

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

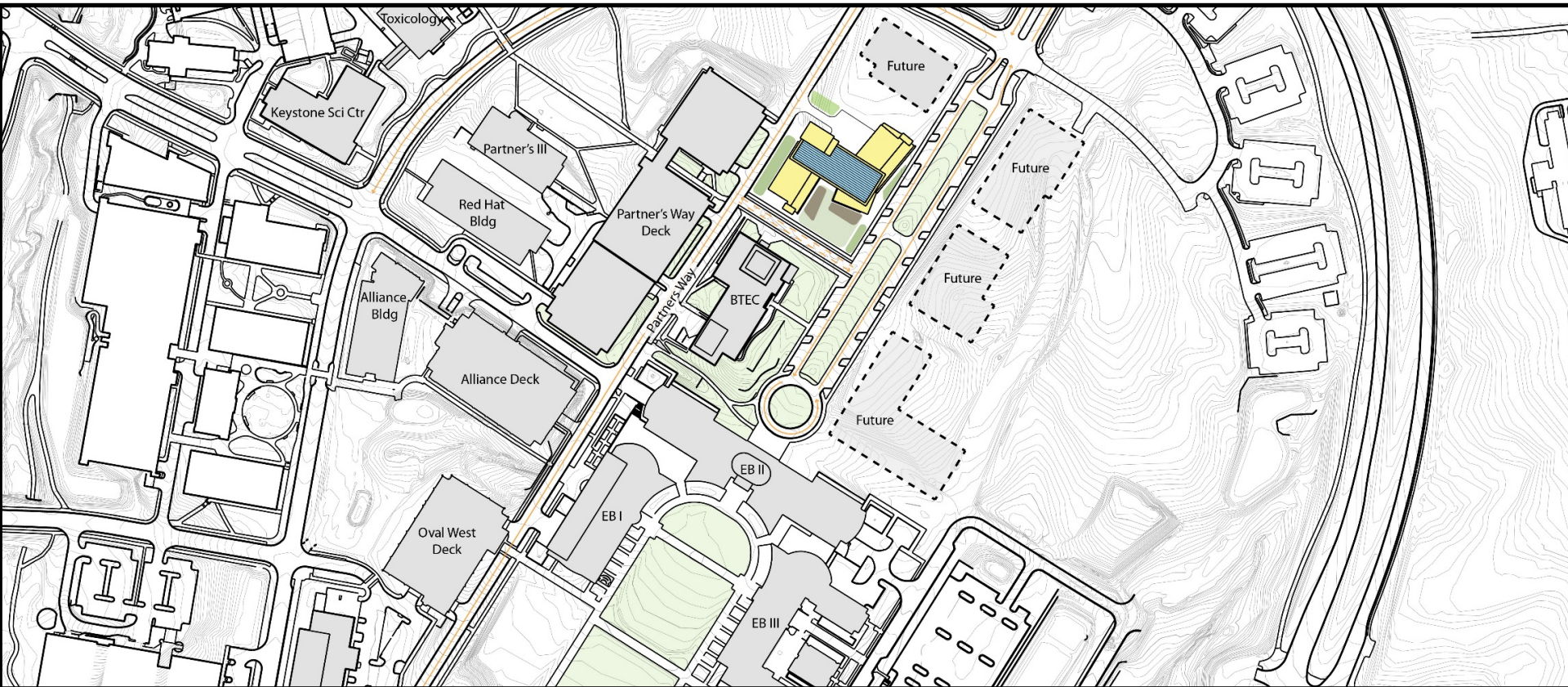
May 8, 2017



**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

November 2016 – May 2017

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

Committees

Building Committee

External Advisory Committee

Interdisciplinary Advisory Committee

Program Groups

Academic Research

Academic Collaborators

External Partners

Corporate Partners

Growth Environments

Administration

Conference and Meeting

Knowledge Management

Community

Maintenance and Operation

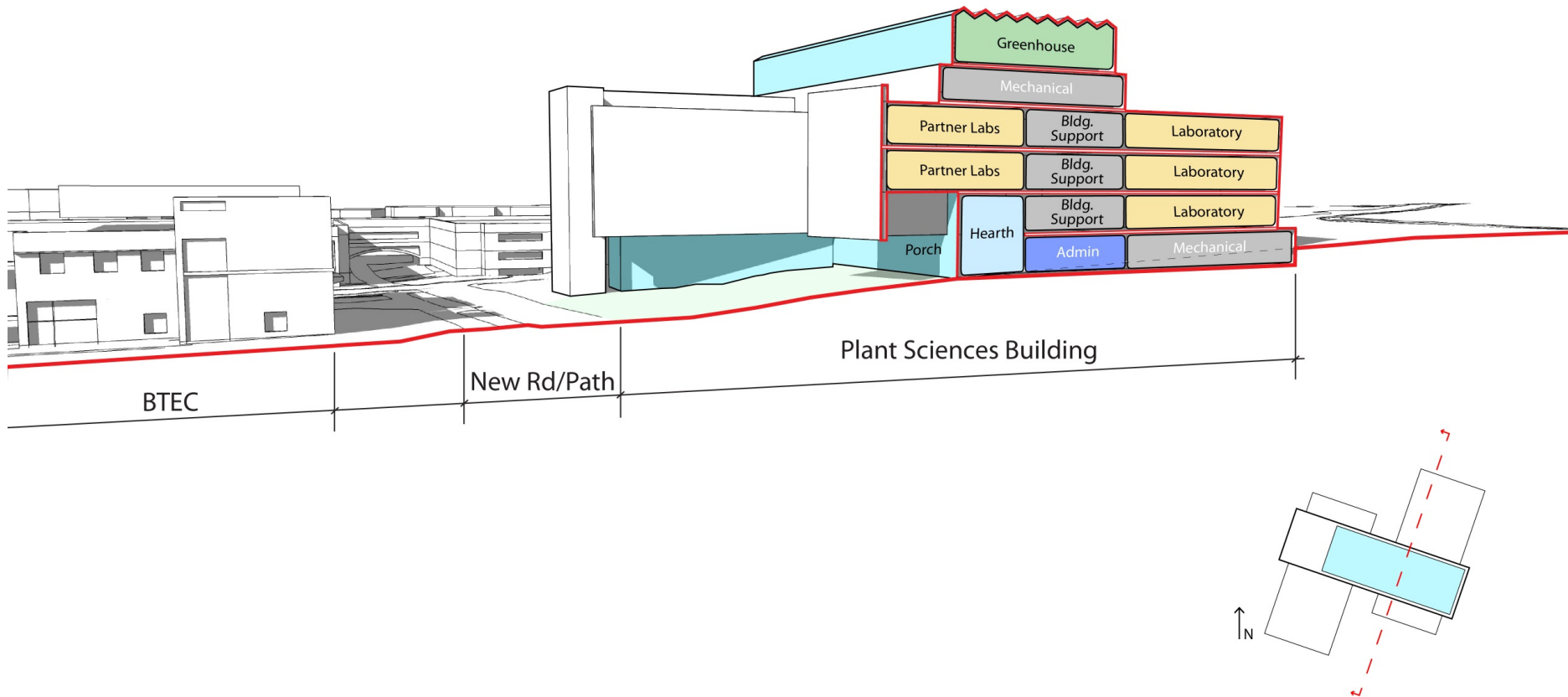
University Architect

Capital Project Management

Design Concept: "The Porch"



Design Concept: "The Porch"



Exterior Massing

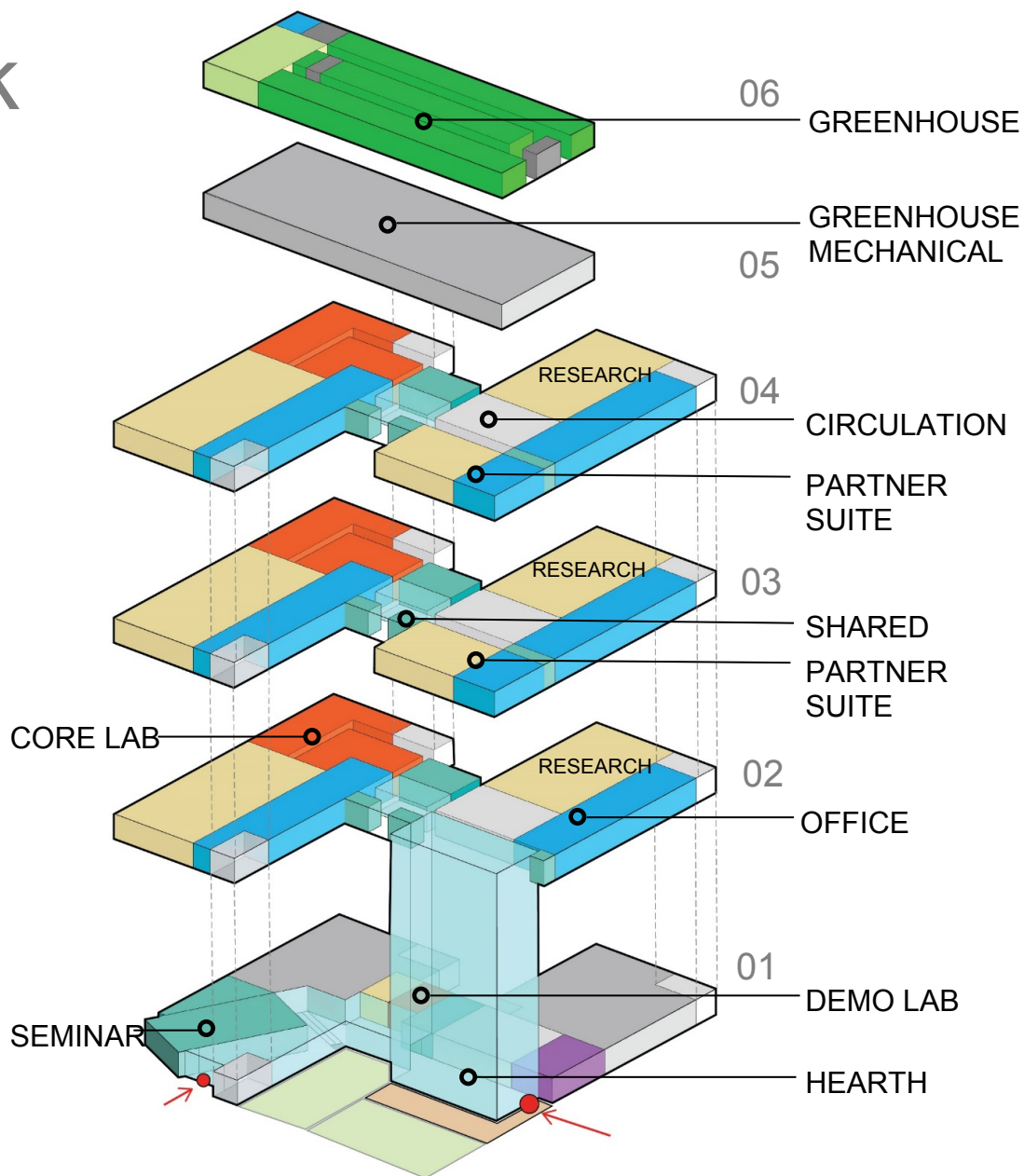


LOOKING NORTH



LOOKING SOUTH

Block and Stack



Hearth

Hearth / Check-in / Cafe

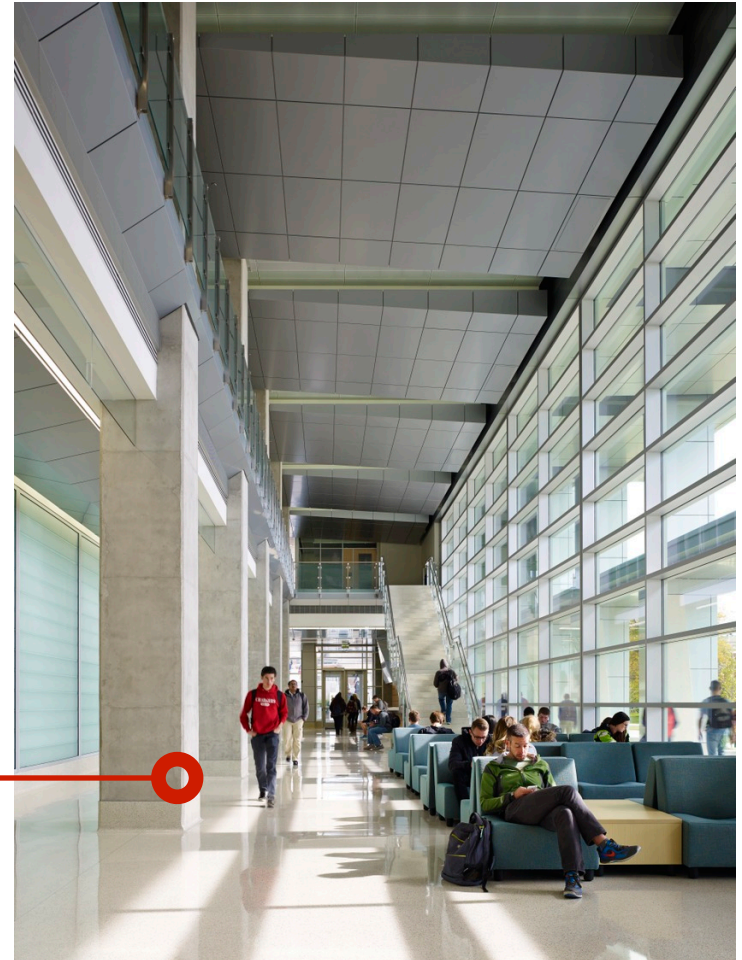
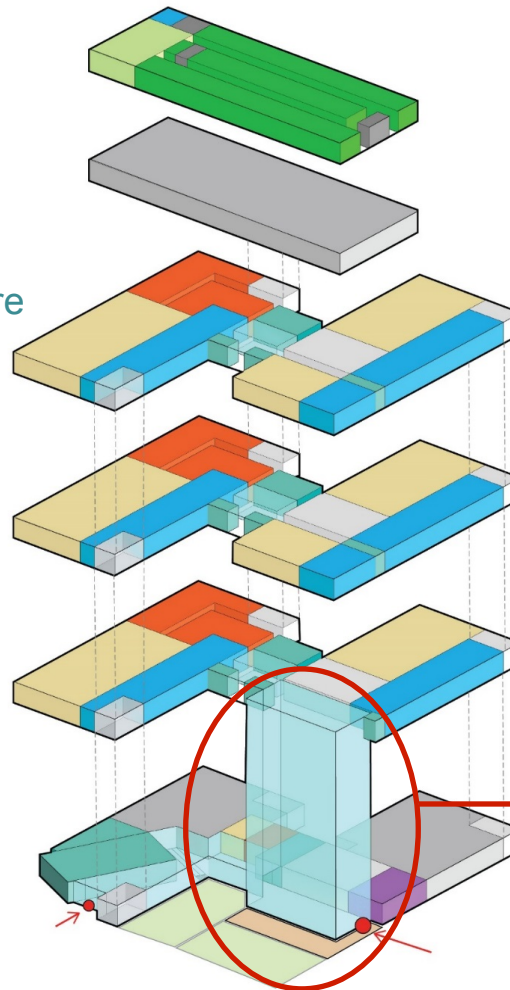
The story of NC Agriculture
and the PSI

Celebrate the Donors

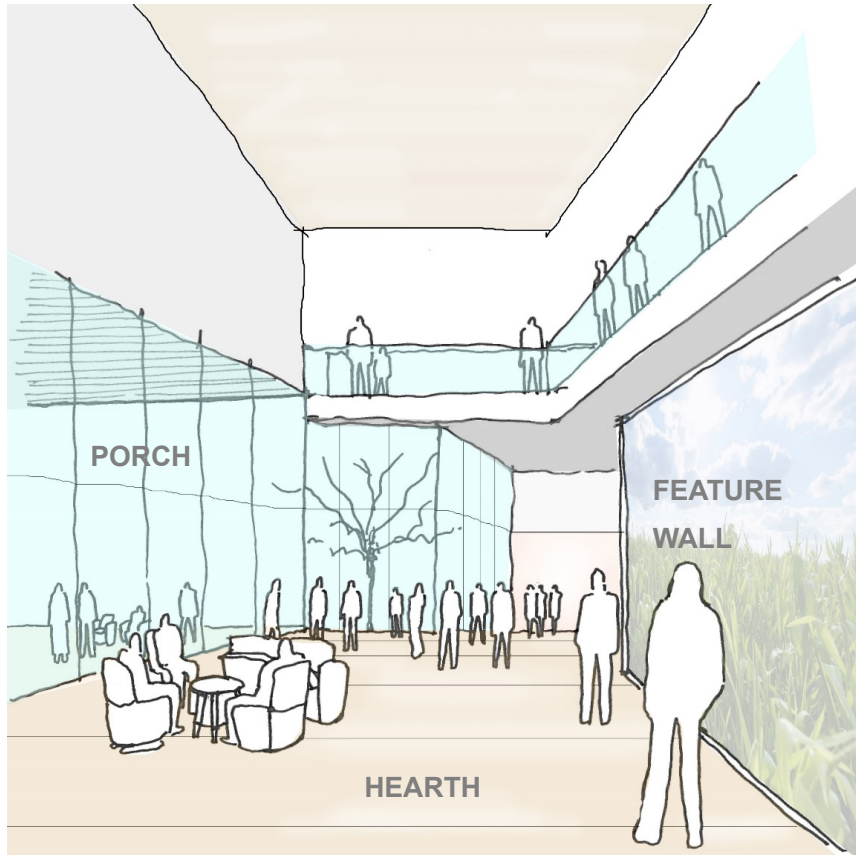
Agricultural history

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

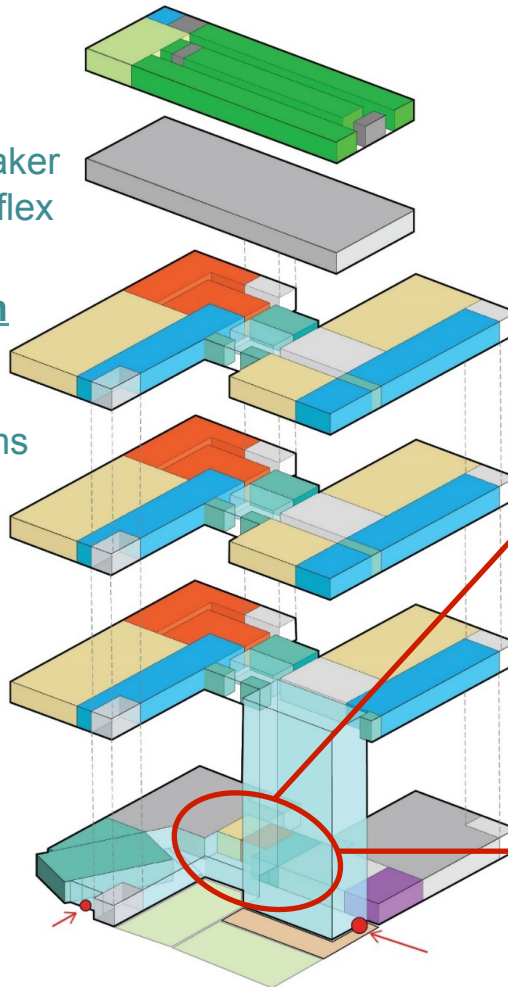
Science in sight
Outreach and extension programs
Maker space as magnet
Activated all the time

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



MAKERS SPACE / DEMO



CONFERENCE RELATIONSHIP TO DEMO LAB

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

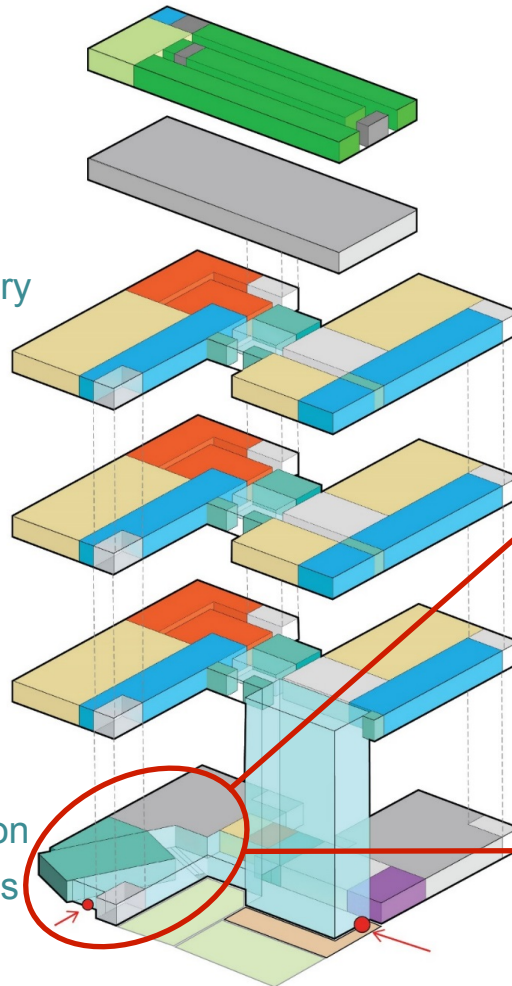
Secondary entrance

Seminar

150-person accommodation

Divisible into three sections

Break out space adjacent



Research Floors

Research Labs

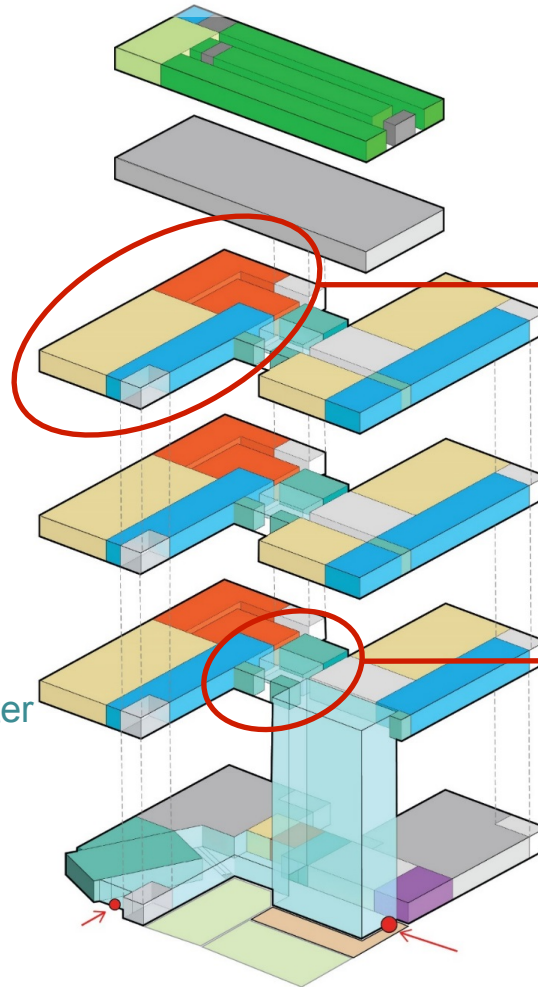
Science in sight / tours
Research neighborhood
Flexible space assignm

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

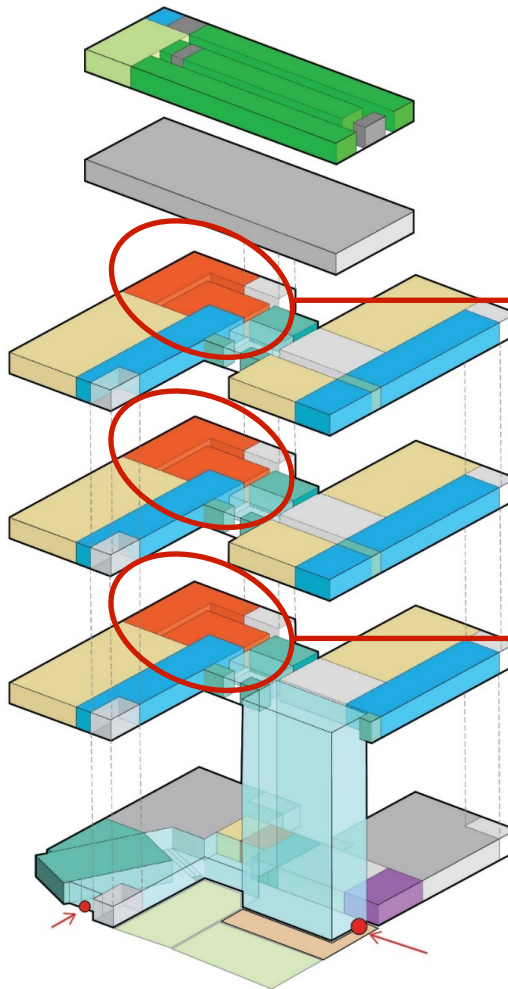
Science in sight

Service corridor connection

University Core Labs

2nd Floor location

University resource



PSB CORE SUPPORT



SHOWCASE CMIF CONFOCAL FACILITY

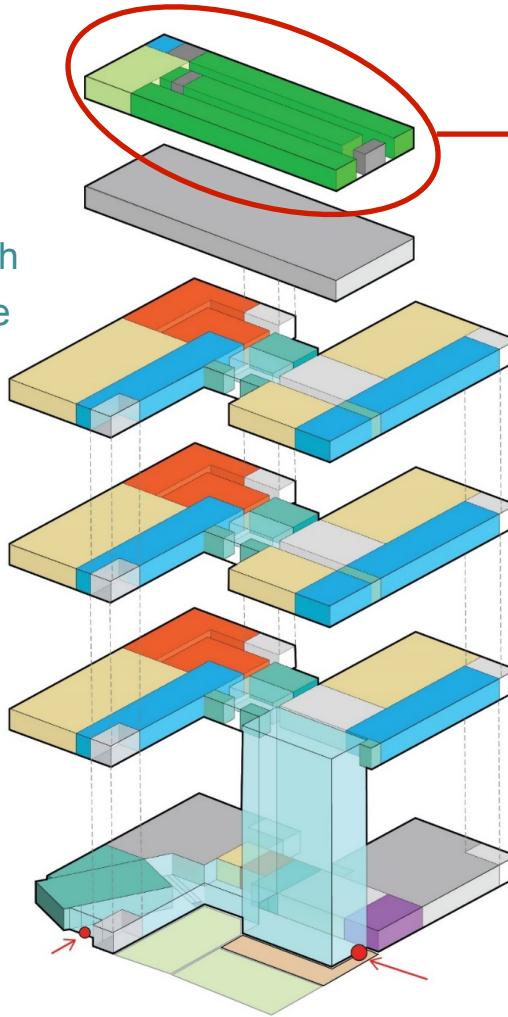
Greenhouse

Greenhouses

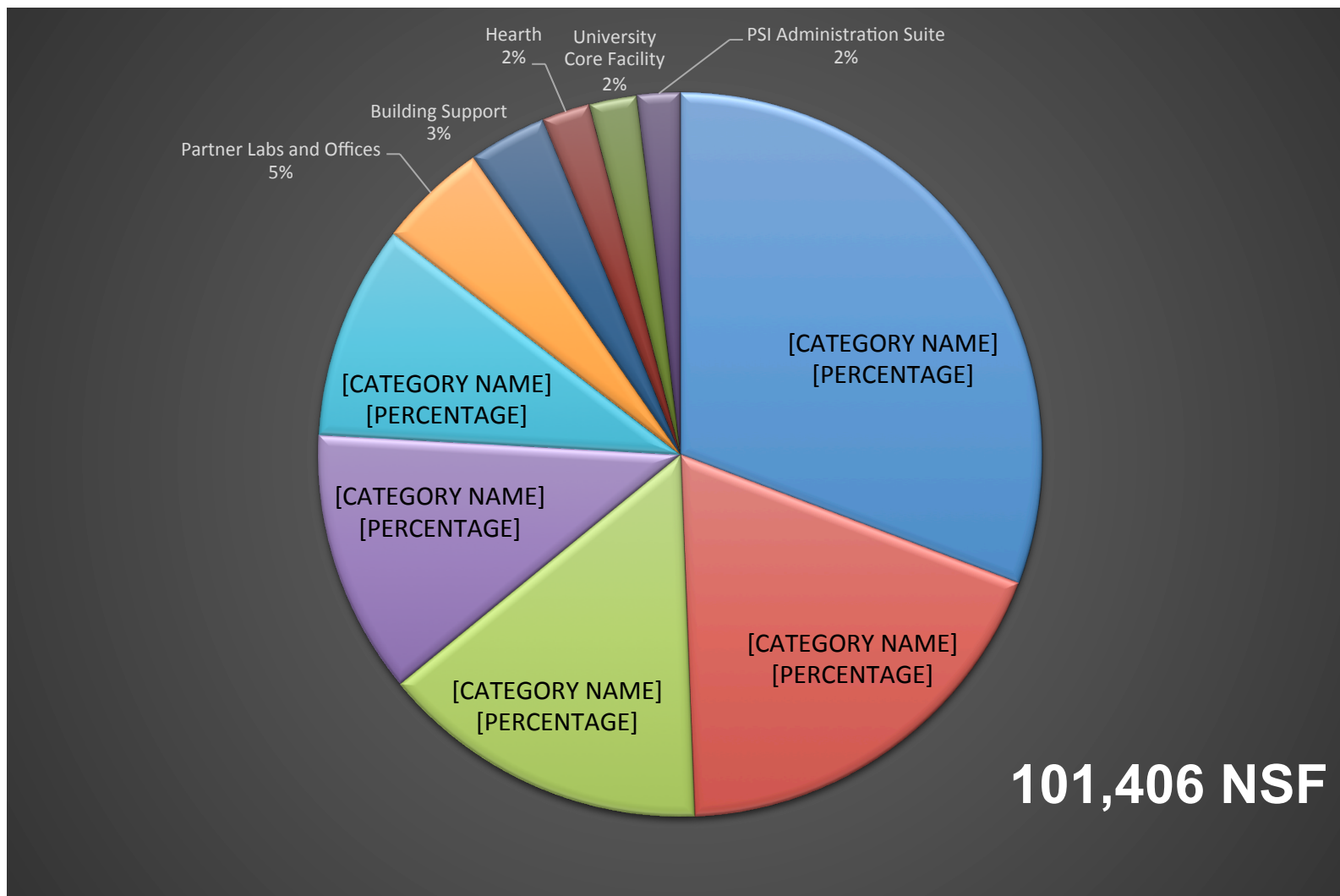
Used by academic and corporate

Science in sight / tour path

BSL-2 and BSL-3 capable

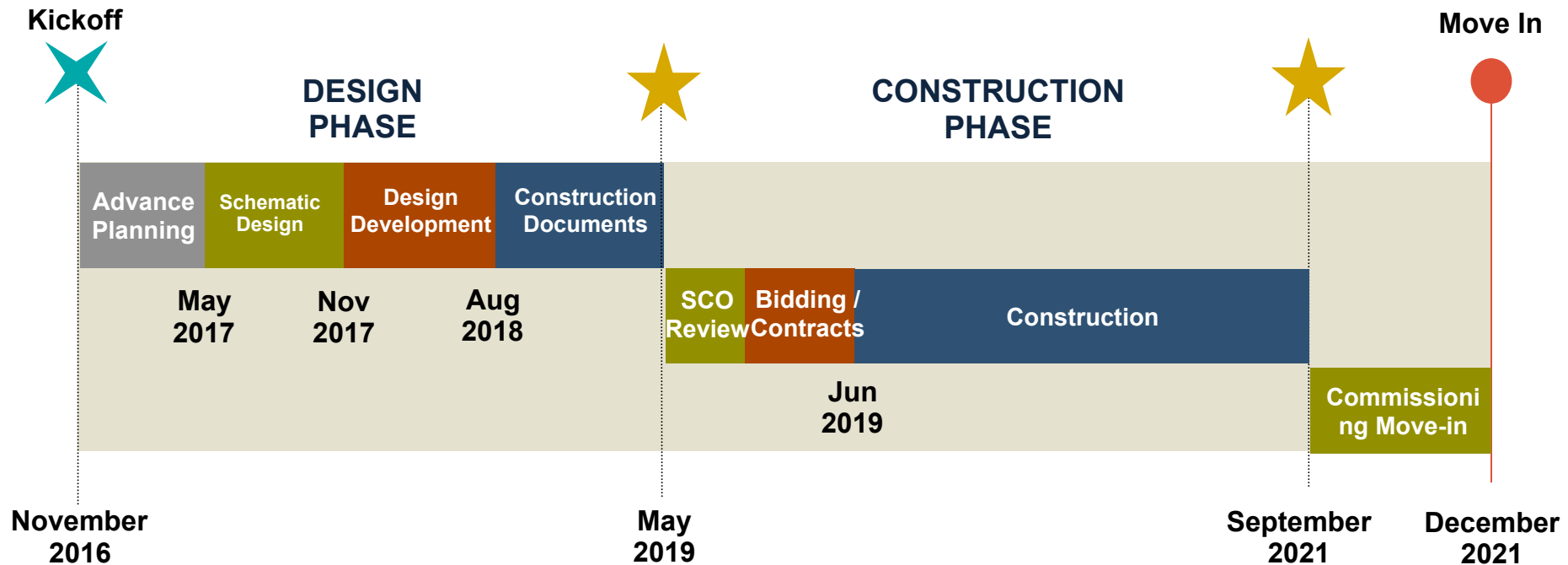


Space Breakdown



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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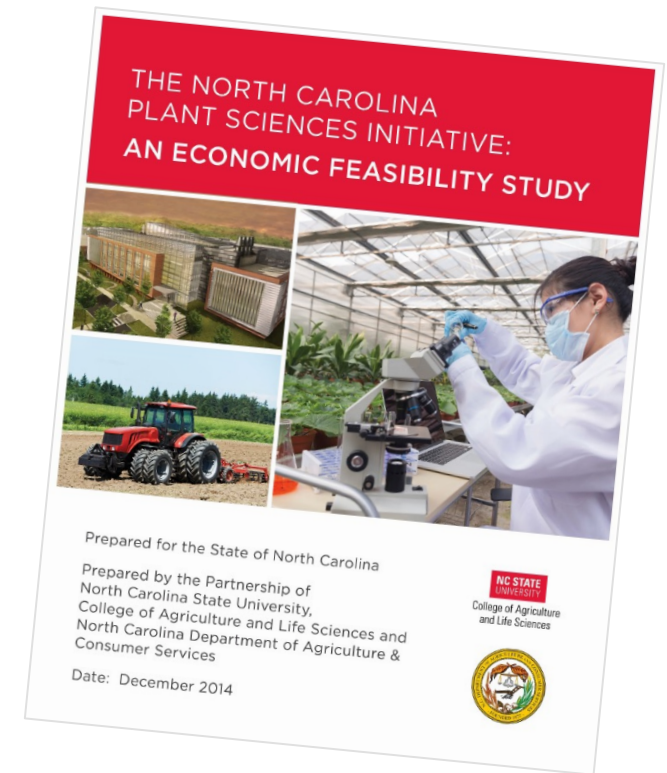
Progress of PSI Task Forces

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.



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.

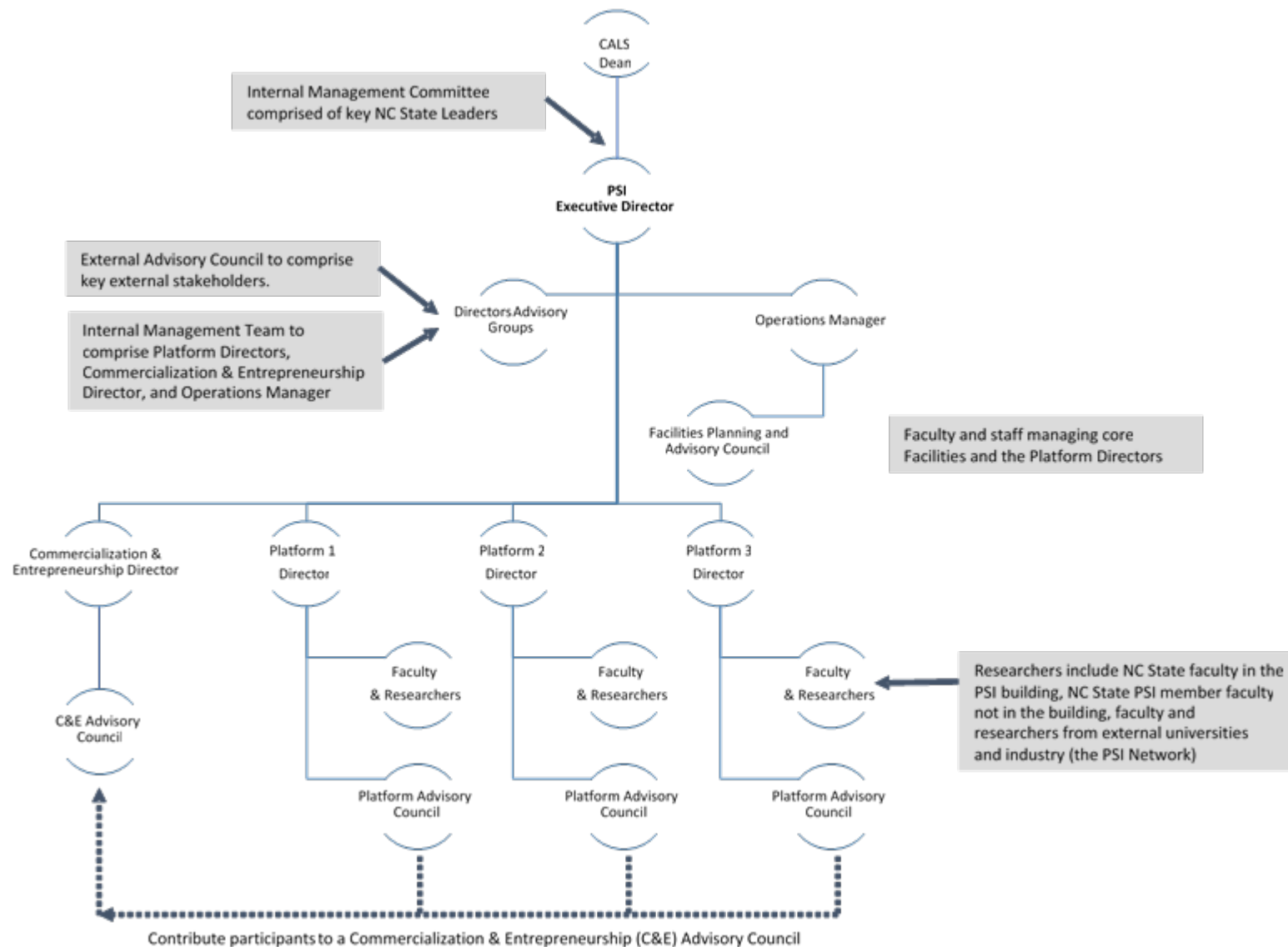
The guiding principles of the NC PSI should encompass the spirit of the following statements:

- 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

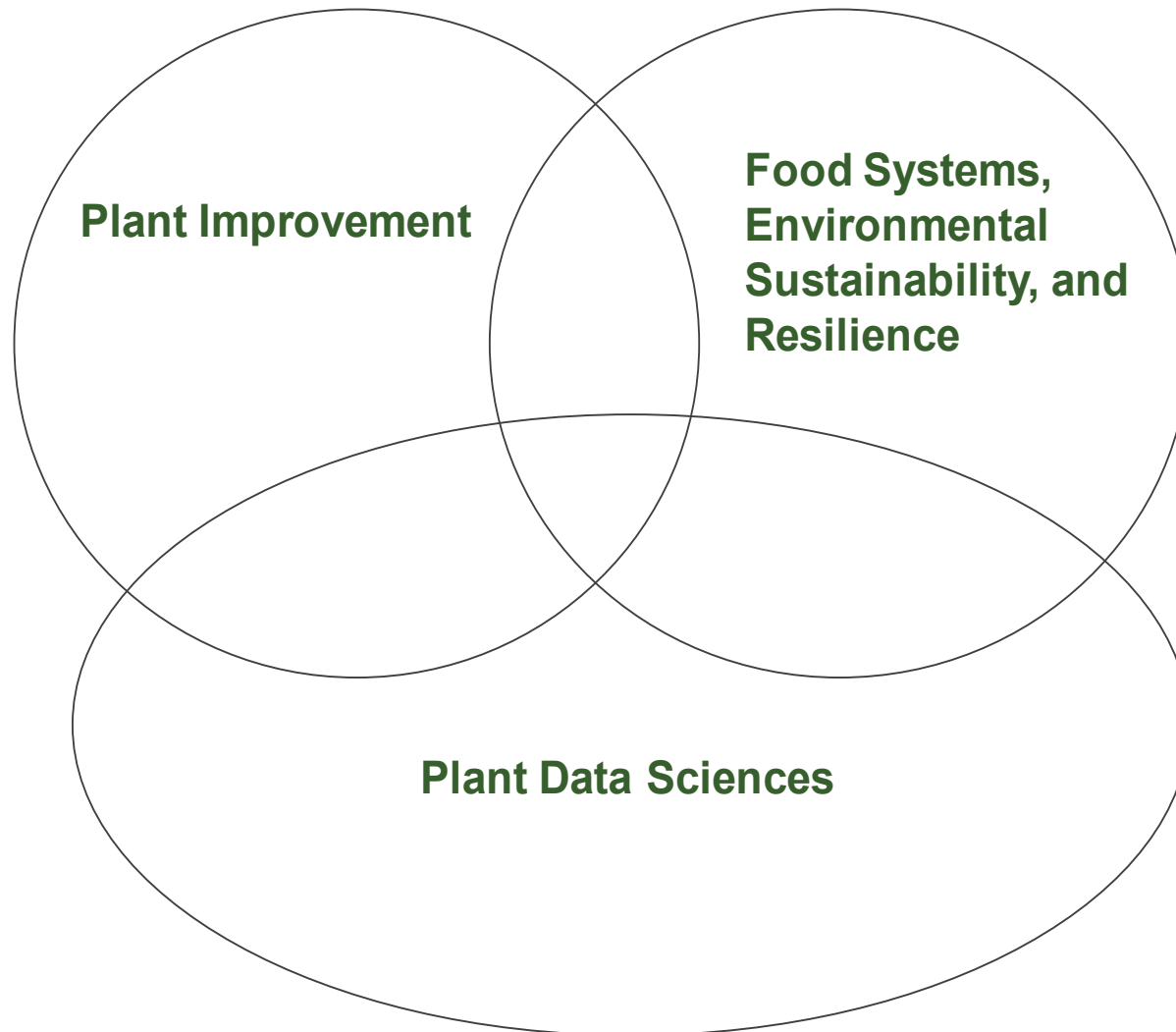


Research & Technology Taskforce Recommendations

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

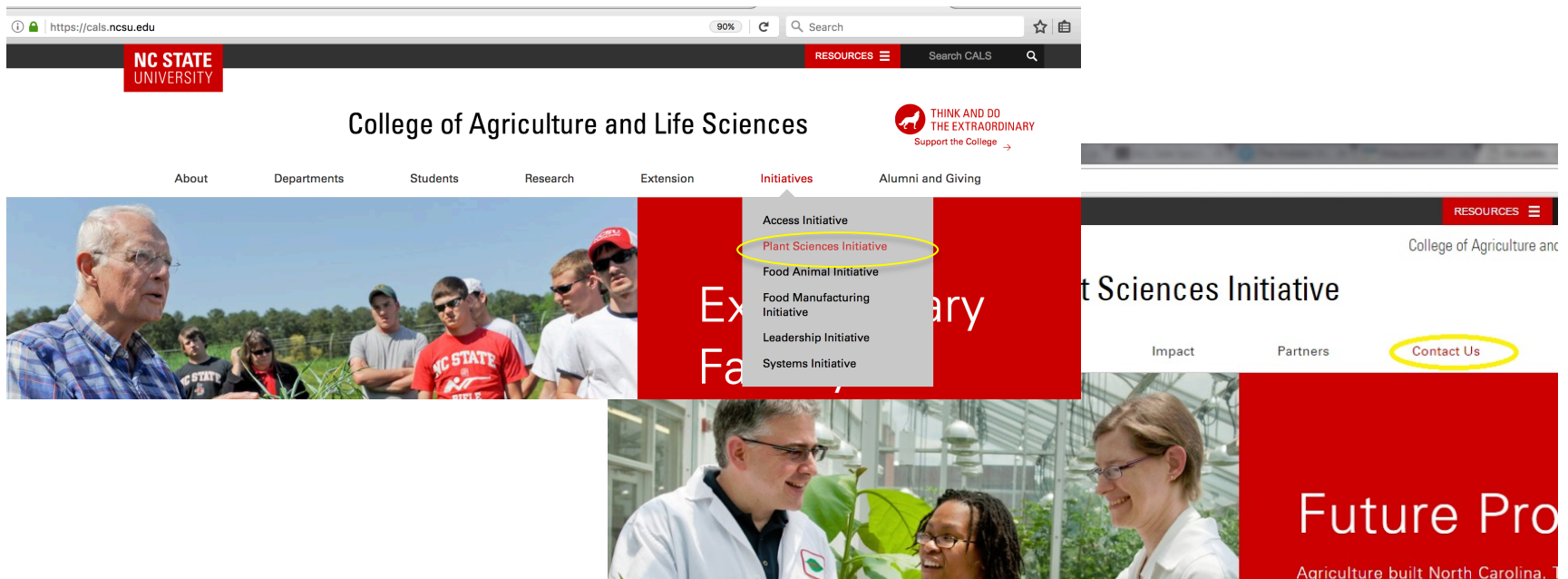
- Have a process to integrate and harmonize the recommendations that are divergent
- Develop thinking on what the NC PSI is not – to achieve better clarity on the ultimate design of the initiative
- Maintain advisory groups that are highly diversified in order to represent the many points of view among 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.



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NC STATE THINK AND DO
THE EXTRAORDINARY



Thank You