Yale

Update from the Instrumentation Task Force

Vision for an
Advanced Instrumentation Development Center (AIDC)
in the Physical Sciences and Engineering Building (PSEB)

Ideation Workshop

May 22, 2020

Workshop Agenda

2:00 **Update from the PSEB instrumentation initiative task force**
Vision for an Advanced Instrumentation Development Center (AIDC) in the PSEB (Lisa D'Angelo, Karsten Heeger)

2:25 **Q&A**

2:45 **Lightning Talks**
highlighting connections between research, instrumentation development, and science priorities at Yale

3:15 **Discussion**

3:30 **Adjourn**

Goals of Workshop & Background

Why Now?

This is a community check-in and request for input prior to articulating a draft vision to the Provost. Prepare for the opportunities after COVID19.

Planning for a New Physical Science and Engineering Building

- two working groups, aggressive timeline from the outset
- our committee focused on instrumentation, in close coordination with the PSEB working group as related to instrumentation/cores

Charge

Develop the vision for an instrumentation and technology development center in support of the USSC Instrumentation Initiative

We envision a multi-pronged approach

- research
- education and training
- building an inclusive instrumentation community
- leveraging internal and external collaboration

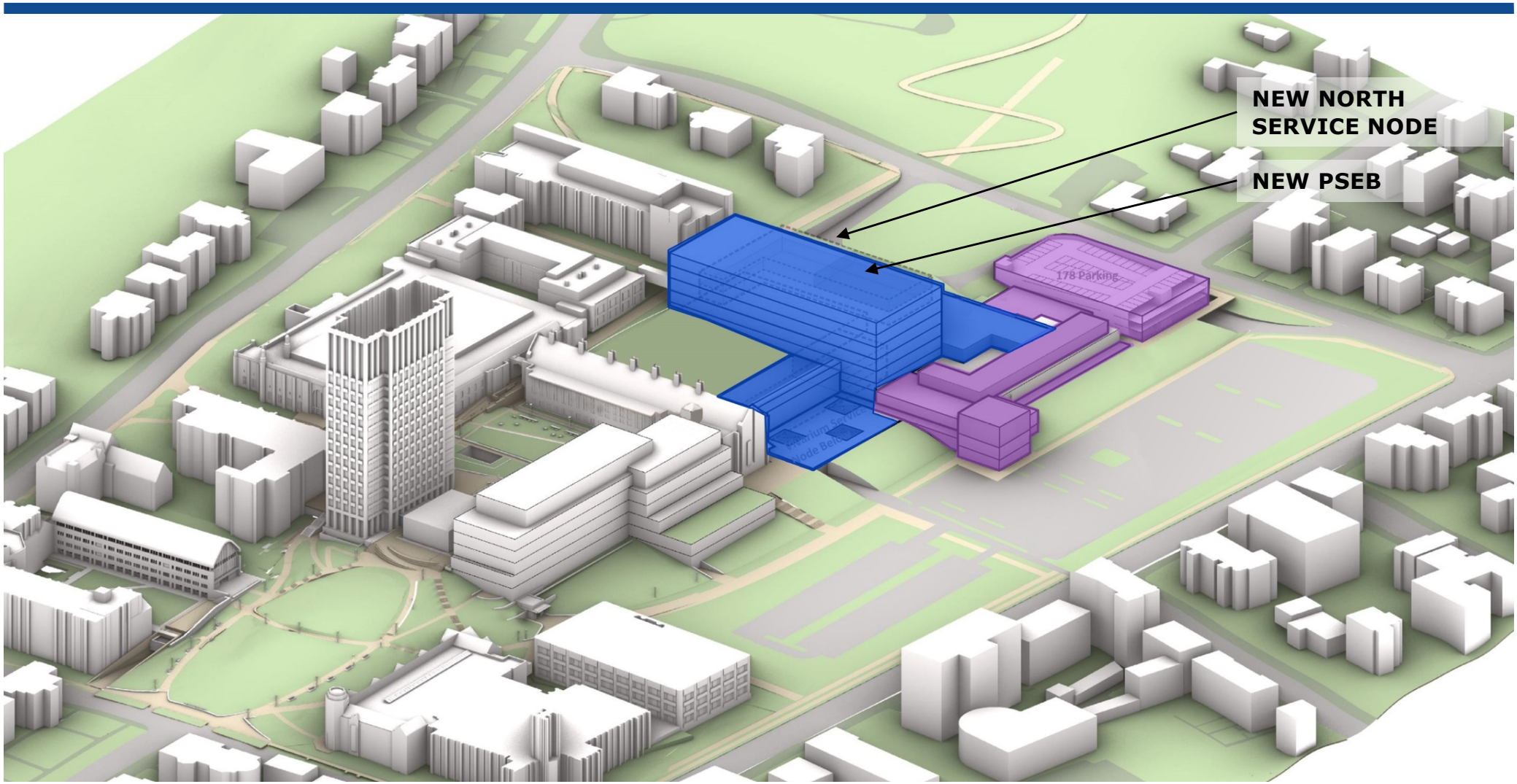
The Opportunity

Program for the Physical Science and Engineering Building (PSEB)

- Intellectual hub for the Quantum Science, Engineering and Materials initiative (USSC)
- Expansion of an Instrument Creation Center (USSC)
- Goal of opening building in 2026
- Expanded and upgraded core facilities
- Space to accommodate approximately 45 faculty and research labs
- Anticipated departments include MEMS, EE, CEE, Applied Physics, and Physics

From PSEB Town Hall 2/25/20

New Physical Sciences & Engineering Building



- Build new Physical Sciences & Engineering Building and new service area (including chemical safety facility).

From Feb townhall

Physical Science and Engineering Building
An Artist's Concept

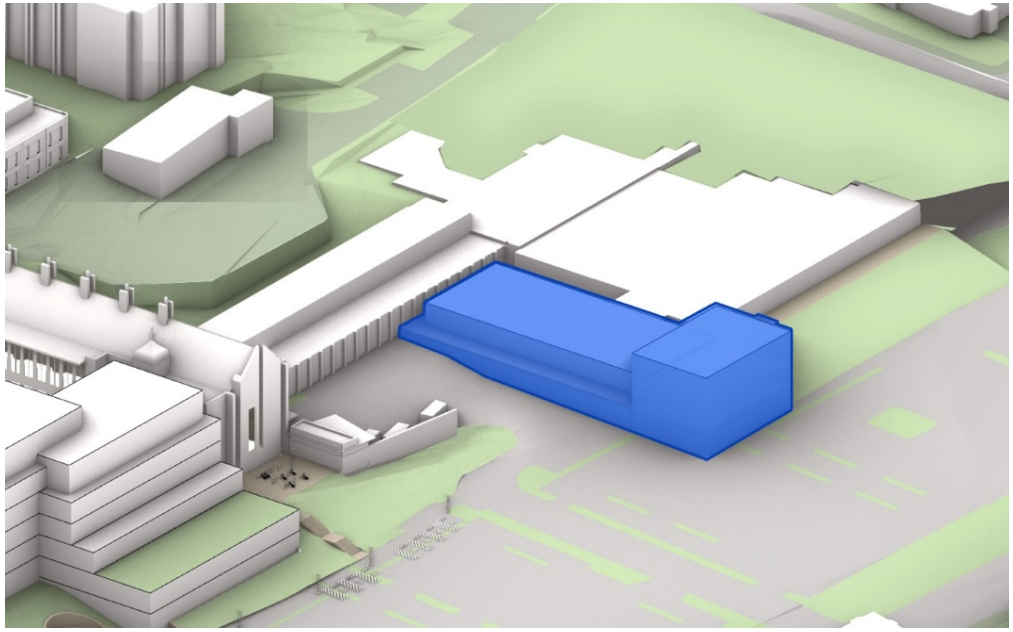
From Feb townhall

Yale

Instrumentation Development Initiative from the USSC

Charge for Instrumentation Initiative Task Force

- Develop the vision for an instrumentation and technology development center in support of the USSC Instrumentation Initiative.
- Conceptualize a technology development center that would support science at Yale and serve the campus community.
- Develop technical facilities that are complementary to existing cores, CEID, and other technical infrastructure on campus
- Optimize the shops and technical facilities at Wright Lab as part of the PSEB enabling project:
  - JW Gibbs shop
  - Advanced Prototyping Center
  - Possible addition of an Electronics Development Core



From Feb townhall

Instrumentation Initiative Task Force

- Karsten Heeger (co-chair) Chair, Physics
- Lisa D'Angelo (co-chair) Associate Provost for Research
- Jeffrey Brock (ex officio) Dean, School of Engineering & Applied Science; Dean of Science, FAS
- Todd Constable, Radiology and Biomedical Imaging, Neurosurgery and Biomedical Engineering
- Mark Johnson, Chemistry
- Rajit Manohar, Electrical Engineering and Computer Science
- Ben Myers, Director of Research Cores
- James Nikkel, WL Associate Director of Instrumentation and Education

- Staffed by:
  - Steve Brown, Associate Director Planning Administration
  - Dev Hawley, Director University Planning
  - Sarah Miller, Assistant Dean for Science & Engineering
  - Jim Slattery, Associate Provost for Research

From Feb townhall

Planning Process

What we did

- Weekly meetings since Feb 2020, many discussions and much progress despite COVID
- Co-chairs began to join faculty meetings, until mid-March 2020, soliciting feedback and ideas
- Reviewed shops and instrumentation-development areas on campus
- Reviewed feedback from 2020 Day of Instrumentation
- Considered how new capabilities (e.g. electronics shop) would fit into instrumentation initiative
- Considered how the shops currently in WL might be optimized (Advanced Prototyping Center, Student Shop, Gibbs Professional Shop) and what additional capabilities might be needed
- Invited CEID leadership and Brookhaven Instrumentation Division leadership to join meetings and describe their resources, mission, and lessons learned
- Identify opportunities for collaboration and synergistic efforts across campus
- Considered how teaching and training would be integrated into the initiative

Developing an Instrumentation Community at Yale

Instrumentation is one of the cross-cutting initiatives in the USSC report

- In response to the report:
  - Developed a central instrumentation website: https://instrumentation.yale.edu
  - Held Inaugural 2018 Day of Instrumentation, https://instrumentation.yale.edu/yale-day-instrumentation-2018
  - Created opportunities through BNL - Yale partnership
  - Held workshops, instrumentation lunches, outreach at Wright Lab and other cores
  - Appointed 2019 Instrumentation Development Committee
  - Held 2020 Day of Instrumentation, https://instrumentation.yale.edu/yale-day-instrumentation-2020
- Since February 2020: ongoing work of the Instrumentation Task Force

Understanding needs, identifying opportunities, articulating a vision

Opportunities Created by the Instrumentation Center

Research

- Advance the frontiers of research with cutting edge instrumentation development
- Provide specialized expertise, facilities, and personnel, including the creation of an electronics resource
- Create a community hub for ideation and technical development
- Respond to needs of our research community

Education and Training

- Enhance instrumentation community on campus through seminars, workshops, and events
- Provide training opportunities for undergraduates, graduate students, and postdocs, creating a pipeline
- Create professional development opportunities for staff and scientists

Collaboration and Community

- Enable cross-disciplinary collaboration on campus and beyond (across science, engineering, and other disciplines)
- Make Yale a destination for instrumentation and technology development
- Develop new collaborations and enable grant opportunities
- Leverage regional partnerships (e.g. BNL-Yale)

Advanced Instrumentation Development Center

What do we envision the AIDC to be?

- An intellectual and technical hub for instrumentation development, a one-stop shop for researchers seeking advice
- Complementary to existing and future research cores, Wright Lab and the CEID, synergistic in capabilities and mission
- A group of highly skilled staff with a variety of technical and project experience
- A community of enthusiasts in instrumentation development
- Creates tighter synergy between current machining resources at Wright Lab: JW Gibbs Shop, Advanced Prototyping Center, teaching and research shops
- Adds new electronics instrumentation development core and potential other capabilities (e.g. assembly and interaction spaces)
- A place for students and postdocs to develop skills for research and technical careers
- Located adjacent to Wright Lab and at (one) entrance to the PSEB

Questions & Discussions

- How can an advanced instrumentation development center support and enable your work?
- What opportunities do you see?
- What capabilities are we missing?
- …

… lightning talks will provide some examples (2min each)

Next Steps

Understanding needs,

Identifying opportunities,

Articulating a vision

We would like to hear from you:

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