Agenda

• Morning
  – Welcome and Vision – Lance
  – Team Introduction – Brad
  – Aspirational Vision of the Future – RDG/HOK Team
  – Project Scope – Brad
  – Communication Strategy – JS

• Afternoon – Breakout Sessions
Team Introduction
Project Team

- **UNL**
  - Brad Muehling – Project Mgr
  - Kim Wilson - ?

- **HOK**
  - Grant Ramsey – Project Manager
  - Randy Kray - Program & Planning Lead
  - Joseph - Ostafi – Design Lead
  - Jeff Strohmeyer – Senior Lab Planning

- **RDG**
  - Nick Schulz – PA/PM
  - Joe Lang – PM/Principal in Charge

- **Alvine**
  - Doug Alvine – Electrical Engineer
  - Steph Guy – Mechanical Engineer
  - Pat Kelly – Telecom Engineer
  - Steve Ford – Mechanical Engineer

- **Hausmann**
  - Chad Wiles - VP
  - Matt Miller – Lead Estimator
  - Matt Huls – Project Manager
Organizing the Process – User Chart

Steering Committee

Planning Teams

Students, Faculty and Staff

Subject Matter Experts

Research

Teaching

Staff

Industry

Shop

Students

Facilities

Art

Furniture
### Steering Committees

#### Weekly

- Lance Pérez
- Kim Wilson
- Mark Riley
- Sohrab Asgarpoor
- Dan Linzell
- Jacki Allensworth
- Jerry Hudgins
- Aemal Khattak
- Jeff Shield
- Brad Muehling
- Brooke Hay

#### Monthly

- Matt Miller, Hausmann
- Chad Wiles, Hausmann
- Joe Lang, RDG
- Nick Schulz, RDG
- Joseph Ostafi, HOK
- Randy Kray, HOK
- Lance Pérez, COE
- Mark Riley, COE
- Kim Wilson, COE PM
- Sohrab Asgarpoor, COE
- Dan Linzell, COE
- Jacki Allensworth, COE
- Jerry Hudgins, COE
- Aemal Khattak, COE
- Jeff Shield, COE
- Brad Muehling, Facilities
- Brooke Hay, Facilities

- Wednesday, November 28, 8:00 – 9:00 am
- Wednesday, January 16, 8:00 – 9:00 am
- Wednesday, February 13, 8:00 – 9:00 am
- Wednesday, March 6, 8:00 – 9:00 am
- Wednesday, April 3, 8:00 – 9:00 am
- Wednesday, April 17, 8:00 – 9:00 am
- Wednesday, May 15, 8:00 – 9:00 am
- Wednesday, June 5, 8:00 – 9:00 am
Vision of the Future
current trends in academic science + engineering schools

Presented by HOK to the University of Nebraska
trends in engineering research facilities

Interdisciplinary research
- Thematically driven
- Shared labs
- Community space

Technology platforms
- High performance space
- Core labs

Innovation landscape
- Project space
- Industry collaboration
- On display
interdisciplinary

thematic research + learning
convergence of disciplines
“... create interdisciplinary and cross-disciplinary teams that have unique composition, and create the conditions for collaboration on the conception of research, that is, people start in directions that they would not have conceived of all by themselves.”

Matthew Tirrell, Founding Pritzker Director
University of Chicago Institute for Molecular Engineering
INTERDISCIPLINARY MODEL

Activity Based

Thematic Clusters
After sitting quietly

After 20 minute walk
flexibility
specialized v. adaptable platforms
PROGRAM BALANCE

faculty research
external partner research

core platforms
innovation / maker space
meeting space
engagement
informal collaboration
<table>
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<tr>
<th>Areas to Concentrate</th>
<th>Areas to Collaborate</th>
<th>Areas to Interact</th>
<th>Areas to Experiment</th>
<th>Areas to Learn</th>
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Innovation hubs
innovation
entrepreneurship and industry collaboration
Cultivate Entrepreneurship

Young Invincibles

together, invincible
thinking
Comfortable, flexible, lounge-like space, that let's ideas take flight.

making
A space that allows students to utilize a wide range of tools – from post-its, to interactive whiteboards, to hand tools – for brainstorming and prototyping.

modeling
This computer lab is a technologically intensive space that does double duty as a teaching and open lab – enabling individuals and teams to interactively utilize digital tools for virtual modeling.
didactic
building as learning experience
optimize adjacencies inside and outside the Lab

Dynamic spaces for teaching and extracurricular activities celebrate engineering sciences

Technology rich studios

SUSTAINABLE DESIGN

- Energy Recovery
- Active air quality monitoring system
- Control system reset capability
- Low-pressure duct
- LED lighting
- Daylighting Controls
placemaking
community building and brand
case studies

engineering project experience
memorial university
core sciences facility

- Construction cost: Confidential
- Size: 475,000 sq. ft.
- Sustainability: LEED-NC Silver (tracking)
- Active Learning Classrooms
- Chemistry Labs
- Engineering Labs
- Instructional Labs
- Research Labs
- Collaboration Spaces
- Student Spaces
- Technology Integrated
- Gateway Building
- New Quad
university of chicago william eckhardt research center

- Size: 278,000 sq. ft.
- Completion: 2015
- Cost: $225 million
- Sustainability: LEED Silver
- Convergence of Biology with Engineering and Applied Sciences
- Cleanroom
- Academic research center
- Applied research
- Imaging
- High Bay
Level 5
Homebase: Astronomy and Astrophysics

1. Optics Lab
2. CMB Lab
3. Offices
4. Conference/Seminar
5. Informal Collaboration
6. Home Base - A+Ap
7. Communicating Stair
8. MEP
Penn State University Chemical + Biomedical Engineering Building

- Size: 194,500 sq. ft.
- Completion: 2019
- Cost: $100 million
- Sustainability: LEED Gold (tracking)
- Maker space
- Instructional Labs
- Research Labs
- Collaboration Spaces
- Student Spaces
- Technology Integrated
university of wisconsin energy institute

- Size: 107,000 sq. ft.
- Completion: December, 2012
- Cost: $54 million - Phase I
- Sustainability: LEED Gold
- High visibility
- Research Labs
- Collaboration Spaces
- High Bay Space
- Cross-disciplinary Teams in Biological Systems Engineering, Sustainability & the Global Environment Center, Computer + Electrical Engineering, Engineering Physics
Biomass Based Research Platforms

Basic Science
- Chemistry
- Biology
- Biochemistry
- Microbiology
- Genomics/Proteomics
- Environmental sciences
- Marine biology
- Physics
- Nano-sciences
- Material Science
- Electrical Engineering
- Mechanical Engineering
- Applied Mathematics

Development Platforms
- Feedstock Assembly
- Fermentation-Biotechnology
- Catalysis & Pyrolysis
- Characterization Labs
- Imaging/NMR Lab
- Pilot Plant Flexible Labs
- Greenhouses, Spirulina
- Clean Rooms
- Photonics & Sensors Lab
- Advanced Fabrication
- Dynamometers Cells
- Combustion Chambers
- Visualization Lab
- Computational Lab

Applications
- Biofuels/Biomass
- Alternative Gaseous Fuels
- Photovoltaics
- Thin Film
- Thermal-Solar Cells
- Clean Air
- Emission Control
- Combustion Optimization
- Energy Transmission
- Smart Grid
- Fuel Cell Technology
- Advanced Batteries
- Wind Turbines
### Biomass Based Research Platforms

<table>
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<tr>
<th>Basic Science</th>
<th>Development Platforms</th>
<th>Ceiling Height</th>
<th>Vibration</th>
<th>Floor Loads</th>
<th>Acoustics</th>
<th>Exhausting</th>
<th>Temp/Humidity</th>
<th>Power Demand</th>
<th>Stand-by/UPS</th>
<th>RF Shielding</th>
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<td>Genomics/Proteomics</td>
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<td>Environmental sciences</td>
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Laboratory Neighborhood - Lab Planning Approach

Lab Tech Zone

Lab Zone

Lab Service Zone

Lab Zone

Lab Tech Zone
university of wisconsin energy institute
university of oklahoma
college of engineering

- Size: 105,000 sq. ft.
- Completion: 2009
- Cost: $31 million
- new heart of learning and research in Engineering
- masterplan: expansion with three new buildings:
  - Devon Energy Hall, a teaching lab and research facility for Computer Science and Electrical Engineering programs
  - Interdisciplinary ‘practice facility’ workshop that supports team projects, such as solar cars, SAE formula cars and battle-bots
  - New teaching lab and research facility for the Bioengineering program
Collaborative and interactive space for students
Integrated lab/classroom environment
Encourages students to stay in the building after classes
High-bay development lab: metal shops, welding shops, electrical shops for engineering project support
Symbolic outdoor space - high level of visibility into and out of the building
Placement of the practice facility along a major pedestrian circulation route (the main path to the football stadium), allows students to walk by and see the activity inside, become engaged
auburn university
shelby center for engineering technology

- Size: 350,000 sq. ft. (in 2 phases)
- Completion: 2011 (phase 2)
- Cost: $75 million (total)
- One of the US’s top engineering programs
- New facility used to recruit seasoned faculty members and draw high-achieving new students
- Laboratories, classrooms and administrative areas for:
  - Computer Science and Software Engineering
  - Electrical Engineering
  - Industrial Systems Engineering
  - Aerospace Engineering
  - Mechanical Engineering
- Opportunities to implement educational support tools through facility design
UNIVERSITY OF GLASGOW

WORLD CHANGERS WELCOME
FACULTY PHENOTYPES

- Biology
- Biochemistry
- Chemistry
- Mechanics
- Electrical
- Optics
- Computer Science
- Informatics
- Psychology
- Social Science
- Theory
- Enterprise
- Incubator
- Arts
Thematic Research Clusters
Landscaping

The furniture has been selected in order to maximise views directly to the working walls.

Using standing height poseur tables in the distance followed by siting benches and low stools, makes the space flexible for different uses such as team presentations.
INTEGRATED INTERDISCIPLINARY RESEARCH
innovation tools
planning + programming for success
Community of ENGINEERING

Students
- Recruiting
- Improve Learning
- Improve Graduation
- More Competitive in Market
- K-12

Faculty Researchers
- Recruiting
- Retention
- Increase Funding
- Higher % of Success
- Increase Productivity

Graduate Studies
- Recruiting
- Improve Training
- Increase # of Graduates
- Increase Productivity
The New Model

Physics
Math
Engineering
Chemistry

No More Departmental Silos

Maximum STEM Learning Opportunities
Industry Partner Spaces
Connectivity/Transparency
Science on Display
Sustainable Design
**Experimental-Chemistry**

Average Research Group Size: 8.2 people

Driver: Faculty FTE

Group Includes 1 Faculty, 7 Staff, .2 Admin Assist

Includes Wet Bench and Some Computational

### Space

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<th>Description</th>
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<th>Dimensio n</th>
<th>Unit ASF</th>
<th>Total ASF</th>
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<tr>
<td>Fixed Elements</td>
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<td>Focus Room</td>
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<td>6x11</td>
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**FTE subtotal**: 1524

**AA**

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**Group Space Sub-Total (ASF)**: 38

**Staff**: 7.00

- Assumes 7 staff / Faculty FTE
- Total AA: 0.2
- Total People: 8.20

**Space Total ASF (Group ASF x Faculty FTE)**: 1562

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**ASF / Person**: 190
RESEARCH THEME/TYPOLGY MAP

Cyber-Physical Systems at the Built and Natural Environment Interface

Biomedical Engineering

Biomaterials

Energy and Air Pollution

Synthesis and Characterization

Chemistry

Biology

Proto / Fab

ME/EE

ME/EE
Agenda

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  – Communication Strategy – JS

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Project Scope
**Project Scope**

- **$75.4M**
- **Construction Phasing**
  - Nebraska Hall
  - Demolition of the Link and Site Prep
  - Construction of the new link
  - Renovation of Scott Engineering
- **Construction Complete Fall 2022**
- **Focus of the project**
  - Research Labs
  - Offices
  - Community Space
- **Future Project**