic Feasibility Study and the original Governance White Paper for the PSI that were commissioned by the State of North Carolina.
- They have provided strategic planning consulting and facilitation of the task forces over the past year and is producing their final report.



Innovating Tommorrow's Economic Landscape

# Taskforce Framework

- **Governance & Leadership Taskforce**
  - Commercialization & Entrepreneurship Sub-taskforce
- **Research & Technology Taskforce**
  - Plant Improvement Platform Sub-taskforce
  - Plant Data Sciences Platform Sub-taskforce
  - Food Systems, Environmental Sustainability and Resilience Platform Sub-taskforce
- **Workforce Development & Public Engagement Taskforce**
  - Science Policy & Communications Sub-taskforce
  - Research Translation & Delivery Sub-taskforce
  - Workforce Education & Development Sub-taskforce
- **Advocacy & Resource Development Taskforce**

# Governance & Leadership Taskforce Recommendations

***Vision: Be the premier destination for plant sciences in the world by leveraging North Carolina's unique assets to create the Silicon Valley of Plant Sciences.***

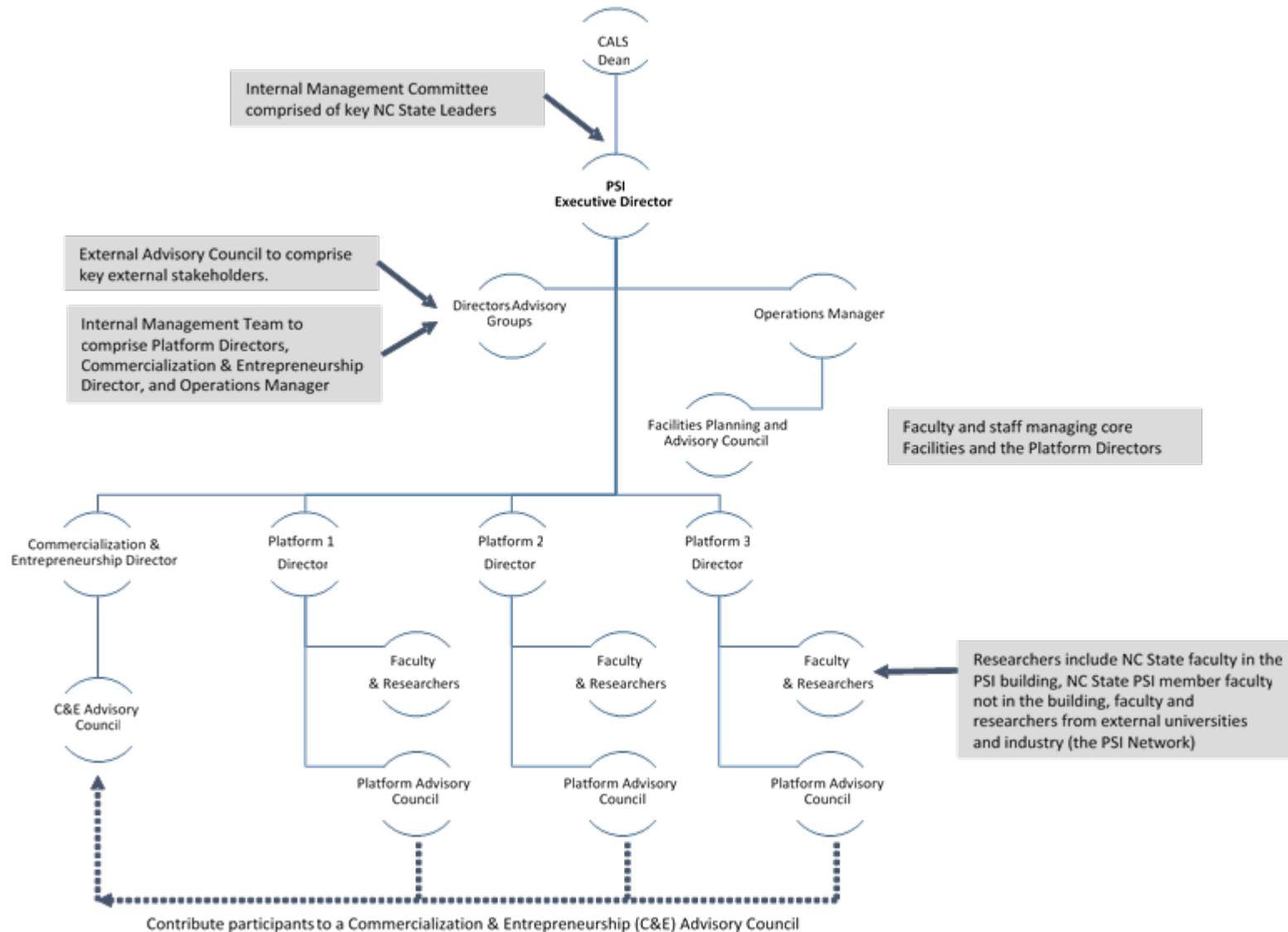
The guiding principles of the NC PSI should encompass the spirit of the following statements:

- Mandate and support transdisciplinary research by creating an environment and culture in which it can thrive
- Create a unique community of partnerships
- Empower a visionary leader to create an innovative culture that fosters premier plant sciences research
- Encourage flexibility, natural evolution, and transformative disruption of technology from discovery to commercialization
- Avoid importing and/or defaulting to traditional institutional structures
- Solve global grand challenges that have local economic relevancy
- Provide transdisciplinary training of the future workforce
- Focus key performance indicators on both traditional academic and transformative outcomes.

## Governance & Leadership Taskforce Recommendations

- Drafted Job Description for the NC PSI Executive Director
- Hire a Dedicated Commercialization & Entrepreneurship Director
- Develop Guidelines for Project Life Cycle Management
- Allow for Physical Rotation of Space
- Provide Commercialization Support for NC PSI Projects
- Ensure NC State's Organizational Culture, including its Reappointment, Promotion & Tenure Policies and Practices, Recognizes, Fosters, Supports, and Rewards Commercialization and Entrepreneurship Activities
- Create an NC PSI Implementation/Launch Advisory Committee

# Recommended NC PSI Organizational Chart

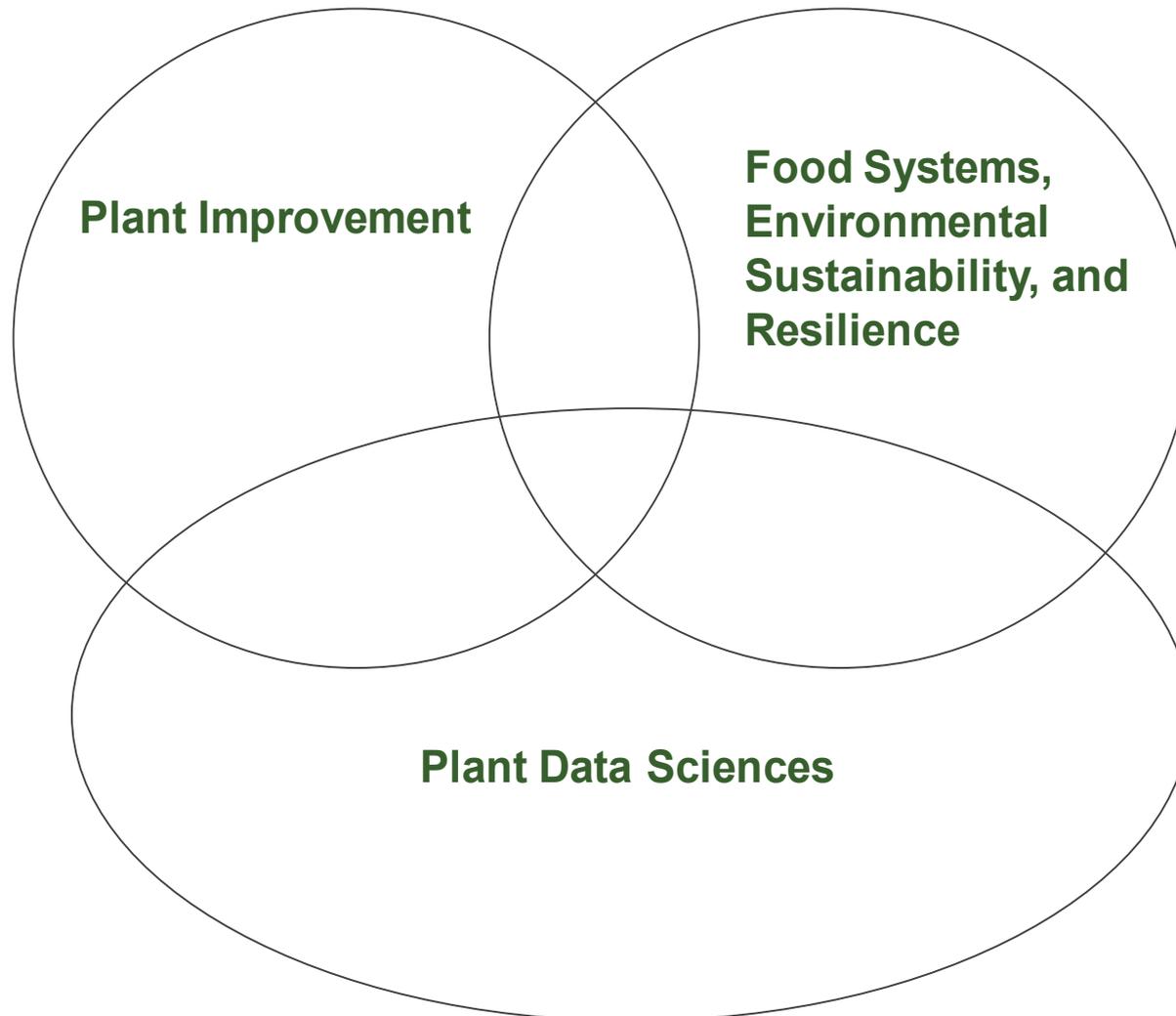


# Research & Technology Taskforce Recommendations

## *Recommended Criteria/Guidance by which Research & Technology Platforms should be Chosen*

- Platforms must tackle global grand challenges that have relevance to both national and North Carolina-specific problems.
- Platforms should provide foundational research relevant to North Carolina agbioscience industry, producers and consumers.
- Platforms should:
  - Be anchored in NC State University research strengths
  - Have the potential for attracting external partnerships
  - Generate impacts beyond research. Issues such as longevity of the platform and length of time between discovery and translation of the research to practices are also important considerations.
- Recognizing that Platforms will evolve over time, constantly review the landscape of opportunities based on the recommended criteria to ascertain when other platforms may become relevant.

# Recommended Inaugural NC PSI Platforms



# Recommended Inaugural NC PSI Platforms

## Plant Improvement

- Crop Protection from Biotic Stress
- Plant Adaptation to Abiotic Stress and Marginal Conditions
- Agri-Symbiotics (plant symbiotic relationships with non-plant organisms)

Targeted areas of convergence that could be addressed under this platform:

- Multiple/cross-crop improvements
- Integrated improvements of stress tolerance
- Biochemistry
- Plant-microbial interactions
- Integrative application of technologies

# Recommended Inaugural NC PSI Platforms

## Plant Data Sciences

- Sensor Data for Precision Agriculture
- Genotype Modifications and their Translation to Phenotype and Environmental Responses in Crop Plants

Targeted areas of convergence that could be addressed under this platform:

- Data Mining and algorithm development for heterogeneous data
- Sensor technology for basic research and field applications
- Heterogeneous data integration for improved breeding/genomic strategies
- Prototyping systems and translating results to crop production and utilization

# Recommended Inaugural NC PSI Platforms

## Food Systems, Environmental Sustainability & Resilience

- Goal to create a resilient food system that reduces food insecurity, improves diet-related health outcomes, protects the environment for future generations, and is profitable for producers
- Environmental Sustainability: Agriculture should be conducted in a way that does not limit future generations from producing the food they need by degrading soil, water, biodiversity, etc.
- Food Systems challenges, including climate change

Targeted areas of convergence that could be addressed under this platform:

- Carbon economy and energy efficiency
- Water quality and use
- Food waste and loss
- Soil health

# Research & Technology Taskforce Recommendations

- Have Dedicated Platform Directors
- Focus Projects/Initiatives at the Intersection of the Proposed NC PSI Platforms
- Continue to Engage the Research and Technology Platform Sub-taskforces
- Develop a Space Allocation Rubric
  - Focused on flexible space that can be reconfigured depending on the current needs of the platforms/projects

# Workforce Development & Public Engagement Taskforce: Science Policy & Communications Sub-Taskforce Recommendations

- Hire a Communications and External Relations Specialist Dedicated to Advancing NC PSI and Integrating its Communication Activities within the Broader CALS Efforts
- Create a Two-Phase Communications Plan
  - Phase I – PSI Launch (Near-Term)
  - Phase II – Strategic Communications (Long-Term)
- Shape and Deliver Communications that Position NC PSI as a “Trusted Source” for Information and Knowledge Dissemination
- Create a Communications Advisory Committee

# Workforce Development & Public Engagement Taskforce: Research Translation & Delivery Sub- taskforce Recommendations

- Ensure that Cooperative Extension has a pivotal role, from beginning to end, for each project
- Ensure that project teams represent a diverse group of individuals to guarantee a robust understanding of needs as well as to be more encompassing in how information is disseminated to broader audiences
- Implement a formal process and create mechanisms that ensure that the capabilities and capacities that Cooperative Extension represents are utilized and embraced, thereby creating a culture in which the role of Cooperative Extension is valued

# Workforce Development & Public Engagement Taskforce: Workforce Education & Development Subtaskforce Recommendations

- Hire a Dedicated Professional Development Coordinator
- Develop agbioscience leaders of the future, which includes both technical expertise, experiential programs and hands-on curricula
- The members of the Sub-taskforce also examined issues that should be addressed by CALS. These additional recommendations to NC State CALS leadership regarding the continued evolution of the College's workforce/career preparedness efforts can be found in the full report

# Advocacy & Resource Development Taskforce Recommendations

- This Taskforce has been instrumental in garnering support for the Connect NC Bond and the Golden LEAF Foundation grant, which account for a significant portion of the capital funding for the Plant Sciences Building
- Now that the other Taskforces have weighed in with their recommendations, this Taskforce will continue to convene to provide guidance and assistance in support of the resource development – both capital and programmatic funds – for the NC PSI

# Results of Joint Task Forces Meeting

May 1, 2017

***Goal: to begin the process of taking the recommendations from the task forces and developing them into an implementation plan***

Discussions focused on three topics:

## **1) Areas of synergy and opportunity**

- Evolve current research programs into greater transdisciplinary efforts
- Ensure a pipeline of students interested in the plant sciences and agriculture, through coordinated communications efforts and working with youth organizations such as 4-H
- Further refine, develop and understand critical technologies, such as genome editing
- Use NC PSI as a driver for how research is pursued and how faculty are evaluated (e.g., team-oriented, working with Extension, commercialization endeavors, etc.)
- Have NC PSI be a trusted source for agriculture and ag-based research and information, both locally and globally

# Results of Joint Task Forces Meeting

May 1, 2017

## 2) Areas of implementation planning that should be addressed

- Ensure that ongoing research is integrated into the new PSI platforms while still meeting the needs of NC producers
- Recognize that NC PSI must maintain strengths in both basic and applied research
- Institute a segmented approach to communicate the NC PSI value proposition to the different stakeholder groups
- Develop a marketing strategy that will better connect the NC PSI to consumers and the general public
- Ensure that NC PSI does not become a new silo on campus and within the College, but instead works collaboratively across initiatives and departments and leverages existing resources both internal and external to NC State

# Results of Joint Task Forces Meeting

May 1, 2017

## 3) Further recommendations concerning integration and the path forward

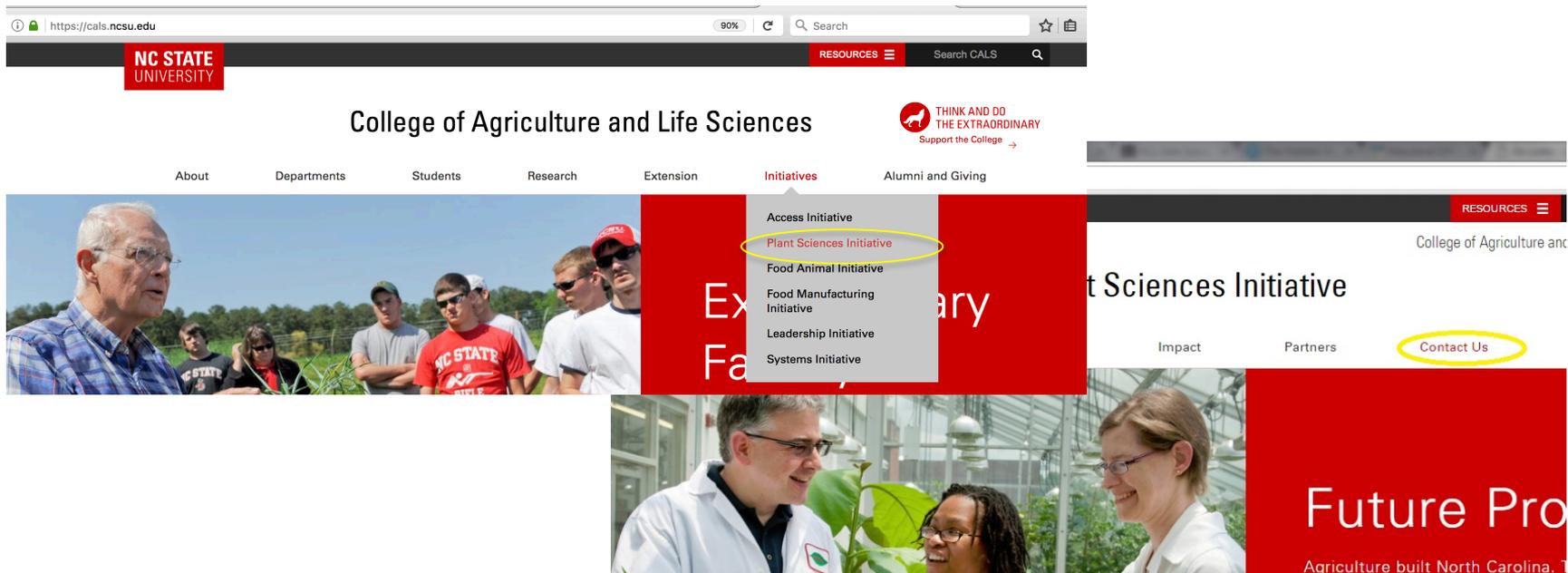
- Have a process to integrate and harmonize the recommendations that are divergent
- Develop thinking on what the NC PSI is not – to achieve better clarity on the ultimate design of the initiative
- Maintain advisory groups that are highly diversified in order to represent the many points of view among stakeholders
- Build an ecosystem that will integrate the “oblique angles” and focus them into a solution-based model
- Embed significant flexibility into the model to ensure that NC PSI can adapt to the needs of the future (e.g., 5 yrs, or even 30 yrs from now)
- Continue to engage faculty and stakeholders in a democratic process

## Next Steps

- We will have the full Taskforces report available online within the next one to two months, seeking comments on the recommended vision and course for the NC PSI.
- We will then synthesize all feedback and work through the recommendations with our Launch Director, who we anticipate to have on board later this summer.
- We will engage CALS and University faculty to assess recommendations and develop an implementation plan.
- We will task the Launch Director with leading an implementation team to carry the action plan forward.

# Contact Us

To ask questions or leave comments about the PSI, please visit us at [go.ncsu.edu/contact-psi](https://go.ncsu.edu/contact-psi).



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**NC STATE**

THINK AND DO  
THE EXTRAORDINARY



**Thank You**