

Downstairs Elab - Discussions and Planning

Mar 11, 2024 | Translating the Electronics Night meeting notes into a planning document.

I've taken the below notes and translated them into a planning document. Please click on the [LINK HERE](#) to be linked to the spreadsheet. Please let me know if anyone has more comments. Regards, Mark

Latest Version of the [ELab Draft Program - V1.0.sheet](#)

Area	Description	Activities	Equipment	Power / HVAC / Lighting Requirements	Adjacencies
Whole E-Lab			<ul style="list-style-type: none"> Single, small-form factors computer Dual monitors with selectable inputs. Like classroom TV Projector & surface Whiteboard to draw upon Prometheus Board (wish list) 	<ul style="list-style-type: none"> Need to keep Rh within limits (?) At least one (1) 20amp circuit with two (2) quad outlets separated such that we can plug in at least two (2) fused power strips for various equipment Would prefer two (2) 20amp circuits 	<ul style="list-style-type: none"> Classroom - Room to spread out onto tables
Fabrication & Assembly	<ul style="list-style-type: none"> Individual work on projects Collaborative area that we can work face to face Space to work on microcontrollers and SBC projects 	<ul style="list-style-type: none"> Assembly for small projects, putting pieces together and /or putting pieces into project boxes or containers (ie., rockets, robots, etc., etc.) 	<ul style="list-style-type: none"> 30"x60" work surfaces Static dissipative, grounded surface. Hard surface for cutting, pounding, heating, etc. (needs to be durable) Handtools nearby - pegboard or clearly labeled bins or drawers (will have to decide on what tools this means) (see * below) Ethernet hard drop(s) Two soldering stations; <ul style="list-style-type: none"> one higher end (rework and more) and one general purpose Pano-vices / Chip Holders, e.g. KOTTIO Holding Hands PCB preheater - 110v 600watt, e.g. this one Hot Air Rework Station Reflow Oven 	<ul style="list-style-type: none"> Where do we ground to? Filtration or Ventilation for soldering and/or solvents Ambient Air Temp - between 68 and 72degrees Moveable task lighting Soldering stations will need ventilation or filtration, e.g. KOT TO Solder Smoke Absorber 	<ul style="list-style-type: none"> Classroom or large table area for group events - Groups, Teams, Presentations (KidWind, Rocket Teams, Robot Teams, etc.) Flexible in configuration to accomodate different sized things
Testing	<ul style="list-style-type: none"> Use of test equipment to measure performance of products 	<ul style="list-style-type: none"> Testing of proto-type products 	<ul style="list-style-type: none"> Ethernet hard drop(s) 30"x60" work surface Binocular magnifier Electrical Cords Testing banana cables 30v 10a power supply Dilip's dual power supply (2 Leader tracking power supplies) (HP power supply) Signal Generator (Questionable to keep) Spectrum Analyzer (Questionable to keep) Oscilloscope (Very much needed) Wall Warts - Standard set of 3.3v, 5v, 12v Static dissipative, grounded surface. Analog Monitor - to attach to Oscilloscope 		Wholly within the Elab
Demonstration	<ul style="list-style-type: none"> Collaborative area that we can work face to face 		<ul style="list-style-type: none"> Arduinos, RaspberryPi's, CPX's Breadboards, hook-up wires LED's, components Ethernet hard drop(s) 		May have to spill out to Classroom

Education	<ul style="list-style-type: none"> Space for presentation of electrical concepts, technologies and equipment Collaborative learning area In-person/Virtual Meeting /Classroom 	<ul style="list-style-type: none"> Soldering 101 events Take-a-part events Build-a-circuit events Conduct dual format workshops see more ideas in list below 	<ul style="list-style-type: none"> Kits and Equipment to support regular events. Multiple soldering stations Worksurfaces like the desks in classroom See Kit listings below 		Spread out broken stuff to DIY fix stuff
	<p>We'd suggest implementing four identical 'virtual meeting' setups to conduct in-person and virtual workshops at the following locations:</p> <ul style="list-style-type: none"> Leesburg upstairs Leesburg downstairs Purcellville Green Room Purcellville lower classroom 		<ul style="list-style-type: none"> cameras computer(s) software 		
Storage	<ul style="list-style-type: none"> Small Parts Storage (LEDs, SMT parts, resistors, capacitors, MOSFETs, etc.) Large Parts Storage (Project boxes, heat sinks, cableing, wire, etc.) 	<ul style="list-style-type: none"> Sorting of parts Labeling of parts boxes Placing boxes in order 	<ul style="list-style-type: none"> Cubbies and/or Racks <ul style="list-style-type: none"> (3 Grey Units) (1 Bin Rack) (6 tool boxes) (drone parts) (robot parts) Racks, Closets, Shelves <ul style="list-style-type: none"> (2 door cabinet) (10 Black & Yellow Boxes) (2 wire racks) (bookcase for equipment manuals) (large diameter shrink wrap and long tubes) 		<ul style="list-style-type: none"> Wholly within the Elab or immediately adjacent If located in Classroom, Classes can't block access to stuff in storage

Assembly kit

- Flush cutters
- Wire strippers
- Tweezers
- Dental picks
- Screwdrivers
- Bench sockets
- Small notebook
- Pens, pencils

Soldering station kit

- Solder wire
- Solder station tips
- Solder suckers
- Braided wire
- Shrink wrap
- Flux dispensers
- Jeweler's magnifier
- Soldering station
- Sponges (natural & brillo)
- Tip tinner

List of potential classes or workshops

- Home Automation
- Home Networking
- Raspberry Pi Projects
- Arduino Projects
- LoRa Projects
- Self-paced electronics projects
- Radio Projects
- Solar Projects
- CNC Foundation

Mar 7, 2024 | [Electronics Night](#) Meeting to discuss what Electronics Lab wants to be when relocated to Makersmiths-Leesburg downstairs

Attendees:

Notes

- Do a needs assessment first.
 - Test Equipment - What test equipment do we want downstairs?
 - Grounding Requirements - Avoidance of static electricity
 - Wall warts - Standard set of 3, 5, 12 volt power supplies
 - Set of banana cables separated into type
 - Anti-static mats on each table
 - Hot Air Rework Station
 - Reflow Oven
 - Power Supply (ies) - Single Output (30v 10a), Dilips' Dual Output (??), (Two Leader Tracking power supplies and one HP brand PSs)
 - Signal Generators? 2 of them (??) - Questionable to keep
 - Spectrum Analyzer? 1 (??) - Questionable to keep
 - Oscilloscope 1 (??) - Yes, Yes, Yes Very much needed
 - Any other equipment?
 - Computers
 - Single linux-based small form factor computer, maybe?
 - Monitors
 - Projector or Prometheus or whiteboard
 - Soldering Station(s)
 - Two soldering stations; one higher end (rework and more) and one for general purpose, solder suckers
 - Consider filtering or exhaust nearby
 - Other Equipment?
 - Flush cutters, wire strippers, tweezers, dental picks, screwdrivers, bench sockets,
 - General Lighting? - LED 2x4s
 - Any Task Lighting? - Task specific lighting on at least one bench
 - Any special requirements, such as exhaust for soldering or SMT work?
 - Humidifier or Dehumidifier? - Keep it within certain Rh limits
 - How many people at a time? - Optimize for two, any more, we'll spill over into the classroom.
 - Test Equipment - list of pieces and dimensions of them. Also consider where electrical cords go...
 - Binocular magnifier(s)
 - Storage Requirements
 - Three Gray Units
 - Bin Rack
 - Two Door Cabinet
 - Wire Racks
 - Bookcases with equipment manuals
 - Large diameter shrink wrap and long tubes
 - Tool boxes
 - Drone Parts
 - Small Hardware Bins
 - Black and Yellow boxes
 - Parts Bins
 - Storage Shelves and/or Racks
 - Work surfaces
 - Hard surface - cutting, pounding, heat, (needs to be durable)
 - Static Dissipative, grounded surface (where do we ground to?)
 - Hand tools - pegboard or clearly labeled bins or drawers
 - Will have to decide on what tools this means
 - Breadboard(s), jumper wires in all combinations,
 - Arduinos and RaspberryPis
 - What will be electrical requirements for
 - What are lighting requirements?
 - What are HVAC requirements?
 - How many people are we looking to work in this space?
 - Listing of Equipment
 - Hard drop(s) for ethernet connections
 - Materials
- From Needs listing, we do a 'space program', listing space/area and the requirements of each
- From Space Program, we do three preliminary layouts / designs
- From Preliminary, we select one to refine.
- From Preliminary, we will price things out and create a draft timeline
- From Final Design, we will include layout, costs & timeline.
- Then to Facility Committee and Board of Directors for \$\$\$\$

Big Picture Planning

- Overall discussion of what the Elab wants to be:
 - Flexible in configuration to accommodate different sized things
 - Spread out broken stuff to DIY fix
 - Collaboration space - something to be able to work face to face

- Space to demo stuff face to face
- Space to work on micro-controllers
- Space to work on project boxes; assembly for small projects
- Three Main Sections: Fabrication & Assembly, Testing and finally Demonstration
- Support for group activities (for example KidWind) and/or classes - robot teams, rocket teams, home automation teams
- Support for proto-typing entrepreneurs
- Will be important to know what we have and where it is located.
- Support for education: IE. a Classroom kit - multi soldering kits and accessories - Will likely need three to six stations for Classroom function