COVID-19 Workspace Safety Plan – Lab Specific

This workspace safety plan will assist Principal Investigators who wish to continue or resume research activities in their lab. This plan will include a review of activities to be undertaken in the lab to ensure effective controls are in place to prevent the spread of COVID-19. Principal Investigators are responsible for ensuring this document reflects current government guidance and notices which can be found, along with information about UBC's response to the pandemic at https://covid19.ubc.ca/.

This plan must be reviewed by your Local Safety Team, and signed by your Unit Head/Director. Once complete, the plan can be submitted with your online application to return to research.

Resources to Consult

The following guidance documents and resources were used in the development of this plan:

- ☒ Preventing Exposure
- ☒ Personal Protective Equipment
- ☒ Physical Distancing Guidelines
- ☒ Reporting COVID-19 Exposure
- ☒ Communications Resources
- ☒ UBC Research Resumption webpage
- ☒ WorksafeBC

Section #1: Lab information

Department	Electrical and Computer Engineering
Faculty	Applied Science
Building(s)	Wesbrook
Lab(s)/workspace(s)	16, 12, 20

Introduction to Your Lab

Our lab: Room 16 (45m^2) of the Wesbrook building is the SoC test lab. It is composed of 5 bays housing various electrical test equipment. Room 12 (67m^2) is office area with desks and 14 chairs. This office area will be instead used for setting up test equipment and doing measurements in Phase 1, and no desk-computing job will be carried out. Room 20 is for printed-circuit board (PCB) assembly area and has 4 testbench bays. The labs are shared by students in Professor Shekhar's and Mirabbasi's group, with very limited "ad hoc" visitors from Professor Salfi's group with a lower priority.

This application discusses Mirabbasi's group and the "ad hoc" visitors from Salfi's group. It was prepared together with Shekhar and Salfi.

Mirabbasi's (my) group: The current size of my group is 10 people: myself, 5 PhD students, 1 visiting PhD student, 3 post-doctoral fellows.

Section #2 - Risk Assessment

1. Lab/workspace Occupancy (under proposed COVID-19 operations)

List the number of people that will be present in your lab/workspace at the same time. List this by every room/lab/workspace you occupy.

Confirm that you have discussed each employee's comfort level with returning to work and have addressed any concerns, or will require further assistance in doing so. ***Any worker (staff, students, faculty, post docs, research associates, technicians and other research personnel) who has concerns about returning to work on campus can request an exemption to his/her supervisor.***

I am requesting 3 out of 10 (including myself), that is 30% of people in my team to return to the lab.

Room 16 is a large lab that can normally accommodate up to 9 people working comfortably spread across 5 bays. At any given time, a normal occupancy would be 9 people. Lab is used to measured electronic integrated circuits and printed circuit boards.
I propose to host a maximum of 1 people in Room 16 during phase 1, so 1/9 of typical occupancy.

Room 12 is office area with desks and 14 chairs. It is a large room that can normally accommodate up to 14 people working comfortably spread across 7 bays. At any given time, a normal occupancy would be 14 people. This office area will instead be used for setting up test equipment and doing measurements. No student will be allowed in this room to do desk-computing work in Phase 1.
I propose to host a maximum of 1 people in Room 12 during phase 1, so 1/14 of typical occupancy.

Room 20 is for PCB assembly area and has 4 testbench bays.
I propose to host a maximum of 1 people, on a need basis, in Room 20 during phase 1, for soldering and assembly use. This will constitute 1/4 of typical occupancy.

I am requesting access for 2 team members, 1 post-doctoral fellow, on a heavy use basis in June-September (the post-doctoral fellow is also helping with managing the lab), and 1 PhD student on a moderate use basis during the same period of June-September. Our research requires building chips, sending them out for fabrication, waiting 3 to 6 months for the chips to come back, measuring the chips, and if needed sending the next design for fabrication based on the measurement data. These measurements are needed for the team members to continue their much-delayed research, as the fabrication/tests cycles are long to begin with. Occasionally, I will require access. Rest of the team will work remotely from home.

Salfi, though not a PI of the lab, is requesting continued occasional access in the form of "ad hoc" visitor access for 2 out of 6 of his team. The total numbers mentioned above for Room 16, 12, and 20 include the ad hoc visitors. Full priority will be given to Shekhar's and Mirabbasi's group. The work will involve basic circuit assembly and low-frequency circuit test with dedicated tools for his group. This work is needed to make progress on much delayed research. Salfi will regulate his group to ensure no more than 33% of his group are ever on-campus, distributed across Brim 111 and Wesbrook. This ad hoc visitor access was described in Salfi's approved request to ApSc.

Please see the appendix which includes a drawing of the labs.

Please see section #7 for list of requested users.

I confirm that I have discussed the plan with the team and solicited their concerns. The main concerns were regarding PPE, especially masks. My group together developed our PPE plan contained herein (see section #6).

2. Hazard Identification Describe what hazards exist in your lab/workspace; both research- related (chemicals, heavy machinery) and COVID-19-related (areas that require closer personal interaction, equipment/instruments that cannot maintain social distancing i.e. that require >1 person to operate)
Hazards (non-COVID-19): (1) small quantities of alcohol (IPA) for cleaning parts, (3) nitrogen cylinder for probe station. Hazards (COVID-19): (1) Work surfaces, (2) Handling of tools, (3) buttons and knobs on equipment, (4) Physical distancing, (5) Room Ventilation. Entering and exiting the lab will be coordinated. If there is a conflict and someone exiting the room encounters someone coming in, the exiting person will go first.
3. Employee (HQP, research staff, other) Input/Involvement Detail how you have involved frontline workers (HQP and research staff) and Joint Occupational Health and Safety Committees (JOHSC) and/or Local Safety Teams (LST) in identifying risks and protocols as part of this plan. Describe how you will **publish** your plan (online, hardcopy) and otherwise communicate workplace health measures to employees. Guidelines from SRS are available here: https://srs.ubc.ca/covid-19/health-safety-covid-19/working-safely/
As a means to educate myself on the hazards and risks I read all of the COVID-19 related guidelines published on the UBC website. This was supplemented by attending the town hall meetings on research curtailment and resumption. To identify hazards, risks, and strategies to mitigate risks I consulted with other professors to identify hazards and consulted members of my research team. I didn't work directly with frontline workers. After approval by our head, our plan will be published according to UBC directives, e.g. online on UBC's COVID-19 safety plan website. It will also be posted on my group's internal website. I will also go through the plan with my team in person.

Section #3 – Hazard Elimination or Physical Distancing

The following general practices shall be applied:

- Where possible, workers (HQP, research staff, others) are instructed to work from home.
- Anybody who has travelled internationally, been in contact with a clinically confirmed case of COVID-19 or is experiencing "flu like" symptoms must stay at home.
- All employees are aware that they must maintain a physical distance of at least 2 meters from each other at all times
- Do not touch your eyes/nose/mouth with unwashed hands
- When you sneeze or cough, cover your mouth and nose with a disposable tissue or the crease of your elbow, and then wash your hands
- All employees are aware of proper handwashing and sanitizing procedures for their workspace

- Supervisors must ensure that all workers have access to dedicated onsite supervision at all times; via their own presence, members of safety committees, campus security or other. When working alone, HQP and staff must be aware of working alone procedures and how these have been adapted for COVID-19.
- All staff wearing non-medical masks are aware of the risks and limitations of the face covering they have chosen to wear or have been provided to protect against the transmission of COVID-19. See SRS website for further information.

Following special practices will be applied:

- Wearing a mask when another person is also in the same lab is mandatory. This is an extra precaution that we have agreed to enforce, and in no way meant to break the physical distancing rule of 2m. In other words, wearing masks do not substitute 2-meter physical distancing and if more than one user is in a room the minimum of 2-meter distancing will be maintained.

4. Scheduling

For those required or wanting to resume work at UBC, detail how you are rescheduling employees (e.g. shifted start/end times) in order to limit contact intensity at any given time at UBC.

Discuss your **working alone procedures** and how they will be adapted for this safety plan. Also describe how you will track those entering/leaving work i.e. sign in/sign out process

- Shift-work is not permitted

Assignment of time on workstations will always be discussed in advance. It is based on the group priorities which generally reflects readiness to embark on a meaningful experiment. First, readiness is discussed within the group and priorities are identified. Then, once the groups' priorities are known, it will be discussed among Shekhar, Mirabbasi, and Salfi. The main factor identified is that it takes several days to set up an experiment.

Tracking entering/exiting the workspace: Complete safety documents will be posted on the door of Rooms 12, 16, and 20. As well, a sign-in and sign-out sheet will be filled out and signed for each entrance and exit of the room according to the schedule. Workers will sign that they followed the posted sanitization processes when they sign out, and are not experiencing any symptoms of infection when they sign in and sign out. It will be the job of the last person leaving the lab to post the day's sign-in and sign-out sheet on a Slack channel "#work-alone". The Slack channel will be backed up on a monthly basis to make sure that the data is archived.

Strict adherence to virtual buddy system/ We use a "work-alone" online message board implemented using a channel in the program "Slack". The virtual buddy system has the following rules. The virtual buddy is a real person and not a robot.

1. When someone wants to work alone, they organize in advance a "virtual buddy".
2. When someone enters the lab they send an "entry notification" in the form of a message on the "work-alone" channel, including which room they are in and how long they will be there.
3. Their virtual buddy replies with "ok" in the "work-alone" channel, and notes the duration of the work alone plan.
4. The virtual buddy check-in with the individual user periodically (every 2 hours).
5. When the person exits the lab, they give us an "exit notification" in the "work-alone" channel.
6. Their virtual buddy replies with "ok" in the "work-alone" channel.
7. If the worker does not notify the virtual buddy with an exit notification at the end of their shift a. The buddy tries to make contact with the worker by their mobile phone. b. The buddy tries to make contact with the worker by the laboratory telephone, but this is complicated by the fact that we don't have a telephone in the laboratory yet.

7. If the worker does not notify the buddy within 30 minutes, a. a phone call is placed to emergency services, 604-822-2222.

+All lab cell phone numbers will be distributed in the coming week.

5. Occupancy limits, floor space, and traffic flows

APSC recognizes that labs are dynamic environments and it may be challenging to adhere to physical distancing guidelines. Nonetheless, controls must be in place to keep personnel spaced at least 2m apart at all times. Clear communication of this to employees, monitoring of implementation, in addition to physical controls (signage) are needed.

As such: Using floor plans and/or photographs of your lab/workspace:

1) Identify and list the rooms and **maximum occupancy** for each workspace/area;
2) Illustrate a 2 metre radius circle around stationary workspaces/benches/instruments and common areas or equivalent approach to social distancing; and
3) Illustrate one-way directional traffic flows

Maximum occupancy:
Room 16: 2 in the room which contains 9 bays. Only 1 person per bay, bays are 3 to 5 meters apart. Please see the Appendix for a drawing of lab space and the corresponding CAD file.
Room 12: 1 in the room which contains 14 workstations in 7 bays, each alternating bay being 3 to 5 meters apart. Only 1 person from my team in room. Please see the Appendix for a drawing of lab space and the corresponding CAD file.
Room 20: 1 in the room which contains 2 bays and 4 workstations. Please see the Appendix for a drawing of lab space.

One-way traffic flow: marked with yellow tape

Doors:
Room 12 has 2 doors for entrance/exit. One will be marked for entrance, one for exit. The doors will be cleaned and closed by the last person to leave. There are no doors within the room.
Rooms 16 and 20 have only 1 door each for entrance/exit which will be propped open by the first person arrived, and cleaned and closed by the last person to leave. There are no doors within the room.

There are hand-washing sinks in Rooms 12 and 16. Therefore, people using the rooms will wash their hands there.
There is a lavatory on the same floor as Room 20; Room 20 has no hand-washing sink directly inside. Therefore, people using the Room 20 will wash their hands in the lavatory according to the building policy.

Separate incoming/outgoing workers: If there is a single door to the room (Rooms 16 and 20) and if there is a conflict and one person wishes to enter while another is exiting, the person exiting gets priority.

Shared equipment: Workstations will be setup to eliminate shared equipment. Room 20 will be a shared equipment room; hence only person will access the room at one time, and will be responsible for wiping down the equipment after use.

We will have periodic visual inspections on each day that the labs are used to make sure there everything is in order and users are all fine.

Section 4 – Engineering Controls

6. Cleaning and Hygiene Detail the cleaning and hygiene regimen required to be completed by HQP, research staff and the PIs for common areas/surfaces (Custodial has limitations on cleaning frequency, etc.). Outline specific cleaning processes and schedule for high-touch equipment, specialized/sensitive equipment or other unique circumstances to your lab/workspace. Detail how and what types of cleaning products and disposal options you will provide. If possible, include cleaning stations/infrastructure on your lab photos/plan.
Tools: During use, tools will be placed in a labelled "in use" zone on the desk. Tools will only be put away into the tool drawer once they are sanitized with isopropyl alcohol or with a disinfectant wipe. The drawer is the "ready for use" zone. Workstation: Sanitized with disinfectant wipes. It will include the keyboard and mouse, the work surface, and instrument knobs and buttons. A checklist will be posted on the workstation of items in use, and that needs to be sanitized. Furthermore, each work station (shown as occupant in the attached drawings) will be equipped with sanitization station which has hand sanitizers and disinfecting wipes (and/or disinfecting spray and paper towels.) We will monitor the supplies to ensure that a notice to restock is made to Engineering Services well in advance. Microscope: Microscope and eye pieces will be cleaned after each use. Measurement equipment high contact points: Sanitization of instrument knobs and buttons with disinfectant wipes after the work is completed in the bay. Room 20 does not contain a sink. Therefore disinfectant wipes and hand sanitizer will be placed in dedicated spots. Disposal of cleaning supplies will be carried out in designated areas in the building.
7. Equipment Removal/Sanitation Detail your appropriate removal of unnecessary tools/equipment/access to areas and/or adequate sanitation for items that must be shared that may elevate risk of transmission, both research-related (i.e. instruments, tools) and general (i.e. coffee makers in break rooms)
Instruments and tools: Equipment will be individually assigned to individuals as much as possible. If a tool is shared, we will provide adequate sanitization for it in the lab. That is discussed in the answer to 6 above. Large equipment that require >1 person to operate, Breakroom: None
8. Safety Infrastructure Requests (Partitions, Plexiglass installation) Describe any needs for safety infrastructure i.e. physical barriers, plexiglass installation required for your lab/workspace and if possible include them on your photos/room plan.
The workspaces are separated by >3 meters apart, so partitions and plexiglass are not required.

Section 5 – Administrative Controls

9. Communication & Training Strategy for Employees Describe how you (the PI) have or will communicate the risk of exposure to COVID-19 in the workplace to your HQP/research staff/other employees and the safety controls in place to reduce such risk.

Detail how you will ensure that all employees successfully complete the **Preventing COVID-19 Infection in the Workplace** online training and orientation to your specific safety plan

Dissemination of plan: Once approval is obtained on the plan, it will be disseminated to my group.

COVID-19 in the workplace training: All students will be required to sign that they completed the training.

Following the safety plan: It will be the PI's responsibility to check that the team is following all of the directives. That will include, checking the posted photos of the sign-in and sign-out sheets, checking the "work-alone" channel that people follow the directions, and having students sign that they followed the posted sanitization processes when they sign out, and are not experiencing any symptoms of infection when they sign in and sign out.

Mitigating training risks: We will not be training lab members on new tasks in the lab that require in-person instruction to identify hazards, risks, and risk mitigation.

Process documentation: LabAgenda.com is used to book time in the bays. (We respect the privacy of our team members and will make sure that by no means their privacy is jeopardized. The users have gave their consent to use LabAgenda.com even if the data may not be stored in Canada.) The sign-in and sign-out sheets and associated signatures will be photographed and posted to Slack by the last person to leave the lab. The Slack channel will be backed up regularly to make sure that the date is archived. The work-alone policy is monitored on a slack channel.

10. Signage

Detail the type of signage you will utilize and how it will be placed (e.g. floor decals denoting one-way walkways and doors, 'cleanliness state' of equipment/instruments, hand-washing guidance). See WorksafeBC for signage guidelines and templates.

Cleanliness of tools: labelled "in use" and "ready to use" zones

Door: Signage with the schedule, a list of procedures for entering and exiting the room, and maximum occupancy. In particular, washing of hands before entry and after exit. Sign-in and sign-out procedures.

Floor tape: Entry and exit of workspace, clockwise direction of travel

11. Emergency Procedures & Reporting

PIs must ensure that all employees entering the lab should be aware of the Building Emergency Response Plan (BERP) and have access to it. If applicable, detail your strategy to amend your lab's emergency response plan procedures during COVID-19.

See the SRS guidelines for handling potential COVID-19 incidents here: https://srs.ubc.ca/covid-19/health-safety-covid-19/reporting-covid-19-exposure/

12. Monitoring

Describe how you will monitor your workplace (supervisor, departmental safety representative, other) and update your plans as needed; detail how employees can raise safety concerns (e.g. via the JOHSC or Supervisor).

The PI is responsible for monitoring the workplace by ensuring compliance with work-alone and safe-work procedures, and for communicating with nominated members of the group who will supplement PI's direct monitoring. The PI will monitor the photographic records of the sign-in sheet to ensure they are filled out properly and signed. The PI will monitor the work-alone Slack channel and ensure it matches the sign-in sheet. The PI will engage in discussion with team members about the efficacy of the process.

In addition to the PI, the lab members will monitor the implementation of the process. The last lab member to leave the lab must take photos of the sign-in / sign-out sheet and ensure they match the posted schedule on LabAgenda.

Process documentation: LabAgenda.com is used to book time in the bays. The sign-in and sign-out sheets and associated signatures will be photographed and posted to Slack by the last person to leave the lab. The work-alone policy is monitored on a slack channel.

Section #6 – Personal Protective Equipment (PPE)

13. Personal Protective Equipment

UBC has a central process for purchasing PPE. Describe what PPE you will require for your lab.

#	Type of PPE	Activity and PPE Use Rationale
1*	Nitrile Gloves Medium	Assuming 100 gloves per box, and what is needed until September.
1*	Nitrile Gloves Large	Assuming 100 gloves per box, and what is needed until September.
12	Hand Sanitizer	Assuming 100 mL per bottle and 6 mL per use, and what is needed until September. Sanitization of hands
12	Disinfectant wipes	Assume 100 wipes per pack and what is needed until September. Sanitization of workspace, keyboard, mouse. An alternative can be disinfecting spray and paper towels.
25	Non-medical masks	Total # masks requested is 25. Two masks per week, for a total of 8 masks per month, and 24 masks until September.

* Since there are sinks and hand sanitizers available in two out of the three rooms, we rarely need to use gloves.

Soiled PPE will be disposed of in designated areas of the building, once per day. There will be a bucket containing a bag to placed soiled PPE. Extra bags will be at the bottom of the bucket. The bucket can only be handled with gloves and needs to be sanitized after it is emptied each day.

Name	Status	Email	Mobile Number
Mengye Cai	Post-Doctoral Fellow	mengyecai@ece.ubc.ca	604-352-0898
Alireza Asoodeh	PhD Student	asoodeh@ece.ubc.ca	604-562-6292
Shahriar Mirabbasi	Faculty	shahriar@ece.ubc.ca	604-440-4860
Ad hoc visitors from Salfi group	Not listed here	Listed in the ApSc web form submission	

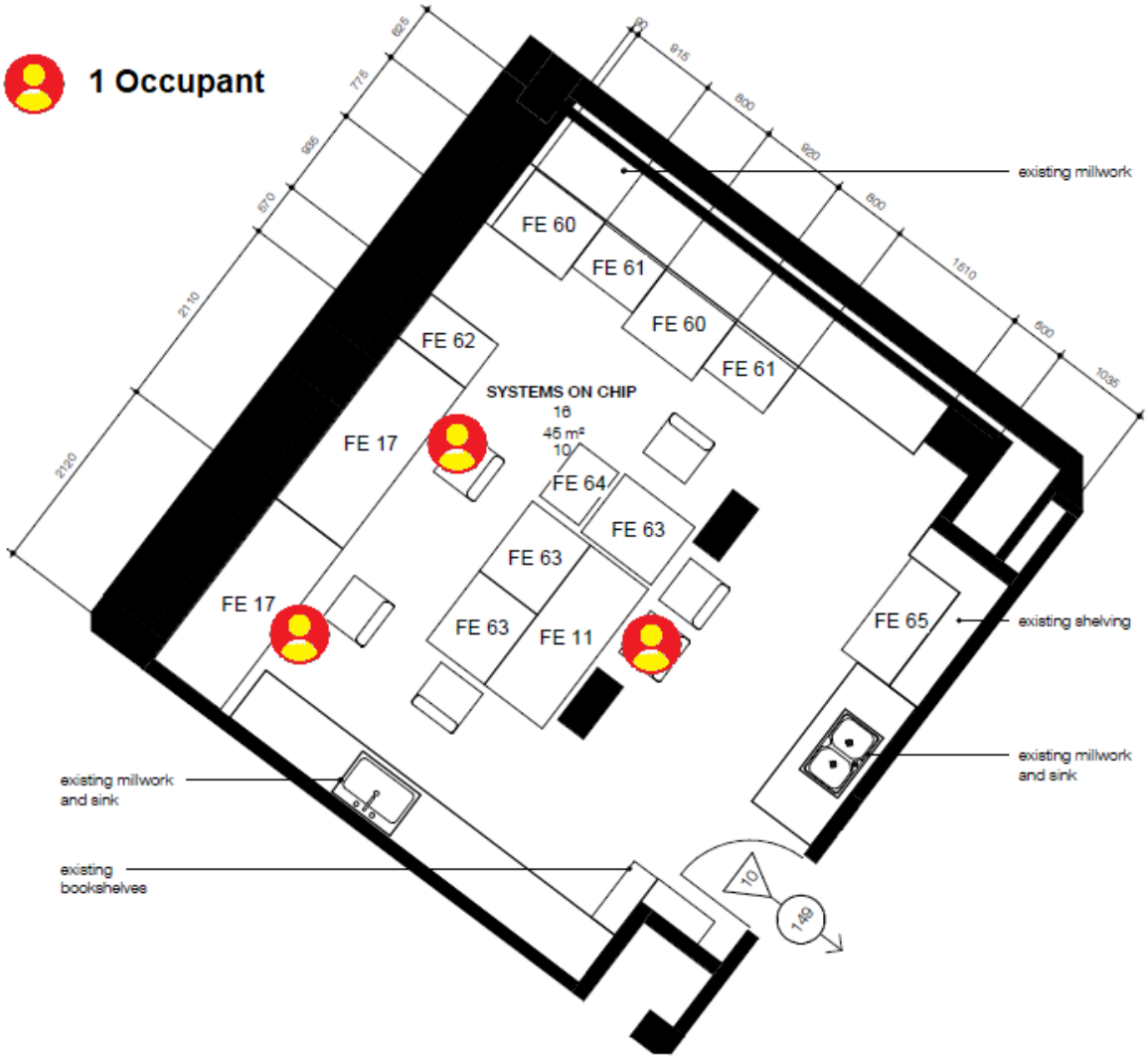
Acknowledgement

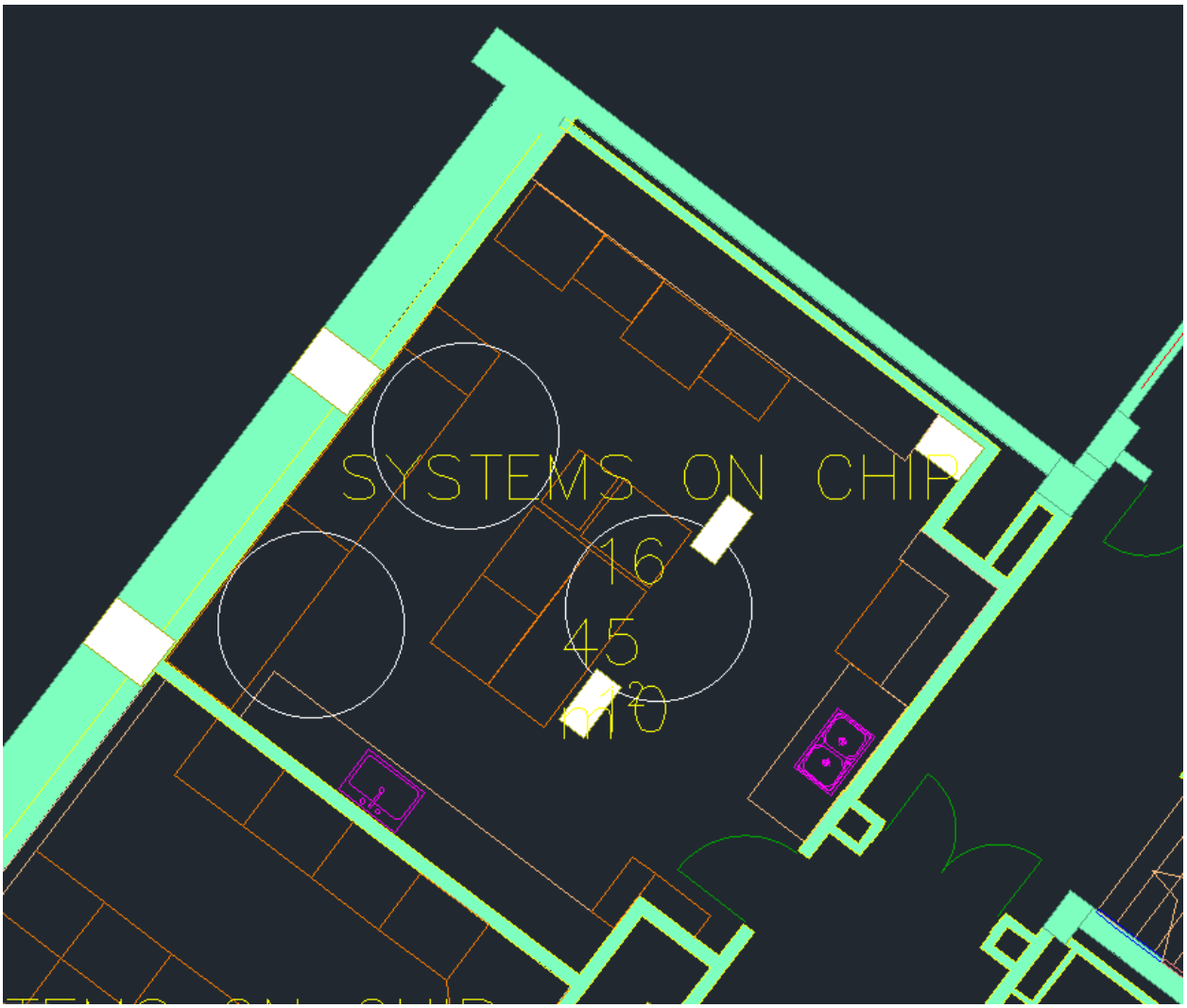
I confirm that this Safety Plan has been shared with all workers (HQP, research personnel, etc.) who will be accessing this space both through email and will be made available as a shared document. Workers can either provide a signature or email confirmation that they have received, read and understood the contents of the plan.

This plan was submitted and signed by the corresponding applicants and has been approved by the ECE Department Head Steve Wilton.

Appendix

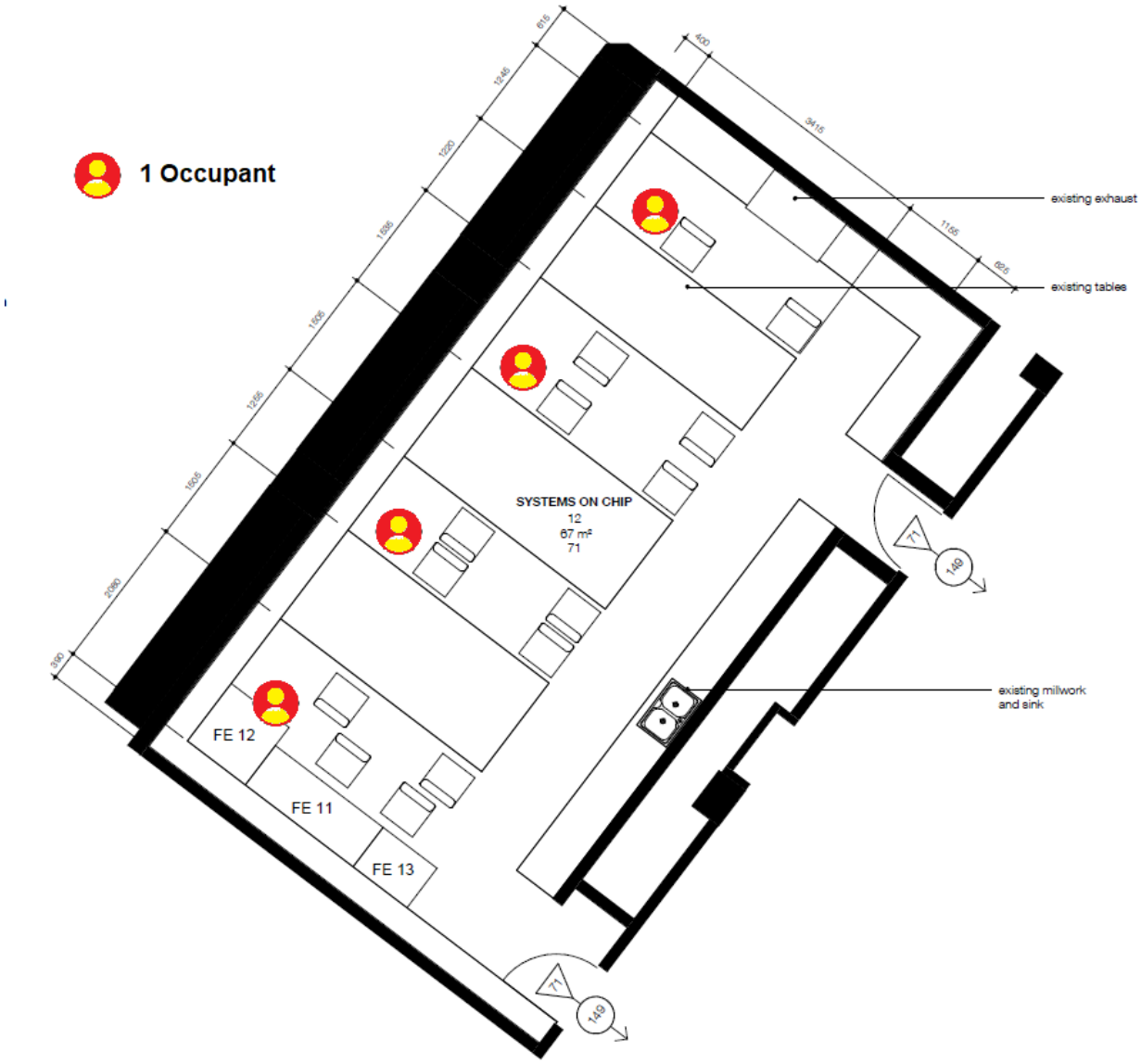
Room 16 – Max 3 people from all PIs

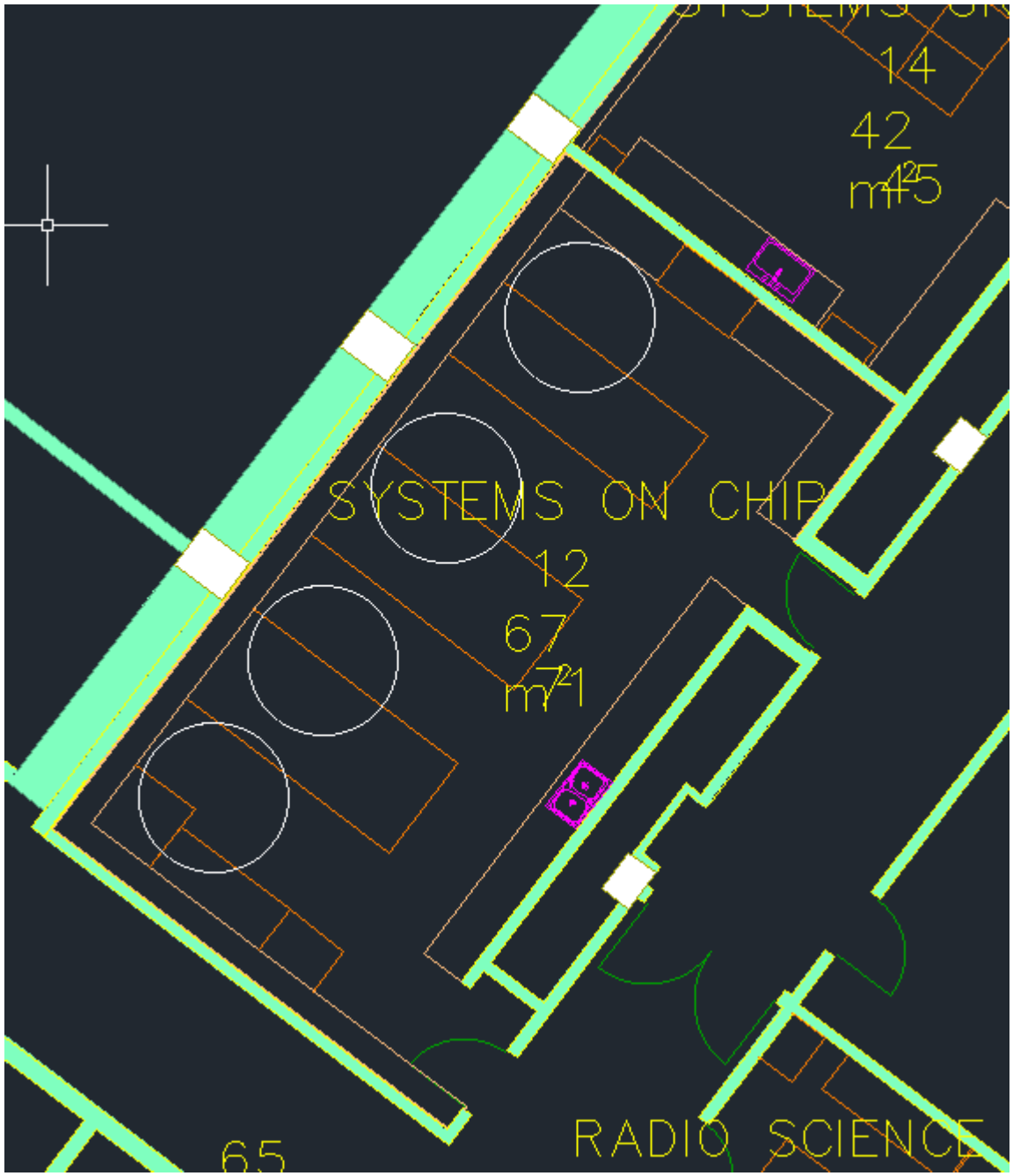




(Circles are 2m in diameter)

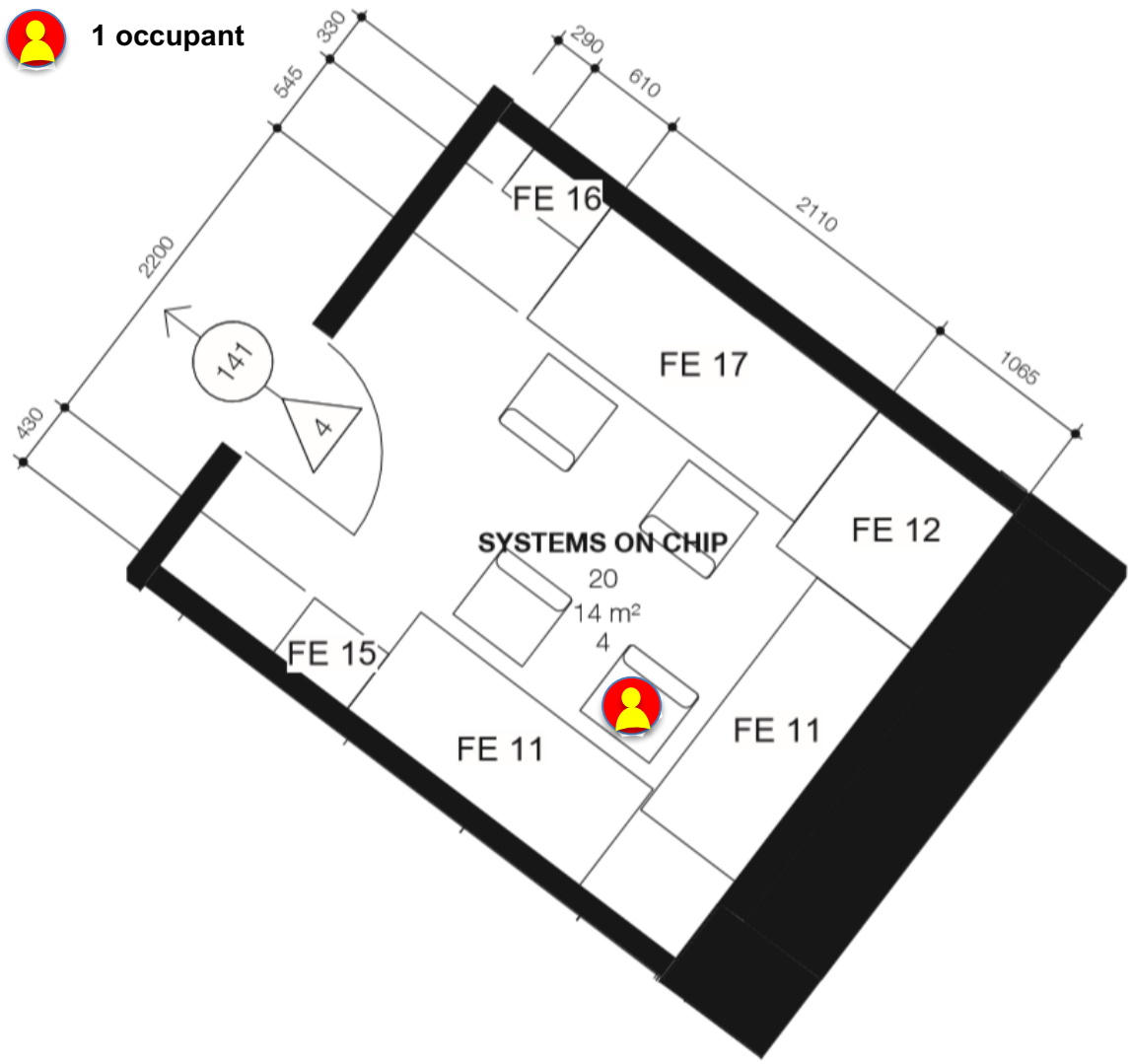
Room 12 – Max 4 people from all PIs





(Circles are 2m in diameter)

Room 20 – Max 1 people from all PIs



2 / A1.15 Room 20 Floor Plan
1 : 50