EYP/ minutes

To:	Attendees		Date of meeting:	June 11, 2019
Project Name:	Bull Run Hall Addition		Time of meeting:	1:00-3:30
Project No.:	1019004.01		Location of meeting:	Sci Tech, IABR, Conf Rm 1004
			Meeting Number:	2.7

Meeting Purpose: Programming for Instructional Computer Labs & Specialized Labs/Virtual Reality Spaces

Attendees:

George Mason University:
- Andre Manitius, IST
- Jim Jones, CYSE
- Joyce Rose, VSE
- Shari Ross, VSE Bio-E
- James Casey, CVPA-Game-VSGI
- Song Nam, CVPA-Game
- Carrie McVicker, COS
- Ben Allen, ITS
- Iosif Vaisman, COS-SSB
- Carrie McVicker, COS
- Laura Manno, Provost/Planning
- Colby Grant, Sci Tech Admin
- Debbie Brady, Facilities
- Virginia Steele, Facilities
- Joy Staulcup, Facilities
- LeAnn Pittman, CaLT/Learning Space Design

EYP:
- Melissa Burns, Academic Planner
- Brian Tucker, Lab Planner
- Rebecca Ross, Planner/Architect
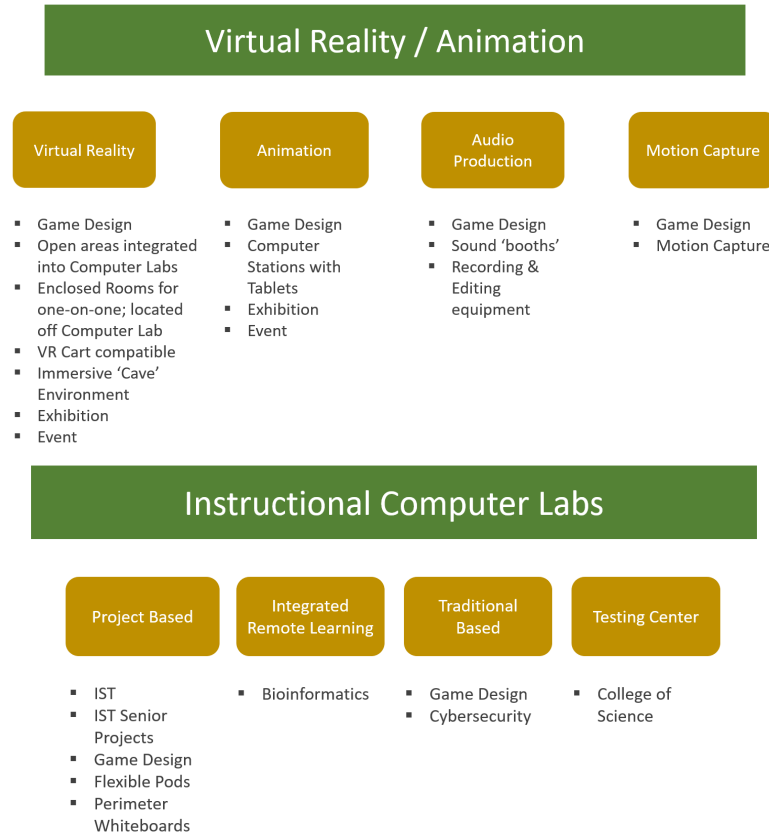- Suzanne Klein, Project Director

Minutes:

General Comments:
The group met on George Mason University's SciTech campus. The purpose of the meeting was to discuss each functional space type in more detail and to identify the following for each space:

- Number of students
- Type and style of teaching
- Timing of courses (Fall/Spring/Summer, Frequency, Time)
- Key adjacencies,
- Prep/Storage needs
- Major equipment

1. **Introductions**: Laura Manno introduced the meeting and provided a brief project overview to the group for new attendees that were not in the last programming meeting. She explained the process and purpose of the building and that there will be ongoing conversations on scheduling, logistics and budget. There were diagrams on the wall which were presented at the last building committee meeting and were the starting point for this set of interviews.

Virtual Reality / Animation

Virtual Reality

- Game Design
- Open areas integrated into Computer Labs
- Enclosed Rooms for one-on-one; located off Computer Lab
- VR Cart compatible
- Immersive 'Cave' Environment
- Exhibition
- Event

Animation

- Game Design
- Computer Stations with Tablets
- Exhibition
- Event

Audio Production

- Game Design
- Sound 'booths'
- Recording & Editing equipment

Motion Capture

- Game Design
- Motion Capture

Instructional Computer Labs

Project Based

- IST
- IST Senior Projects
- Game Design
- Flexible Pods
- Perimeter Whiteboards

Integrated Remote Learning

- Bioinformatics

Traditional Based

- Game Design
- Cybersecurity

### Testing Center

- College of Science

The green bar represents a typology in the building and the gold groups represent a function of the type followed by a list of uses. The function could be representative of one or more spaces and are a way to think holistically and collaboratively about space within the building.

2. **Virtual Reality**:
   a. # of Students: 20-25 students
      – Groups of 5-6 students
   b. Courses:
      – 1 Dedicated VR course
      – Senior Capstone Project, one group may develop a VR game, but not all the time.
      – 300 level courses
      – 3D animation and 3D modeling classes need access to test their models periodically, but the course is not taught in a VR space.
   c. Currently use Computer Lab with Pod Tables (circular table) for groups of 5-6

- 6 computers and appropriate monitors
- Space around the edges of the computer lab to test VR (not ideal).
- Used for Game Design and VR

d. VR Treadmill could be in its own room.
- Does not require a lot of space because you are moving the treadmill.
- Need 4' x 4' space around the treadmill to move around.
- 10' x 10' space would allow people to watch.

e. Goggles or VR Cart
- 10' x 10' space (minimum 6' x 6'); enough to walk around and for people to gather around.
- More space is more flexible.
- Fixed space for Sensors
- 3 VR rooms

f. The Design team asked if there was a need for a larger space, 20' x 20'.
- James explained a larger space would be for an immersive "cave" type environment
- Currently there is no need for it
- Motion Capture space could be used for a larger VR space

3. **Information Systems Technology**:
a. Two kinds of classrooms: Lecture (University Classroom) and Computer Labs
b. <u># of Students</u>: 30 students
c. Current rooms in Bull Run Hall are tight
d. Overlap with Cybersecurity and IST program
- IST classes in the evening
- Cybersecurity classes during the day

e. Currently use Row-Based computer Lab
- Tables have computer stations on them
- Need enough room behind students so the instructor can stand behind them

f. Computers are connected to network racks for students to simulate
- In same room
- Students connect to routers, make connections work
- Students work on cabling
- Cable trays
- One or two racks needs for IST courses
- Servers are turned off at the end of class
- Example of networking computer lab with adjacent network rack space; glass wall between two spaces allows it to be secured. Four racks are needs: 2 for IST and 2 for Cyber.
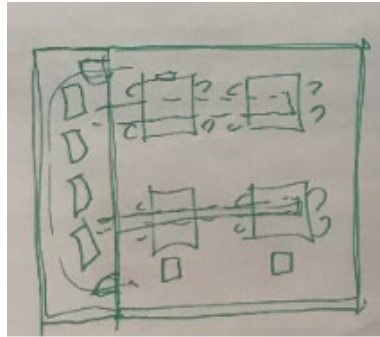
4. **Pod Computer Labs vs. Row Computer Labs**:
   a. Pod Setup
      – Pods are nice when the instructor needs to walk around.
      – For lecture, the room could have multiple monitors so students can follow the professor.
      – Capability for roaming and eyes on the professor.
   b. Row Setup
      – For lecture, a row set up allows students to look at the professor or follow along while the professor is demonstrating.
      – At least one or two rooms set up in rows is useful (IST)
   c. University owned, fixed computers are preferred. (Cybersecurity)
      – Better than making sure everyone's laptop is working the same.
      – Software cannot be installed on student laptops (computer security and cyber security)
      – Possibility of using a "virtual desktop" if students need to bring their own device.
      – WiFi concerns; need strong WiFi if students bring their own devices.
   d. Group discussed providing (3) pod style computer labs and (1) row based computer lab in the program for Bull Run Hall.

5. **Cybersecurity**:
   a. # of Students: 24 to 30 Students
      – 4 classes per semester (including growth)
      – Assume 50/50 split between row and pod-based computer lab
      – 2 to 3 sections of cybersecurity that would use Mechatronics lab
      – 3-hour labs
   b. Melissa explained conversations from previous sessions about the need for a "clean" lab to work on electronics, circuit boards, etc. in the Mechatronics lab set up.
      – Jim agreed this set up will work from Cybersecurity needs
      – Storage for soldering tools and hardware
   c. Can use the same room as IST with racks.
      – Increase the number of racks to 4 (instead of 2 requested by IST).

6. **Bioengineering**:
   a. # of students:
      – Groups of 5-6 students; 4 teams

- Senior Design; 1 section – usually scheduled in a university classroom
- Open lab needs

b. Pod-style computer lab will work best
c. Students bring their own laptops, but if they need access to software, they use the University Computers.
- One computer per team
- Mat Lab Software

d. Power and WiFi

7. **Senior Design IST**:
    a. No computers provided, bring your own device.
    b. Currently scheduled in a University Classroom (active learning)
    c. Need more information from this group.

8. **Game Design**:
    a. Junior and Senior level classes will be on the SciTech Campus.
    b. # of Students: 25 to 30 students
        - Daytime classes, evening open lab time
        - **Homework**: Sang will send the number of sections
    c. Currently using traditional, row-based classrooms. Pod style will work if there are multiple displays.

9. **Bioinformatics**:
    a. # of Students: 15 to 20 students + remote students
        - Cap classes at 30 students
    b. Row style computer lab is preferred.
        - University provided computers at each station (department provided currently)
    c. Joy asked how their current space has been working.
        - Iosif responded that they would be fine staying in their current space with some quality improvements.

10. **Animation**:
    a. # of students: 25 to 30 students
    b. Use tablet and 3D modeling software
        - Require high graphics quality
        - Students cannot bring their own device
        - Tablets stay in the room
        - Think of a traditional drawing class with an easel, but now it's a tablet.
    c. Dual monitor system (21" monitors)
        - Plan for 4' per work station
    d. Game Design and Animation can use the lab. Other courses can too, nothing proprietary.
    e. Adjacencies:
        - Near Motion Capture lab
        - Students use data from motion capture lab

11. **Audio**:
    a. <u>Courses</u>:
       – Game 250 and 267
       – Projects in upper level courses
    b. Currently 5 sound lab stations in the Art and Design building
       – Demonstrate in the classroom, then instructors take students to the sound lab.
    c. 4 to 5 stations would cover the needs on the SciTech campus.
       – (4) 6' x 6' (minimum) booths
       – (1) 10' x 10' room with isolation from sound (used after hours for project work) – this was combined with motion capture space as it could accommodate both uses.
       – soundproof doors on rooms

12. **Motion Capture**:
    a. Established at the last round of interviews that Motion Capture for Human Performance and Game Design will be separate rooms.
    b. Motion capture lab could merge with the 10' x 10' sound isolation room (listed in Audio).
    c. Need 20' x 20' black box with 10' min. ceiling height.
       – Fixed cameras
       – Rail system optional
    d. Not a lot of needs for equipment
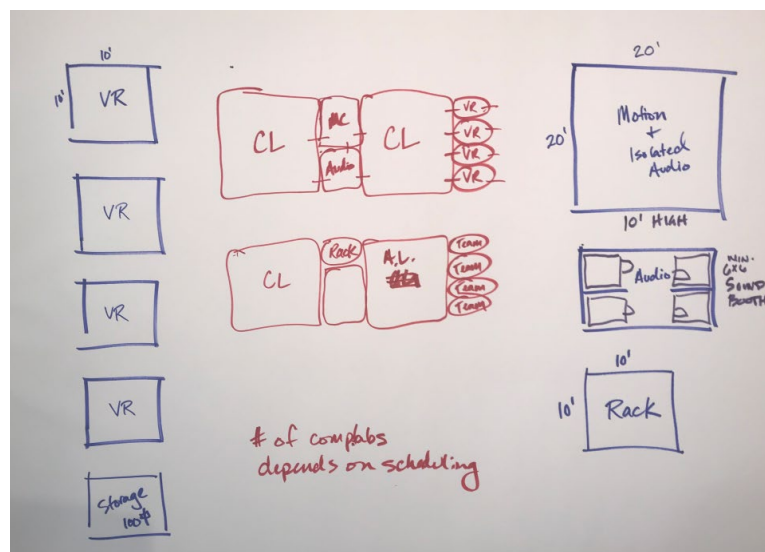   – Motion capture suits
    e. <u>Adjacencies</u>: near the editing booths
    f. Not used every day – one dedicated class, but the space will be used every couple of weeks.

13. **Adjacencies:**
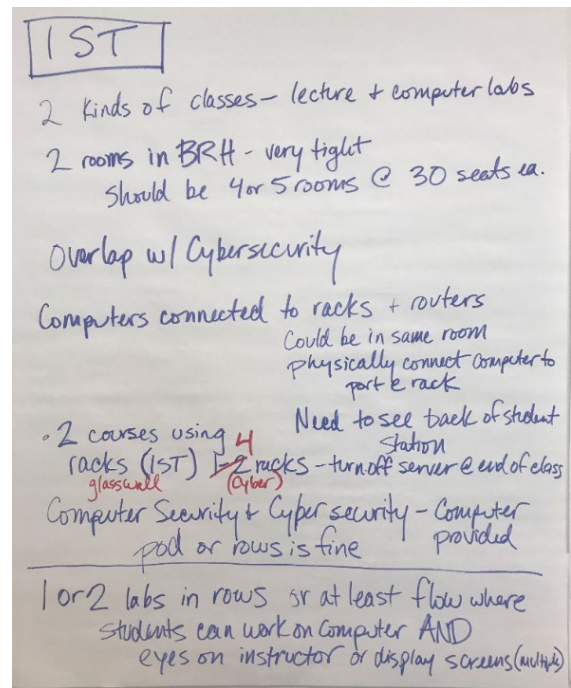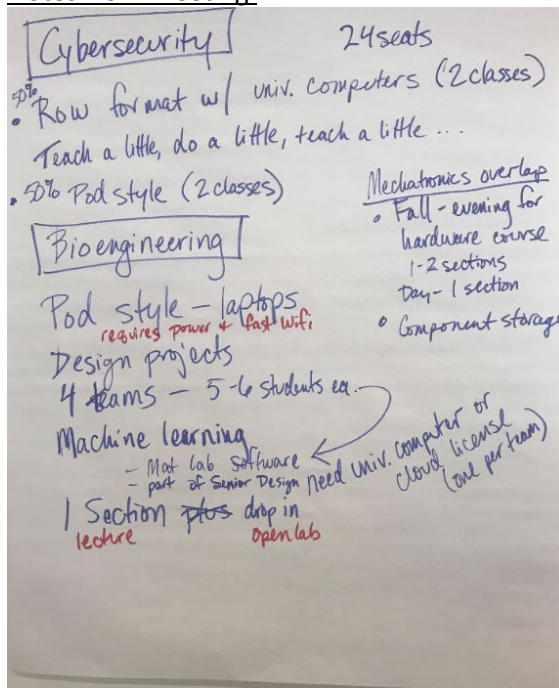   a. The diagram below outlines required spaces for this typology and possible adjacencies.

14. **Storage**:
    a. Consider storage needs for department technology of sorts.
        – Back-up computers, extra keyboards, mice, etc.
        – Fairfax has a lab manager; assume one for SciTech
        – Need lab manager office space; 10' x 10'

15. **Event / Display Space:** Having a space with multiple displays could serve large number of groups.
    a. Display of many types of work
        – VR
        – Animation
        – IST projects
        – Central use space
        – Student presentations
        – Conferences / events
        – Competition space
        – Ongoing display of student work
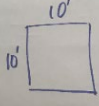   – Ability to be opened to common space or closed off

Notes from Meeting:

Cybersecurity — 24 seats
- 50% Row format w/ univ. computers (2 classes)
  Teach a little, do a little, teach a little...
- 50% Pod style (2 classes)

Bioengineering
Pod style — laptops, require power + fast wifi
Design projects
4 teams — 5-6 students ea.
Machine learning
  – Mat lab software — need univ. computer or cloud license (one per team)
  – part of Senior Design
1 Section plus drop in
lecture   open lab

Mechatronics overlap
- Fall - evening for hardware course
  1-2 sections
  Day - 1 section
- Component storage

IST
2 kinds of classes — lecture + computer labs
2 rooms in BRH - very tight
  should be 4 or 5 rooms @ 30 seats ea.
Overlap w/ Cybersecurity
Computers connected to racks + routers
  Could be in same room
  physically connect computer to port e rack
- 2 courses using 4 racks (IST) 1-2 racks - turn off server @ end of class
  glasswall   (Cyber)
  Need to see back of student station
Computer Security + Cyber security — Computer pod or rows is fine   provided
1 or 2 labs in rows or at least flow where students can work on computer AND eyes on instructor or display screens (multi)

VIRTUAL REALITY

Game 399 - 20-25 students - group 5-6
Senior Capstone - 1 group
300 level courses - 25-30 students
Animation - Test once a month their models

Currently — Computer Lab w/ pod
    6 computers w/ Monitors
    Could be used for both
    general game design + VR
→ Virtual treadmill w/ big
    monitor ... 4'x4'
    in 10'x10' space
→ VR w/ goggles + IR sensors
    Could be 6'x6'
    10'x10' better for further movement
Need 3 rooms

(10' x 10' square diagram)

Game Design

Move 3rd + 4th year here
Daytime courses, Evening open lab
No preference between row + pod
Class size 25-30
    ↓ multiple displays

Bio informatics

① 15-20 person + some remotely
② 30 cap
    Rows preferred - univ. computer (dept provided) (now)
Address issues w/ current space instead of new?

Animation
25-30 students;

Use drawing tablet attached to monitor
    Cannot be BYOD
    graphic card → Could be used as 2nd monitor for others
1 monitor AND 1 tablet ≈ 4'
Tablet stays out, wouldn't want to connect + disconnect
Other classes taught now → all other Game Design
    could share, nothing proprietary
    just have to move out of the way.

Adjacency to Motion Capture

Need to be able to easily see instructor's display
    Pod or Row

Storage — 10'x10'
Lab Tech office

AUDIO

Classes — Game 250 + 367
    Projects in upper level courses

5 stations in Art Building = Sound Lab
4-5 stations for 3rd or 4th year
(4) 6'x6' booth
    video + audio editing
(1) 10'x10' isolated room } Night time
    sound effects
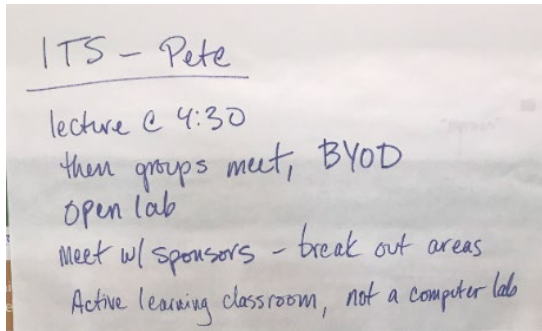
MOTION CAPTURE
    merge w/ isolated sound booth

20'x20' probably fine, 10'ceiling
people, basic movement — still gives people room to watch
not used every day .. 1 time per 2 weeks
Daytime use

Handwritten note:

ITS – Pete

lecture @ 4:30
then groups meet, BYOD
open lab
Meet w/ sponsors – break out areas
Active learning classroom, not a computer lab

End of Meeting

The above constitutes my understanding of the items discussed and the decisions reached. If there are any additions or corrections, please, contact the undersigned.

Signed:	Rebecca Ross / Brian Tucker
Cc:	Attendees
Date:	June 26, 2019