Bed-mounted Modular Procedural Training Surface

Date: 10/22/2026
Client: Shannon DiMarco
Advisor: Darilis Suarez-Gonzalez

Team:
Nathan Knight – Team Leader and BSAC (nknight3@wisc.edu)
Evan Koelemay – Communicator (ekoelemay@wisc.edu)
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Problem Statement:
A secure, lightweight, procedural workstation is crucial for clinical simulation centers to conduct procedural training. Current solutions leave much to be desired as they lack stability, take up excessive floor space, or exhibit tipping hazards. To resolve this, the team is being tasked with designing a modular workstation attachment to existing bed architecture. The workstation must be compact for storage, quickly attachable, and meet desired constraints for sanitation and safety.

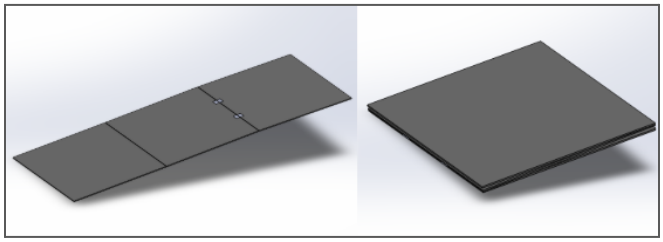
Brief Status Update:

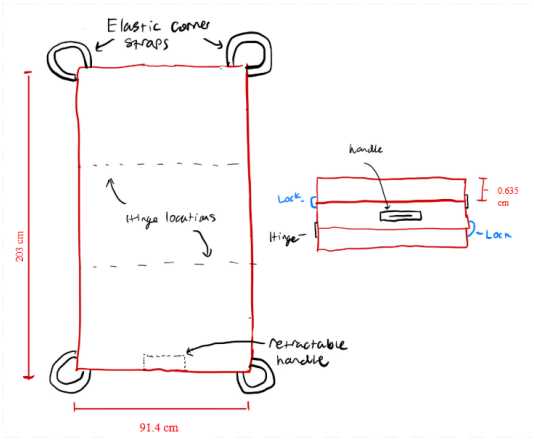
- This week, the team took in the feedback that was given from peers at the Show and Tell event last week to try to apply to the project. The team still needs to order materials to full scale for final design fabrication. The plan for testing the device is currently in progress.

Project Difficulties/Advice Requests:

- None to report

Current Design





The current design features three equal-sized panels, attached by piano joints in alternating directions to fold into one neat stack. In order to prevent fluid leakage, a thin silicone sheet will be placed over the entire surface, which will easily fold and stretch with the panels. The method of securing the surface to the mattress will be done with 4 elastic straps, one on each corner. These straps will easily slip under the corners of the mattress, preventing movement in all directions. This design will also feature a compact, retractable handle, allowing for briefcase-like carrying when in its folded state. Dimensions will be 36” (91.4cm) width, 80” (203cm) length, and ¼” (0.635cm) thickness.

Materials and Expenses:

Item	Manufacturer	Mft Pt#	Vendor	Vendor Cat#	Date	QTY	Cost Each	Total	Link
Prototype									
Acrylic Sheets	Makerspace	n/a	UW-Madison	n/a	10/19/2026	1	$10.75	$10.75	n/a
Piano Hinges	XHMAX E Store	XHMAX E-8IN-BLACK-4 PACK	Amazon	B0B4DDWQNG	10/20/2026	4	$4.75	$18.98	link
Elastic Bands	Airisoer	192687523764	Amazon	B0869KZ9CT	10/23/2026	1	$6.49	$6.49	link
							TOTAL:	**$36.22**	

Team Goals for Upcoming Week:

1. Decide on mechanism for attaching/securing silicone sheet to base
2. Order full scale size polypropylene

Individual Goals for Upcoming Week:

- Nathan Knight
    - Further look into and plan out considerations given during show and tell
    - Update Labarchives with relevant deliverables completed
    - Continue working with team to obtain any parts to continue fabrication
- Evan Koelemay
    - Research possible materials for elastic hinge mechanism
    - Meet with client to discuss current design considerations
- Tess Fitzgerald
    - Research vendors for ordering large scale polypropylene sheets
    - Meet with advisor to discuss mechanisms for testing
- Andrew McLaughlin
    - Continue to look at different ways of purchasing materials
    - Continue fabrication and implementation of some of the ideas given at show-and-tell

Timeline

Task	September				October					November				December		
	4	11	18	25	2	9	16	23	30	6	13	20	27	4	9	11
Deliverables																
Progress Reports		**X**	X	X	X	X	X	X	X	X						
PDS Draft			X													
Design Matrix				X												
Preliminary Presentations					X											
Preliminary Report						X										
Preliminary Evaluations						X										
Show and Tell									X							
Final Poster Presentation																
Final Lab Notebook																
Final Report																
Final Evaluations																
Meetings																
Team	**X**	**X**	X	X	X	X	X	X	X							
Client	**X**		X		X		X	X								
Advisor	**X**		X	X	X	X	X		X	X						
Website																
Update	**X**	**X**	X	X	X	X	X	X	X	X						

Previous week's goals and accomplishments:

- Nathan Knight
    - Help group with creating our survey
    - Continue looking into ways the electrical component can be added
    - Work with the group to obtain any ordered materials
- Evan Koelemay
    - Keep in contact with client for further materials ordering for prototype
    - Research ways to improve faults in current design
    - Help write survey questions
- Tess Fitzgerald
    - Begin writing a survey questionnaire for testing
    - Order silicone or other mechanism for resisting chemical liquids
- Andrew McLaughlin
    - Order silicone and additional materials needed
    - Keep BPAG spreadsheet up-to-date
    - Assist in writing survey questions for testing

Activities

Name	Date	Activity	Time (h)	Week Total (h)	Sem. Total (h)
Nathan Knight	11/5/2026	Continued looking into existing designs for outlet connections(likely going to put a hold on this until more fabrication is done)	1.5	1.5	19
Evan Koelemay	11/5/2026	Research for potential hinge mechanism adjustment Research into possible vendors for bulk polypropylene	1.5	1.5	20.5
Andrew McLaughlin	11/4/2026	Researched vendors for large sheets of polypropylene as well as looked for silicone fabric to act as alternative for a hinge	1	1	21
Tess Fitzgerald	11/3/2026	Researched vendors for snapping mechanism (attaching silicone sheet via screwed in snaps for easy attachment/removal)	1	1	21.5
Team					