

LAPDOG™

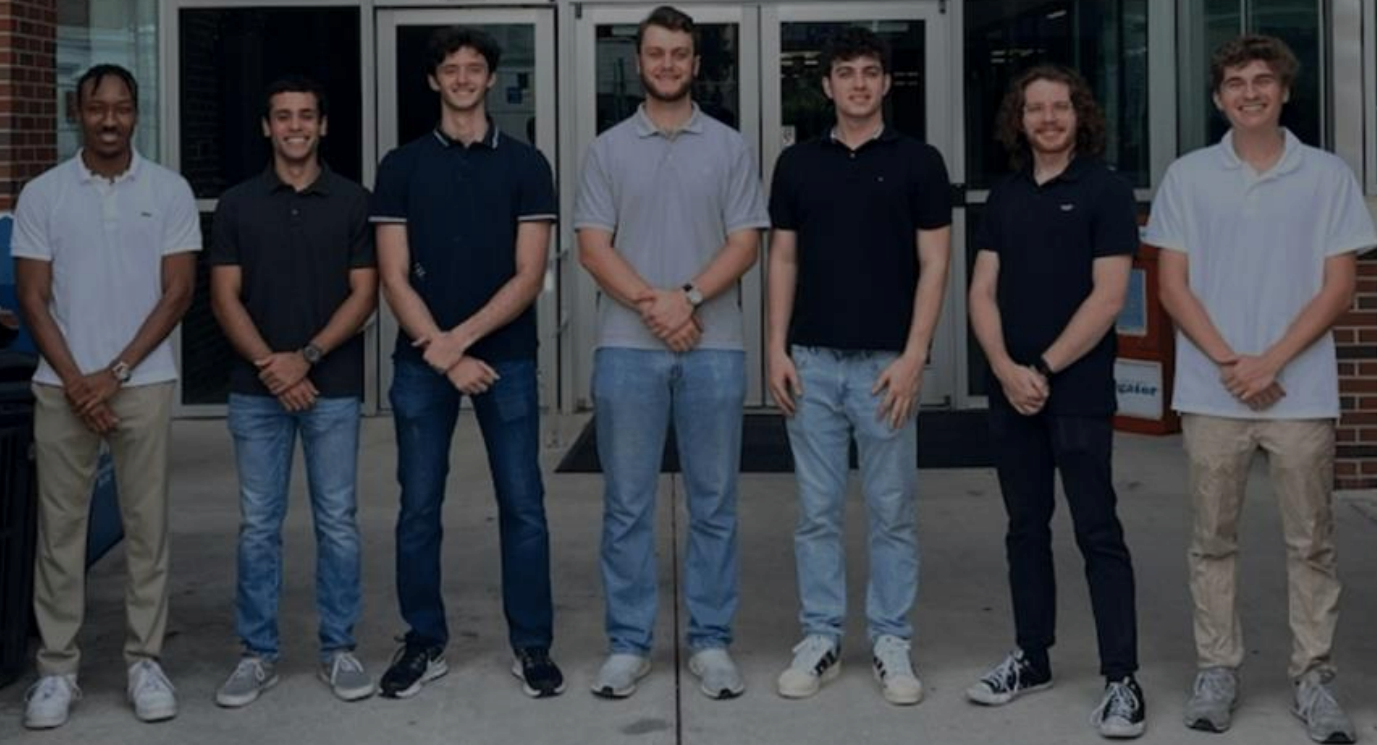


WHAT IS LAPDOG™?

“Our goal is to have your DOG be on your LAP (LapDog) the same day after their surgery.”

- Top-notch pet care for all shapes and sizes
- Exclusive access to LiftLoop™ device
- Collaboration with world-class laparoscopy experts
- Primary revenue from the DogHouse™
 - Repurchase of disposable components/replacement parts

OUR TEAM



OUR TEAM

CEOs



George Fairchild



Ryan Buchanan

COOs



Cayman Wilson



Jordan Rhymer



Jackson Sammartino

CFOs



Raymond Millero



Max Usher

PROBLEM



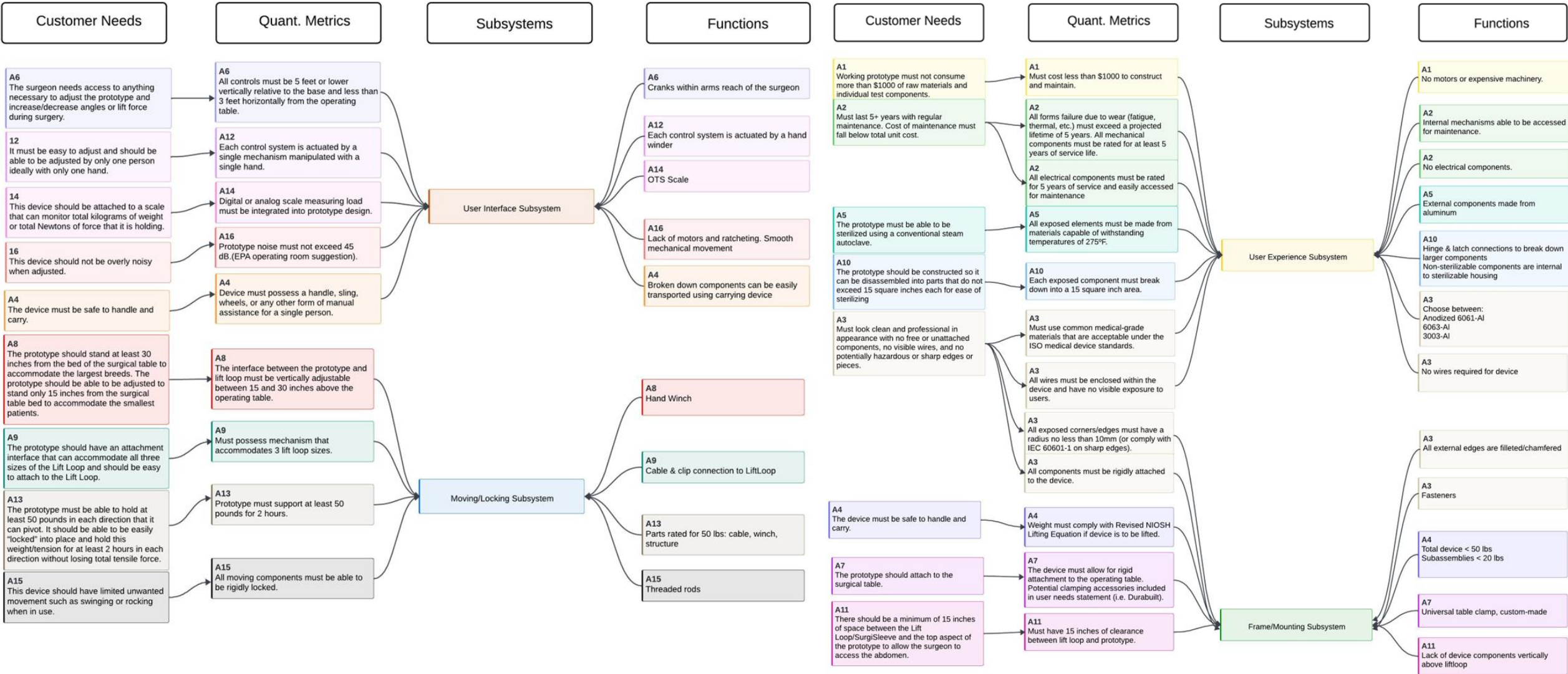
Harrison, Case, et al. 2024

- Owners want **health and safety** for their pets
- High demand for **minimally invasive methods**
 - Less pain, less scarring, faster recovery
- A commercial device that utilizes lift laparoscopy rather than insufflation **does not exist**

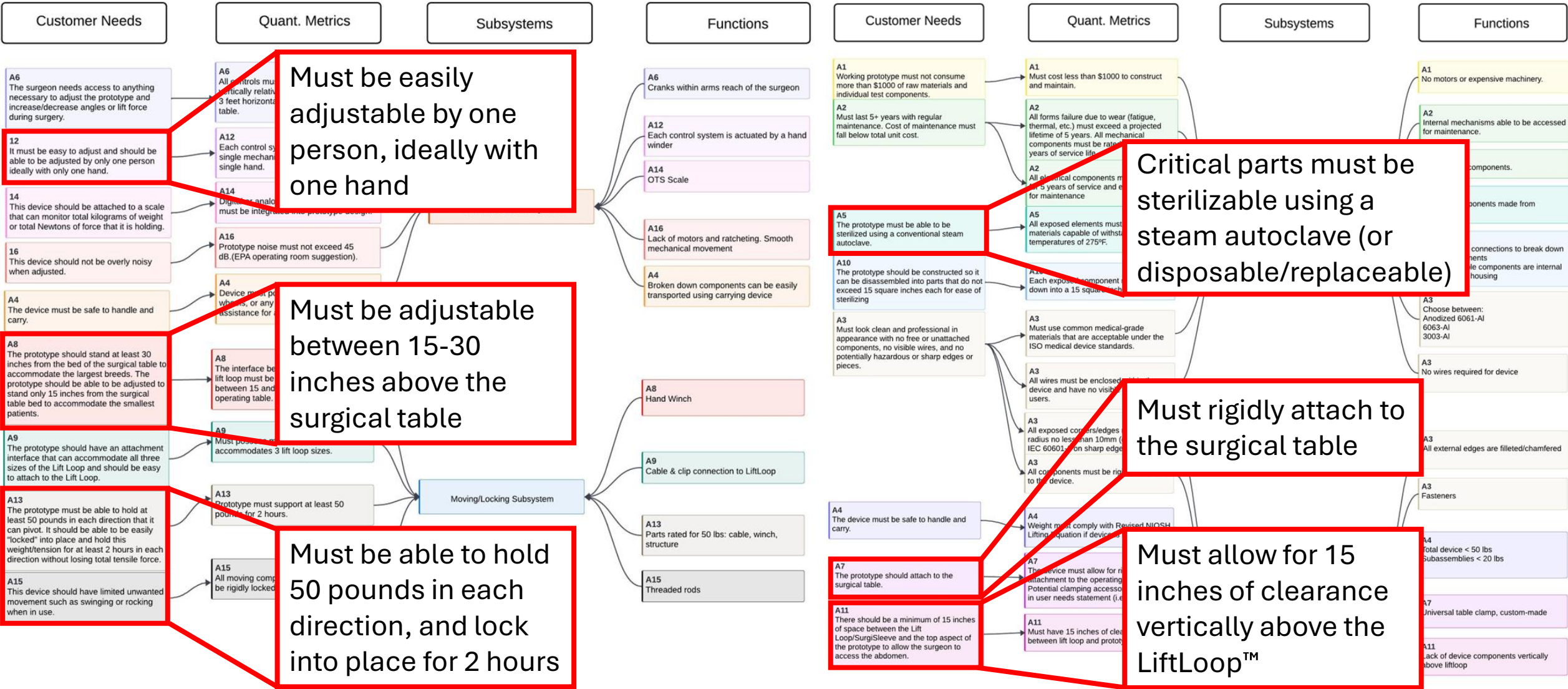
SOLUTION

- A reliable device that facilitates lift laparoscopy in the surgery of a dog or small animal, allowing vets to:
 - **Move & angle** the patient in 6 degrees of freedom
 - Support up to a **300-pound** patient
 - Operate a **rigidly attached** device that is **convenient and sterile**

CUSTOMER NEEDS MAPPING

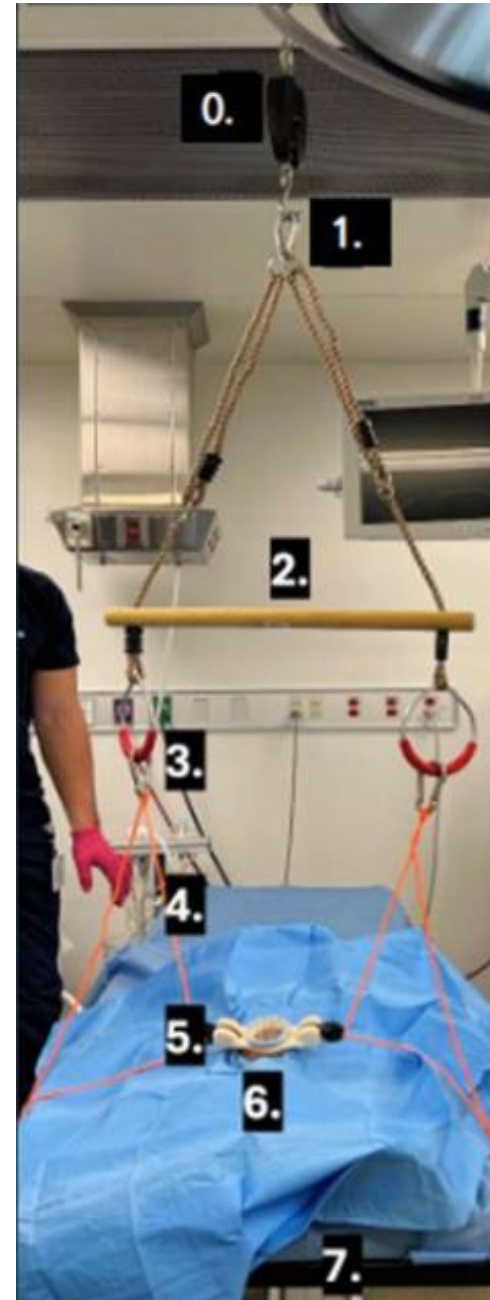


CUSTOMER NEEDS MAPPING



ORIGINAL DEVICE

- Starting point and proof of concept
- Areas for improvement:
 - Unstable mounting/attachment
 - Difficult to adjust
 - 1D motion only (up/down)
 - Materials difficult to sterilize

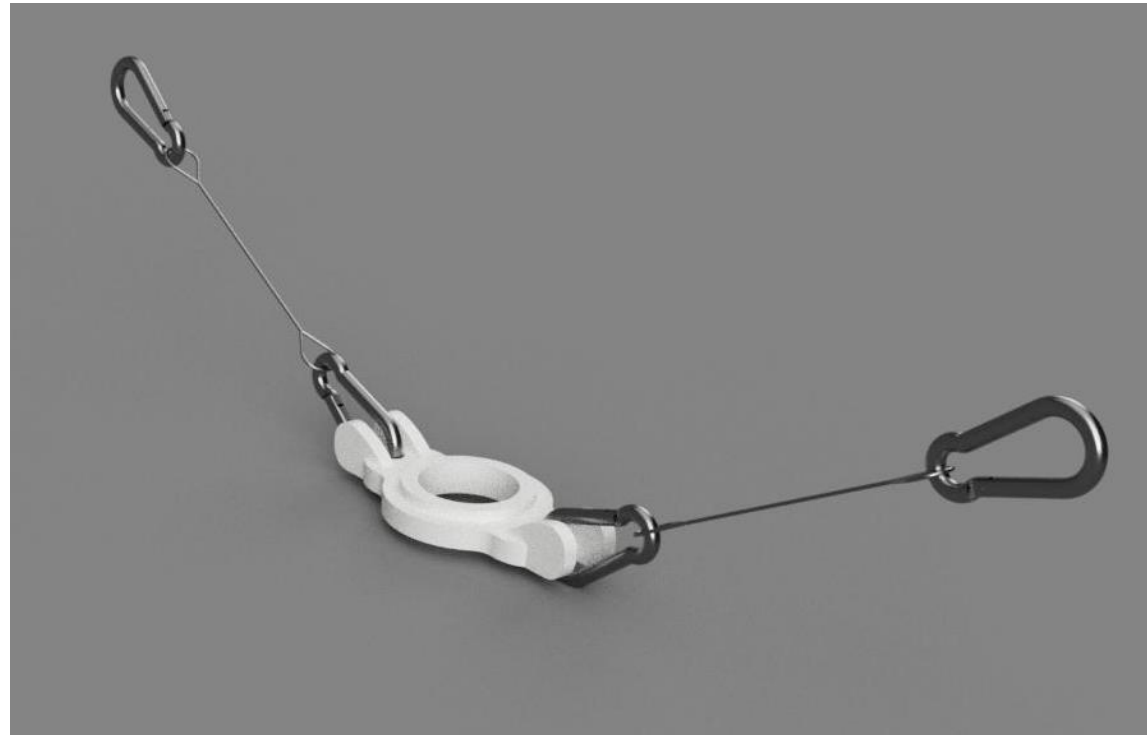


NEW TECHNOLOGY

- LiftLoop™
- DogHouse™
- Rottwinder™
- Husky Handles™ & Koolie Knobs™

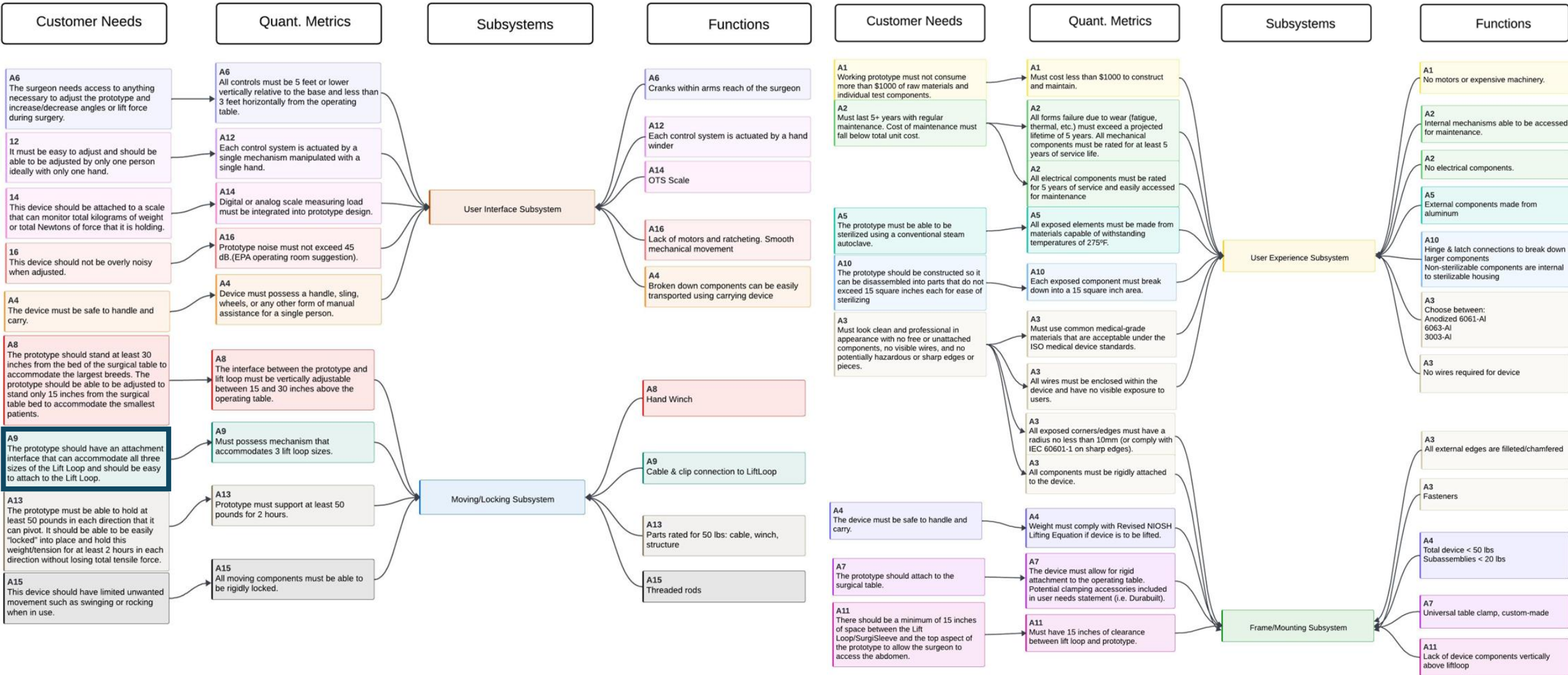
LIFTLOOP™

- Patented, custom 3D-printed device that allows vets to avoid gas insufflation completely, while still maintaining the benefits of MIS



Harrison, Case, et al. 2024

CUSTOMER NEEDS MAPPING

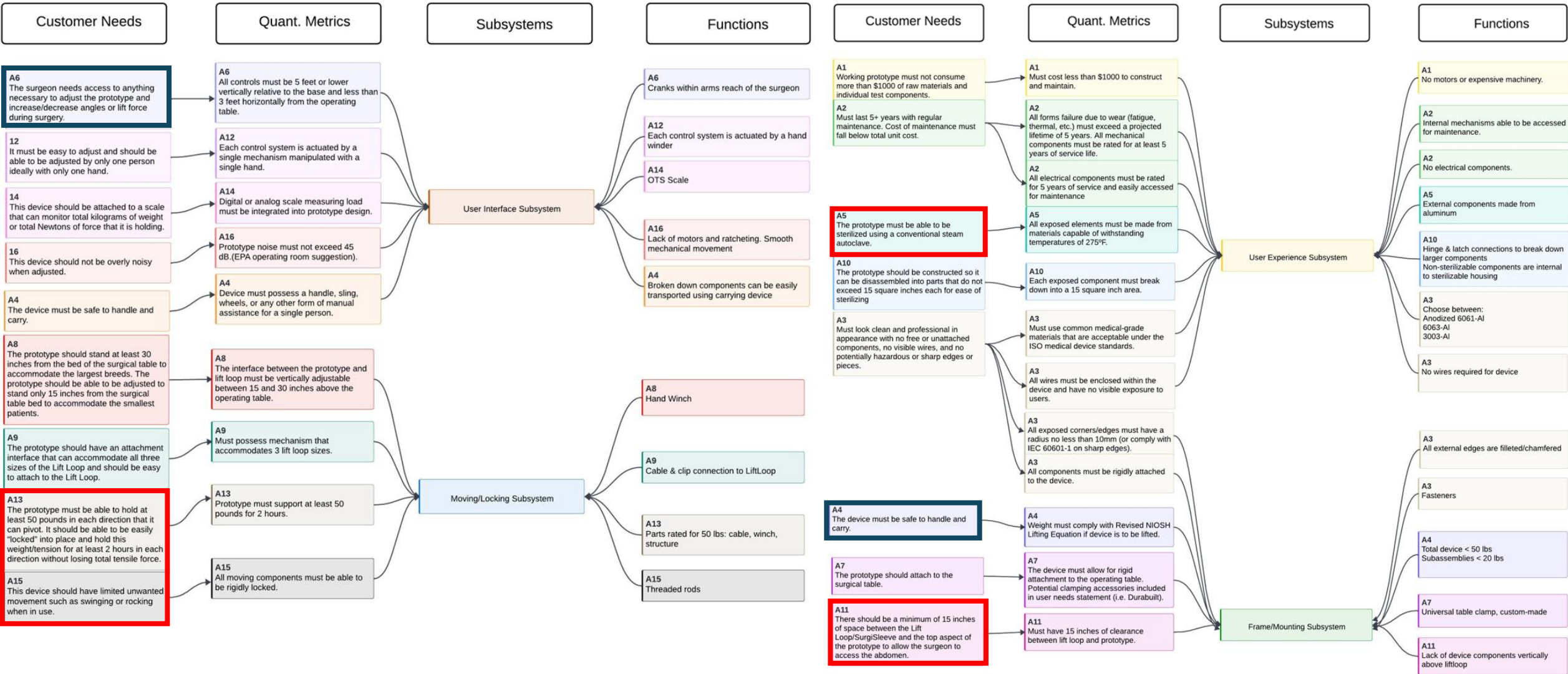


THE DOGHOUSE™

- Easy, rigid installation and use
- Motion in all directions
- All materials can be sterilized
 - Or reprinted/repurchased
- ~24.1 pounds

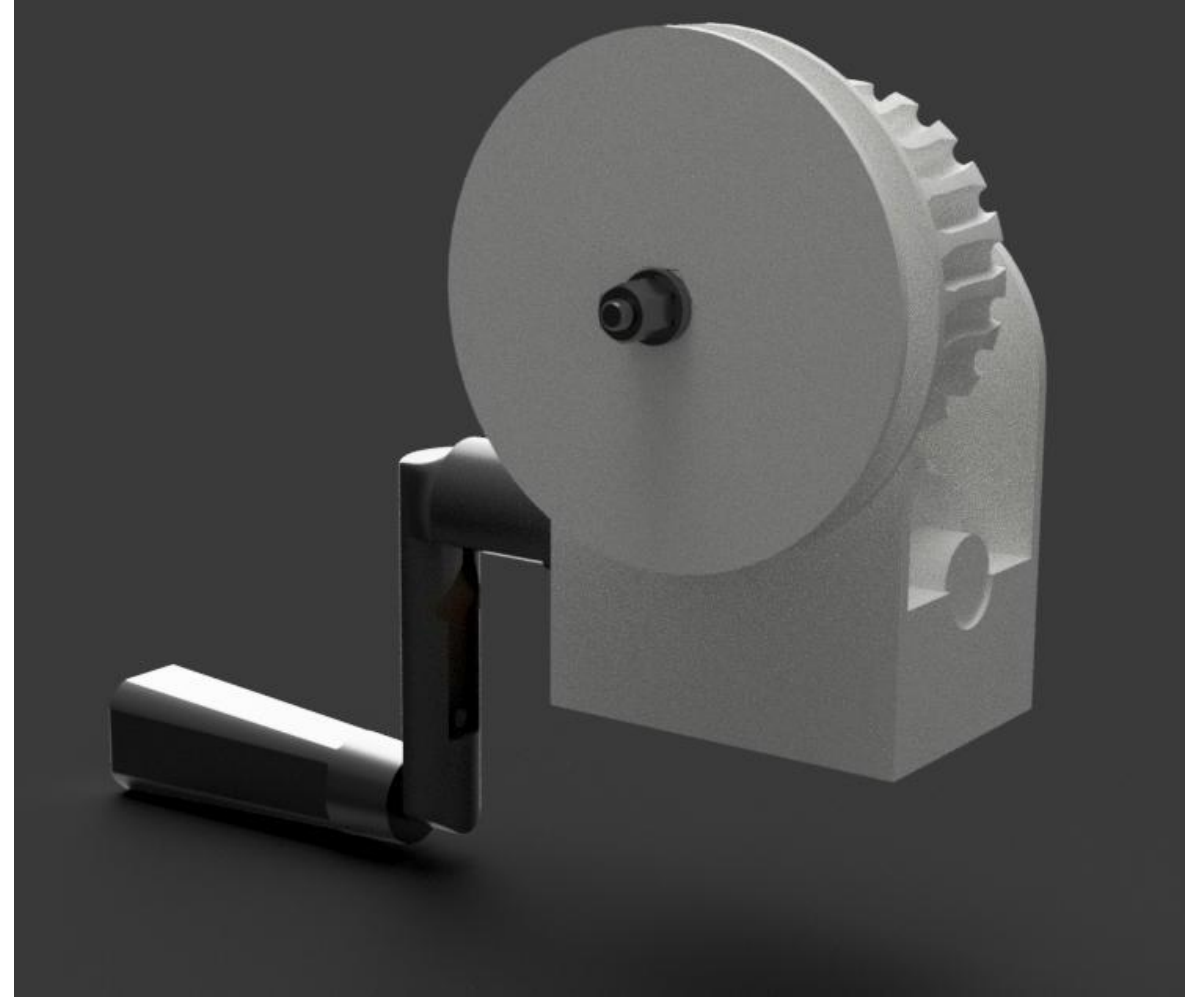


CUSTOMER NEEDS MAPPING



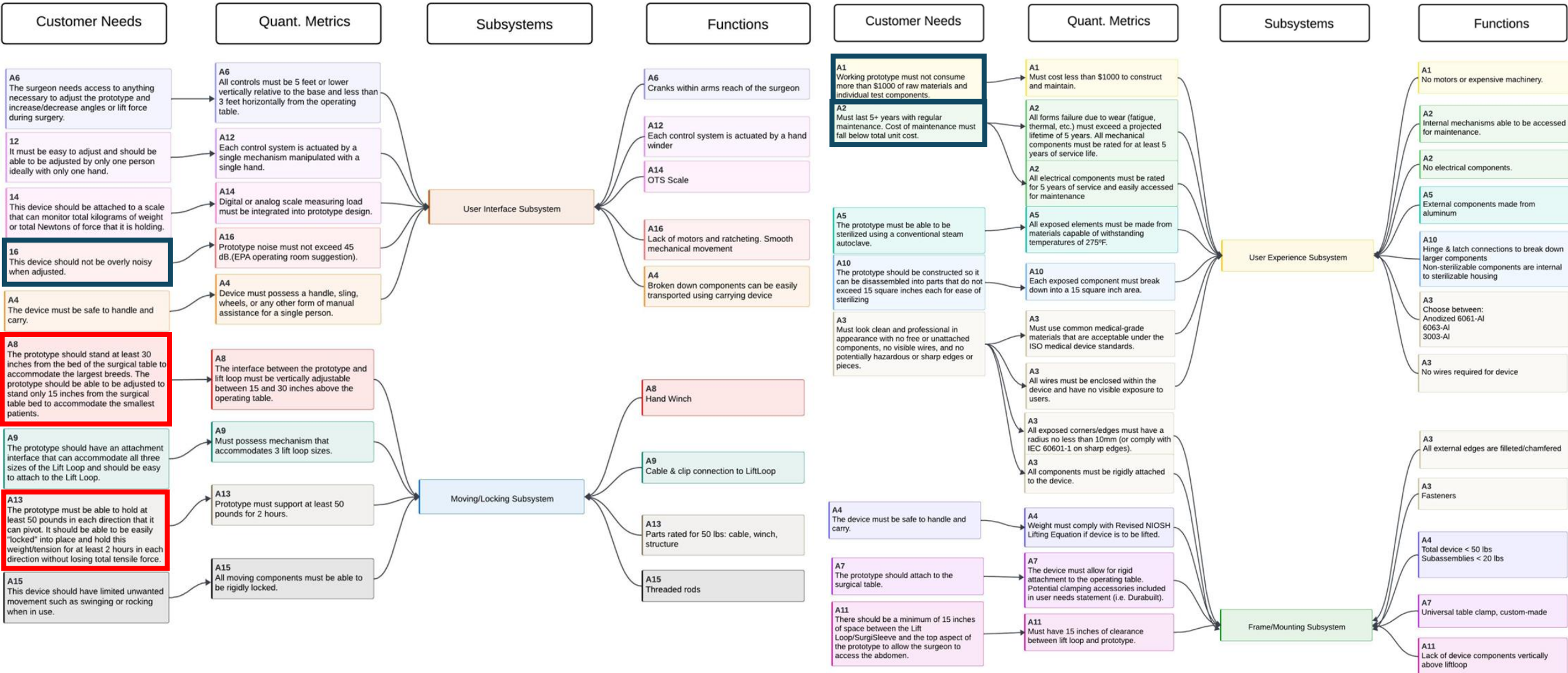
ROTTWINDER™

- 3D printable hand winch
- Durable, lightweight
- 22:1 worm gear ratio
- 0.47" linear spool per handle turn
- Self-locking



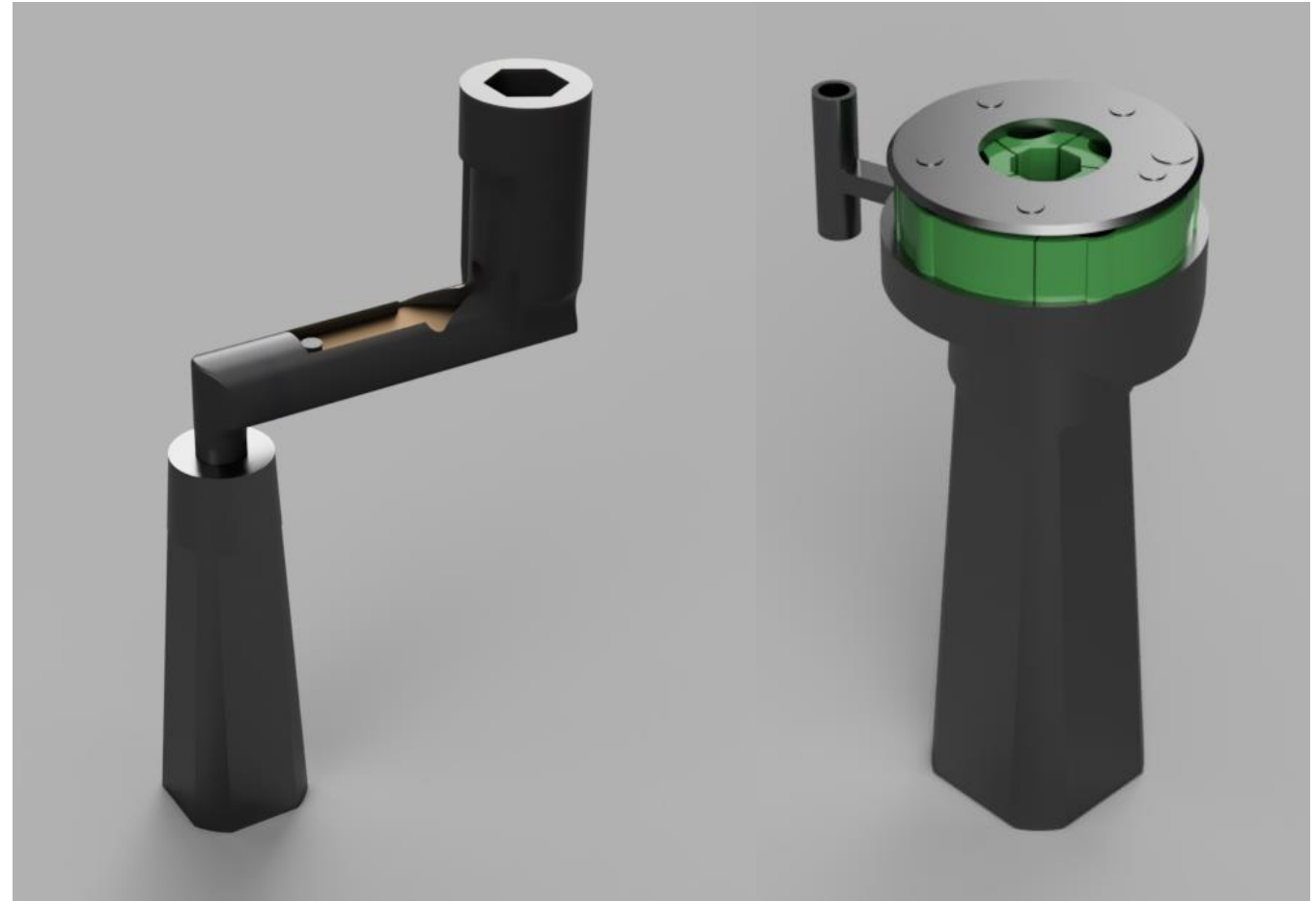
RottWinder™ CAD Render

CUSTOMER NEEDS MAPPING



HUSKY HANDLES™ & KOOLIE KNOBS™

- 3D-printable handles and knobs
- Large and ergonomic
- Easy to remove
- Maintains sterile environment
- Disposable/replaceable (secondary revenue)
- Rotating lock-mechanism



Husky Handles™ & Koolie Knobs™ CAD Render

CUSTOMER NEEDS MAPPING

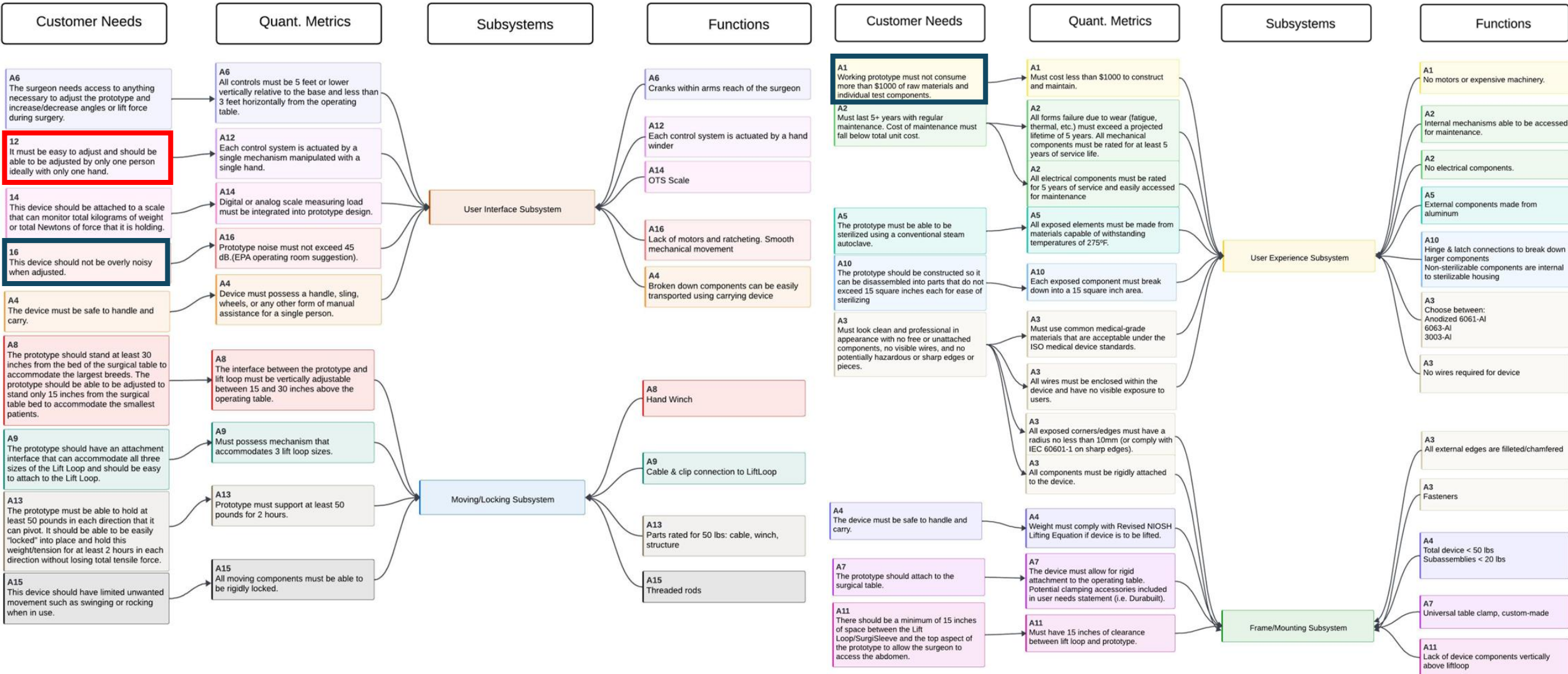
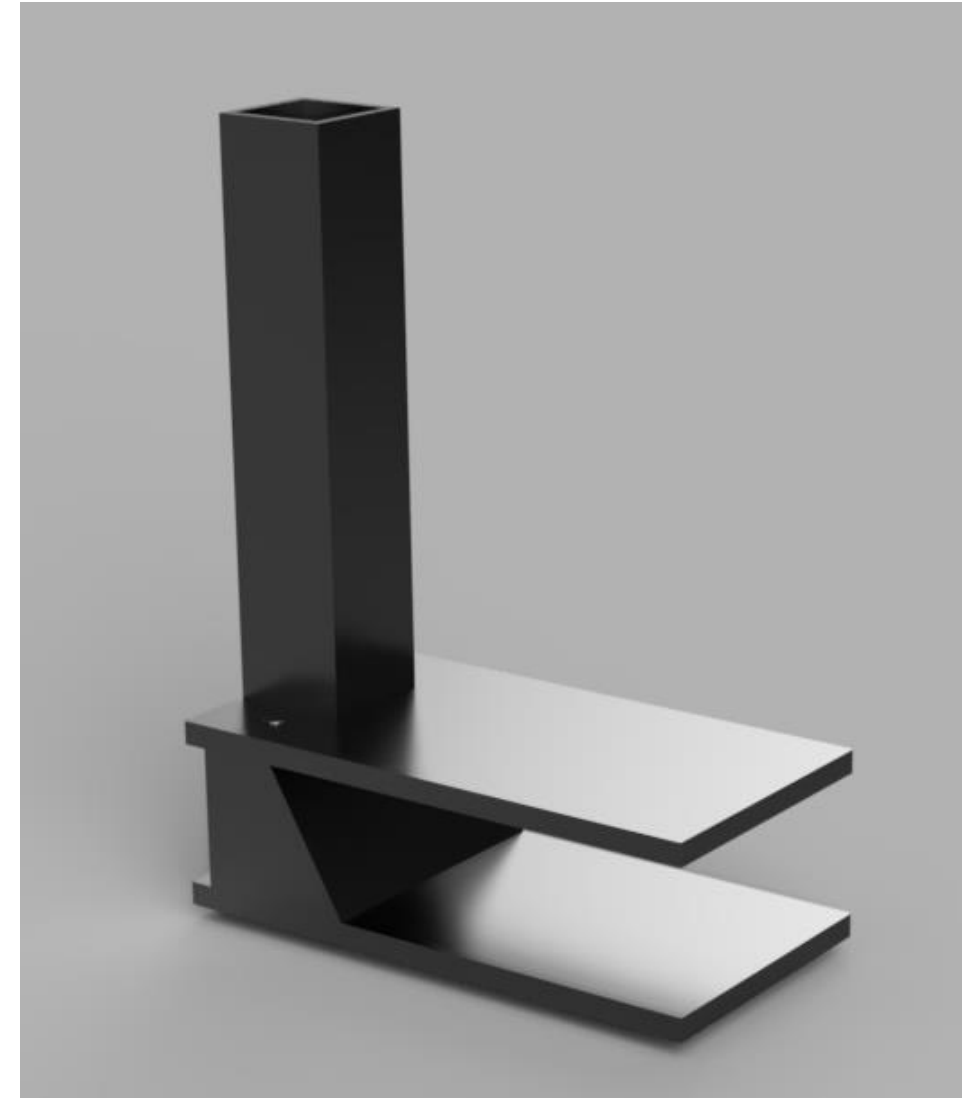


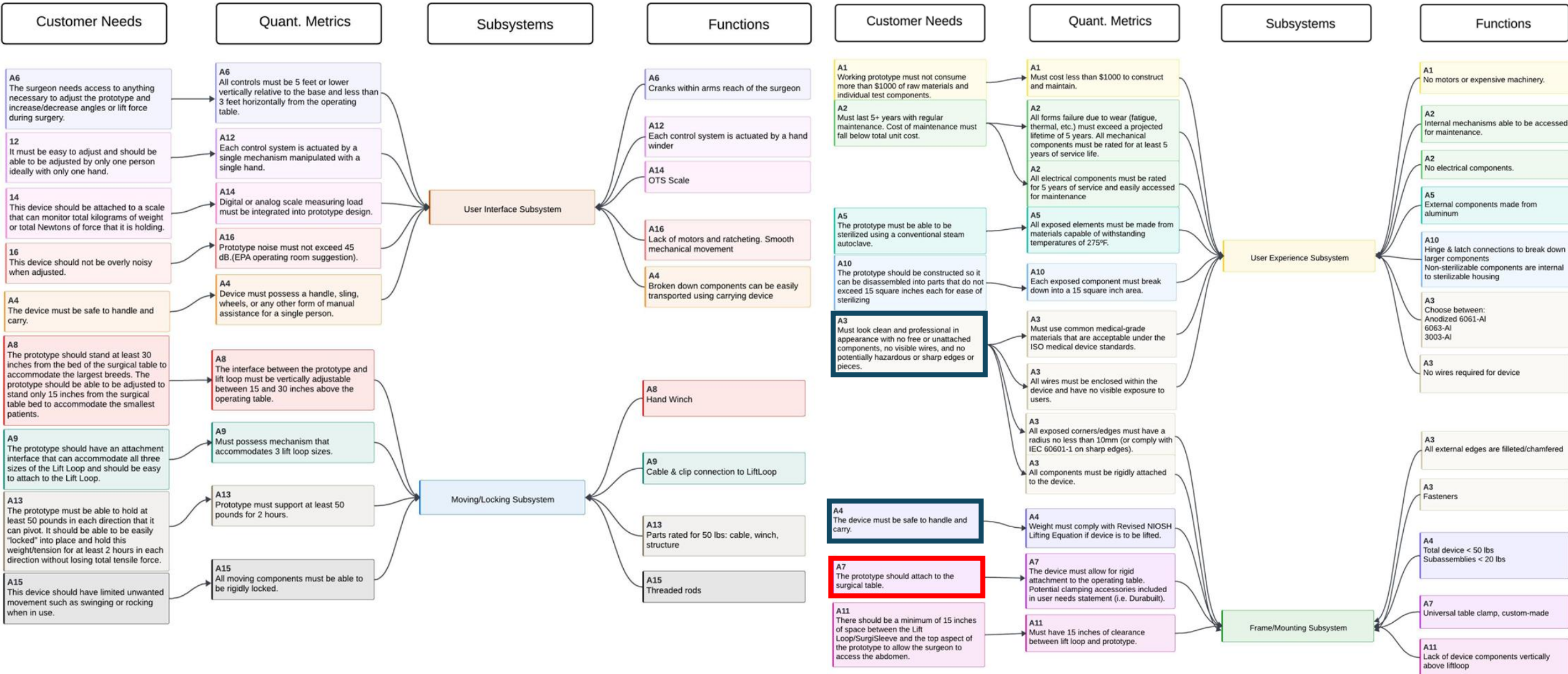
TABLE CLAMPS

- Easy to install with just 2 bolts/nuts each
- The DogHouse™ fits in the square posts
- Allows for operation from side or bottom of table
- Large middle wedge prevents torsion of top/bottom plates
- ~3.5 pounds each



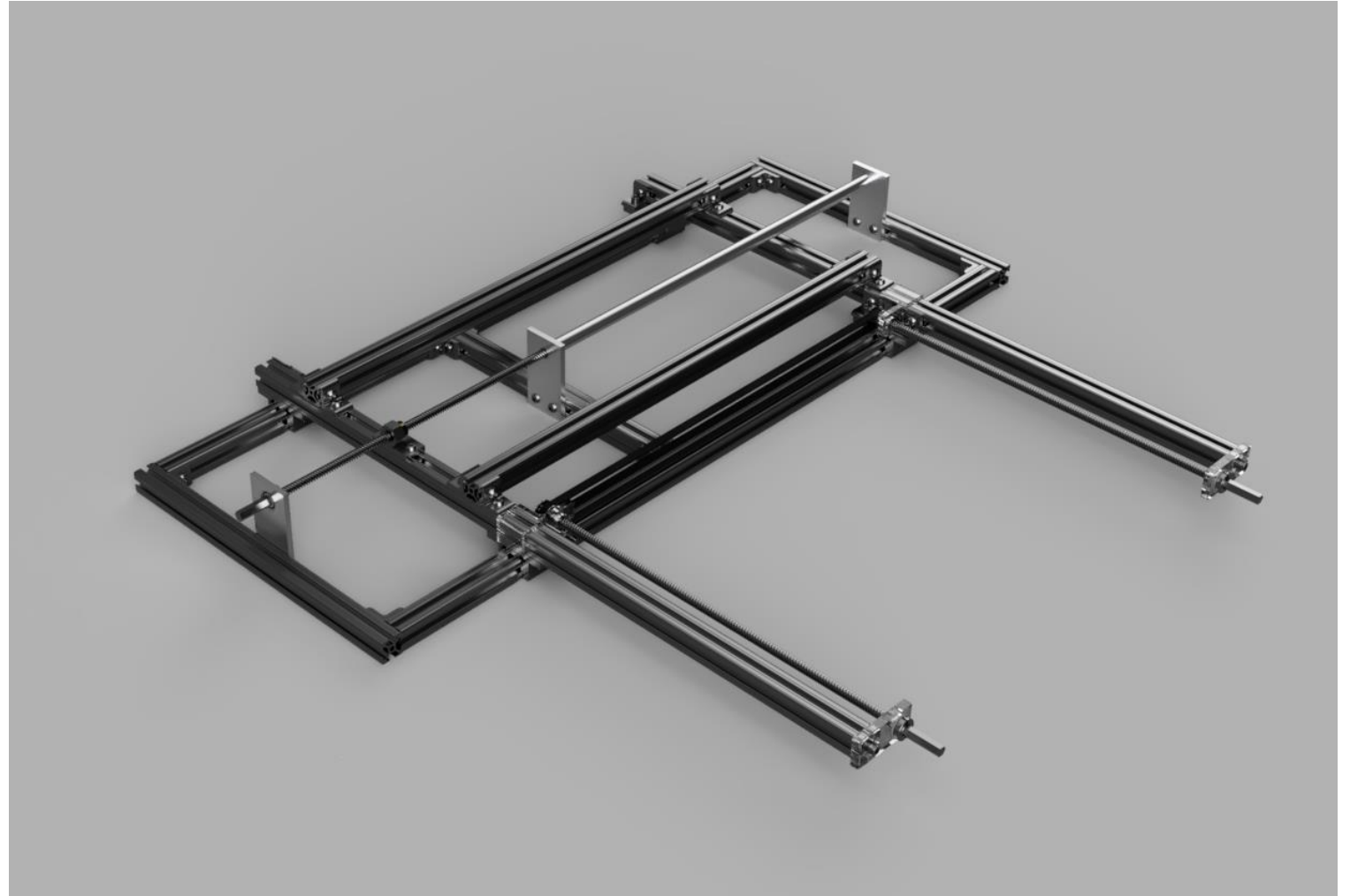
Clamps CAD Render

CUSTOMER NEEDS MAPPING



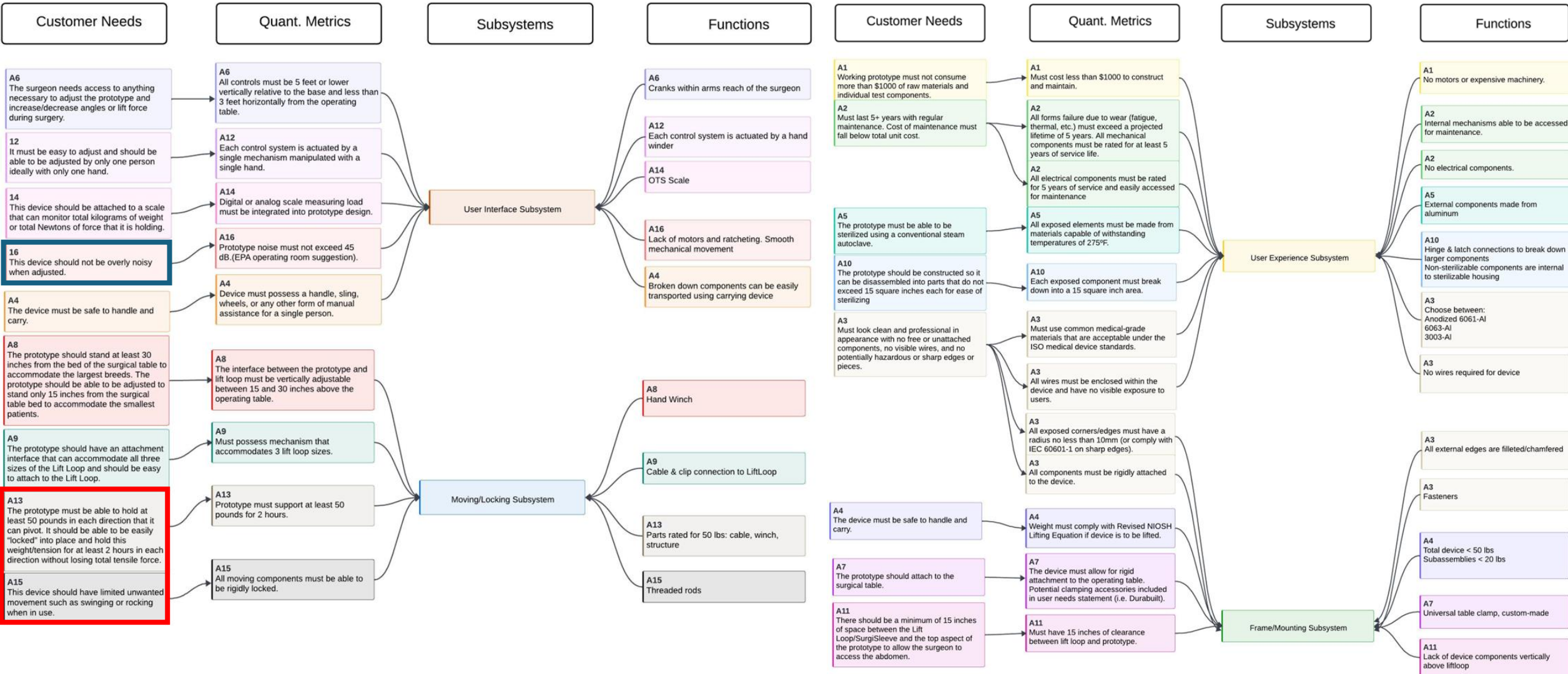
LINEAR MOTION

- Adjustable along both x and y axes
- Lead screws: 1/2" linear motion per turn
- Actuated by Husky Handles™ and Koolie Knobs™
- Self-locking

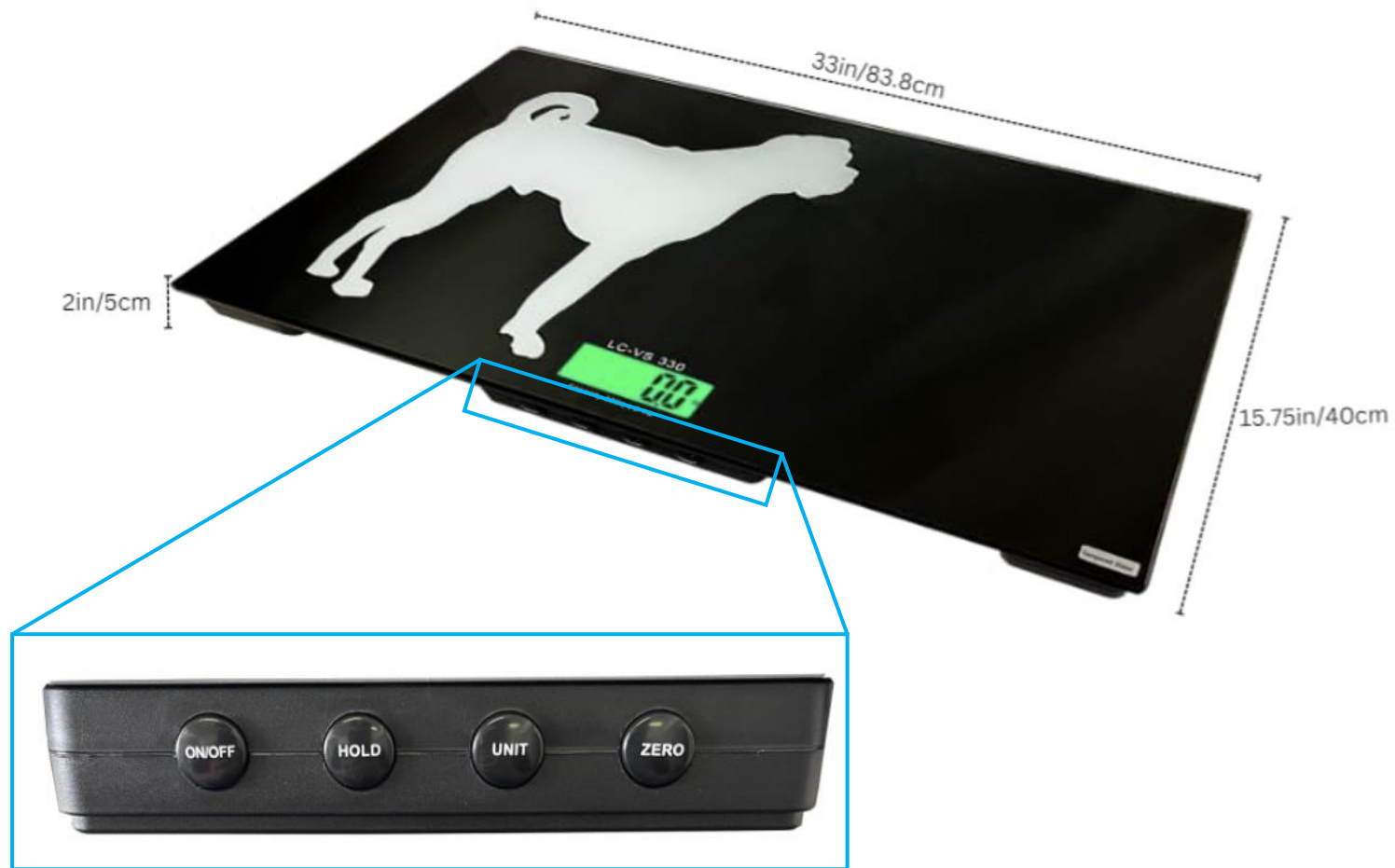


Upper DogHouse Frame CAD Render

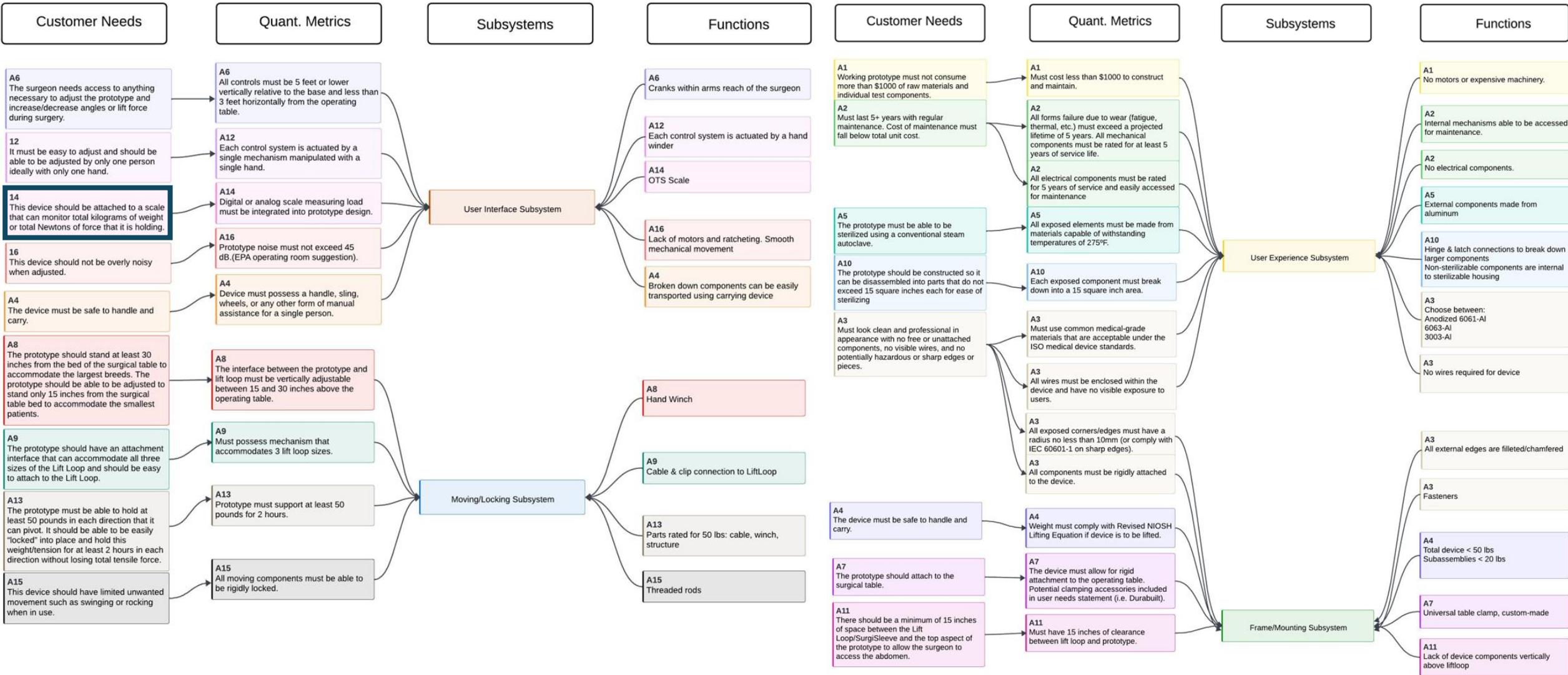
CUSTOMER NEEDS MAPPING



INCORPORATING A SCALE

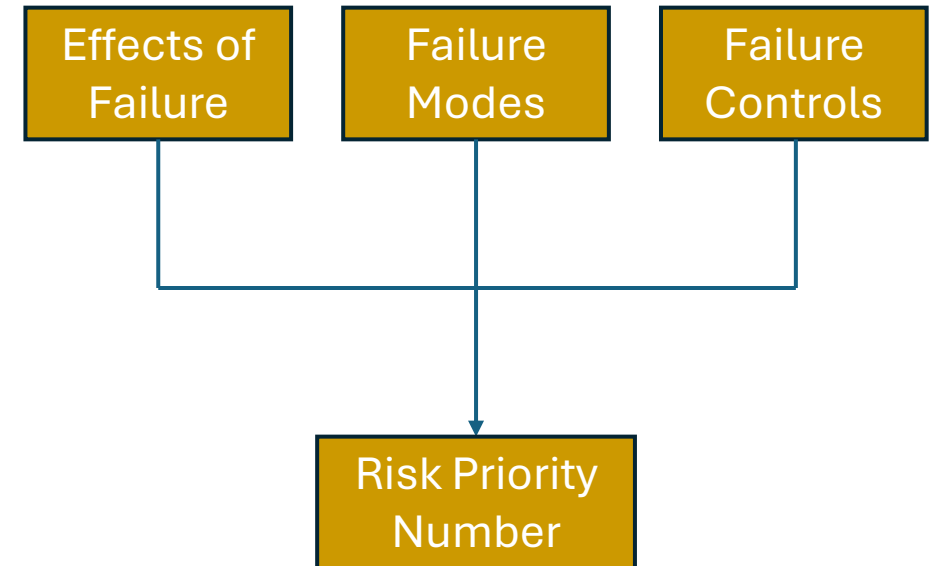


CUSTOMER NEEDS MAPPING



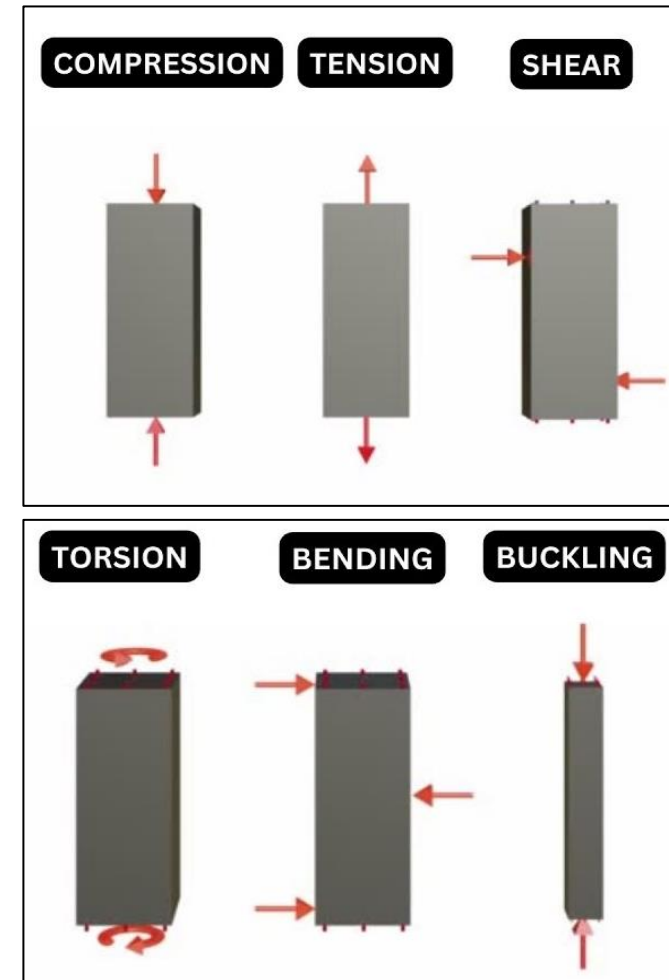
DESIGN SAFETY

- Design factor of safety chosen for:
 - Consequences of catastrophic failure
 - Uncertainty in materials
- $FOS_d = 3.0$
- Critical margins of safety (MOS) all positive
 - Some too positive (optimization)
- Failure modes and effects analysis



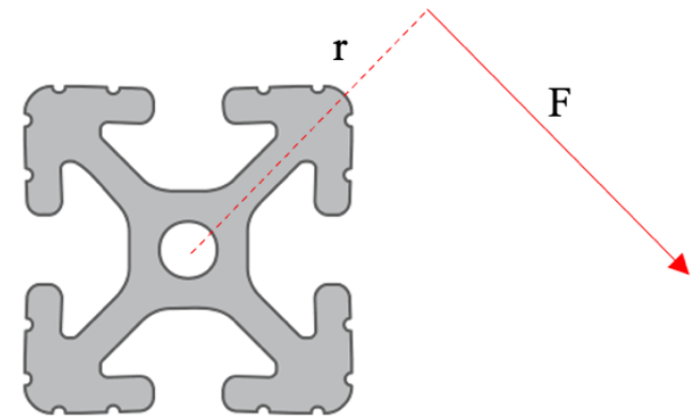
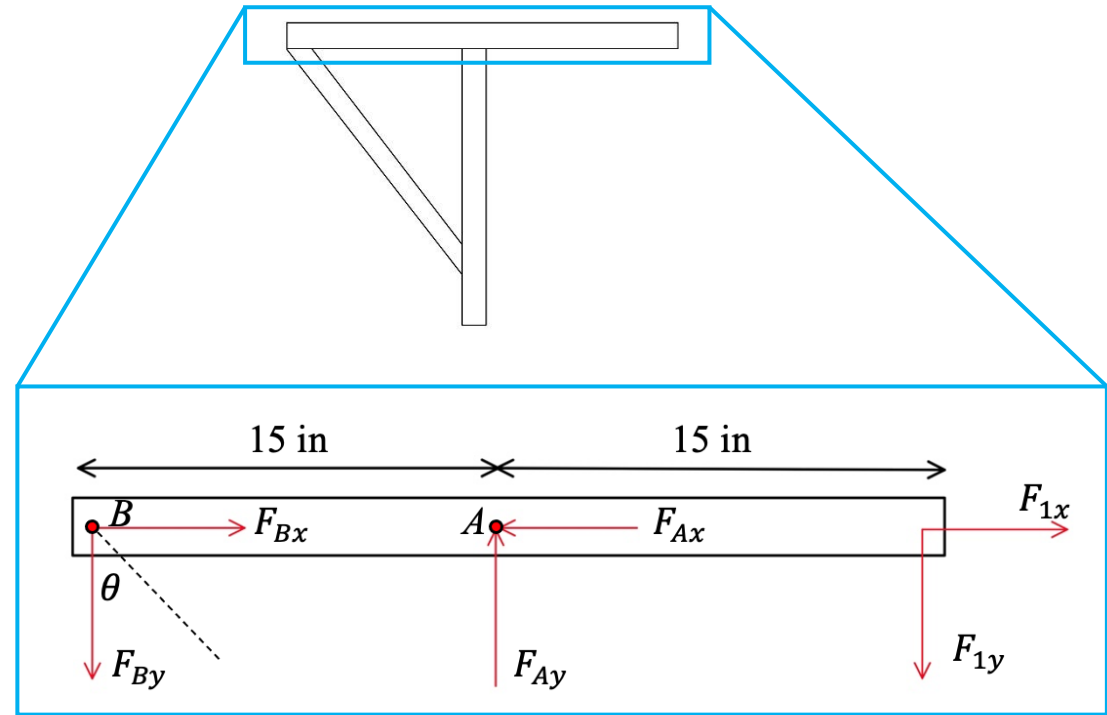
CRITICAL COMPONENTS

- 8020 branches
 - Modeled as simply supported beams under bending and torsion
- Vertical 8020 members
 - Modeled as cantilever beams under bending
 - Buckling
- Clamps
 - Cantilever beams under bending
- Linear bearings
 - Winch bearings under torsion
 - Frame bearings under vertical load



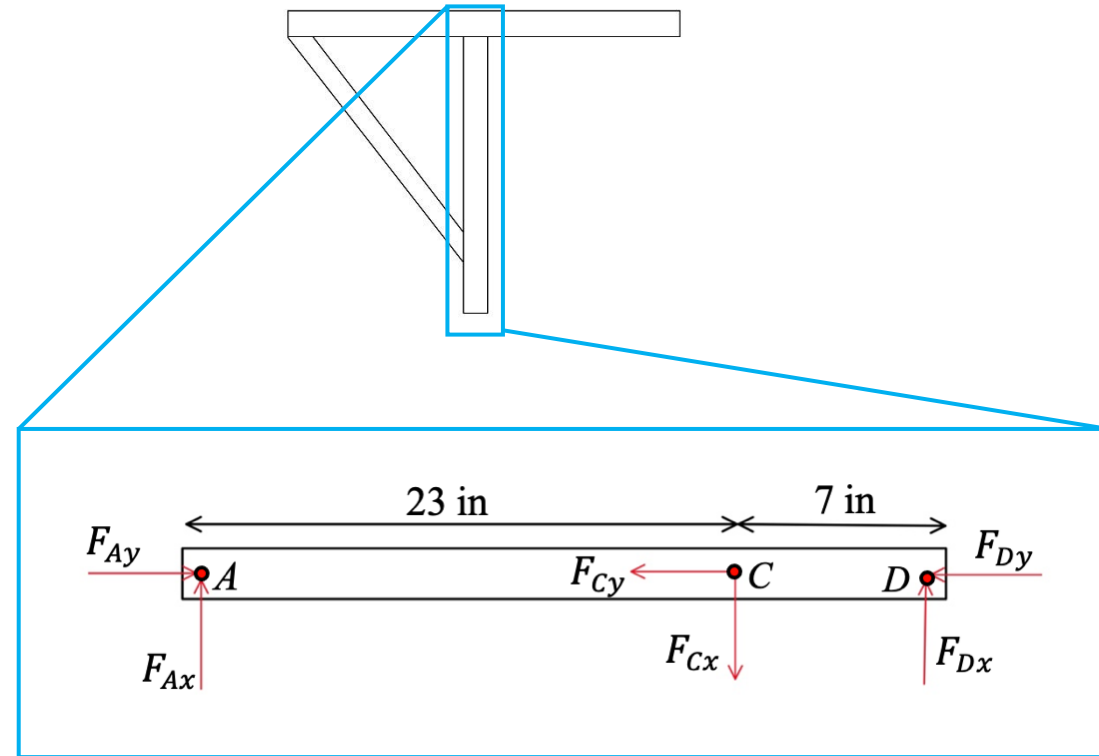
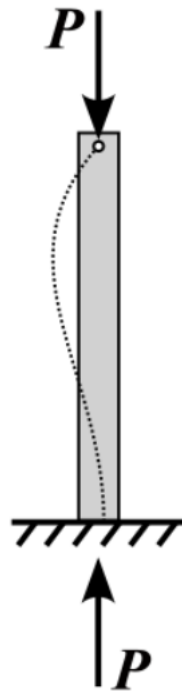
8020 BRANCHES

- Bending stress is most critical failure mode
- Shear stresses also a major concern
- Principal stresses calculated to apply failure criterion
- FOS_i : 3.1
- MOS: +0.02



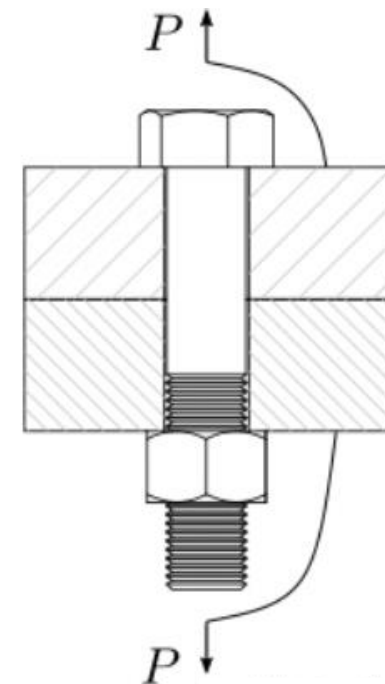
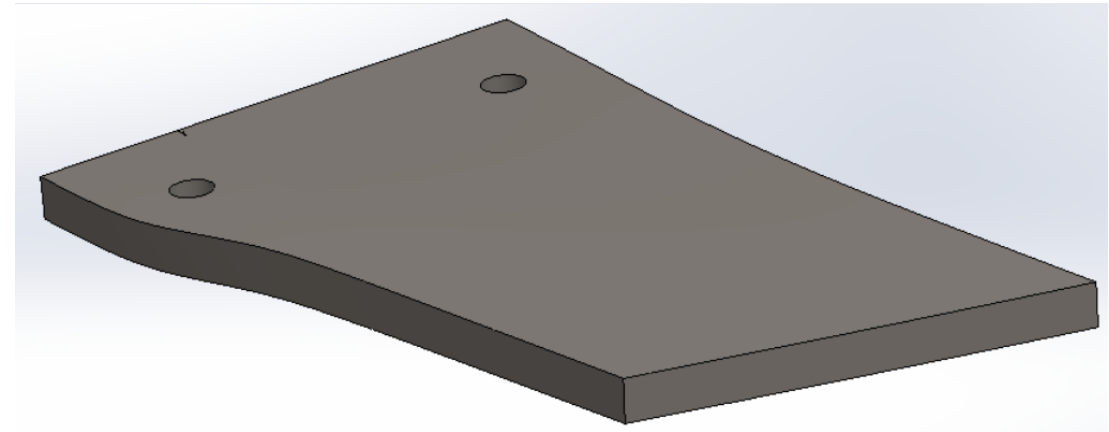
VERTICAL 8020

- Bending stress greatest at bottom
- Combined with compressive stress
 - FOS_i: 4.1
 - MOS: +0.36
- Buckling not an issue
 - $F_{crit} = \sim 9,900$ lbf



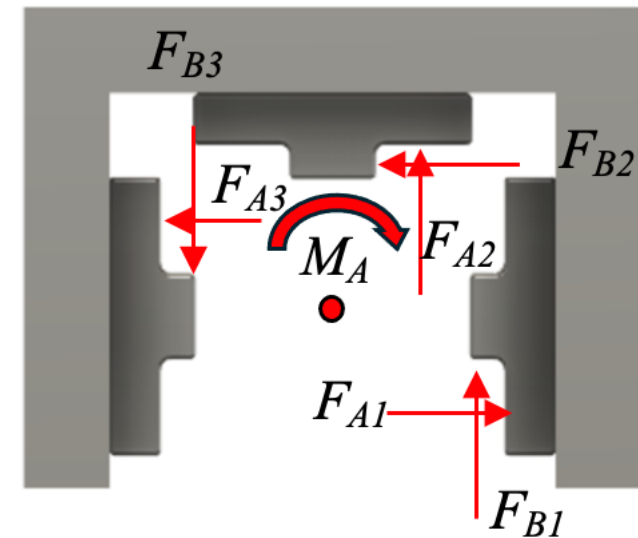
CLAMPS

- Top plate bending along length and width
 - FOS_i : 3.5
 - MOS: +0.18
- 1/4" bolts under 550 lbf load
 - Bolt preload found for joint separation FOS of 3.0
 - Yield FOS_i : 2.8
 - MOS: -0.06 ✖
- 3/8" next nominal size
 - FOS_i : 4.7
 - MOS: +0.58



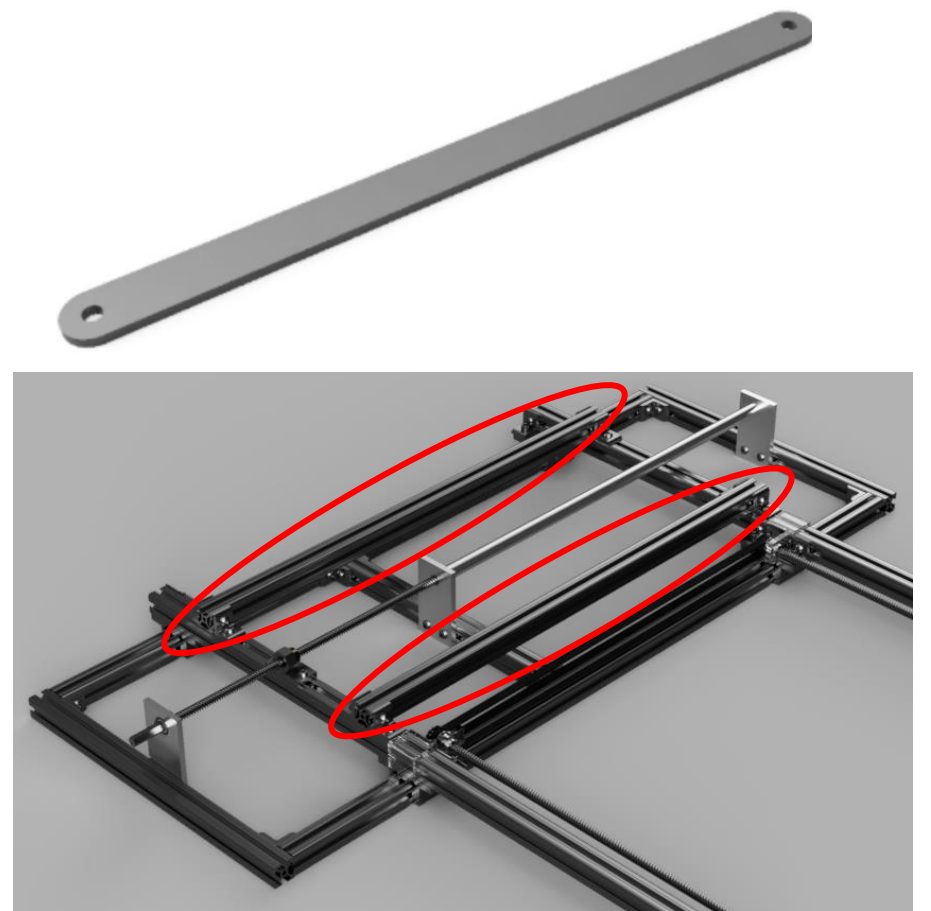
LINEAR BEARINGS

- Bearing pads most critical
- Shear forces generated by moment
 - FOS_i: 5.7
 - MOS: +0.9
- Middle bearings under 100 lbf load
 - Recommended load capacity of 200 lbf



OVERDESIGN

- Diagonal members
 - MOS: +85
- Horizontal stiffeners
 - MOS: +250
- Goals:
 - Reduce weight
 - Maintain stiffness



PERFORMANCE EVALUATION #1

RottWinder™ Hand Winch



Category	Level 0	Level 1	Level 2	Level 3	Level 4
Vertical Range of Motion (20 pts)	Achieves less than 50% of the full range (0 pts).	Achieves at least 50% of the full range (5 pts).	Achieves at least 80% of the full range (10 pts).	Achieves full range of 15-30 inches (15 pts).	Exceeds range of 15-30 inches (20 pts).
Load Support (15 pts)	25 pounds causes winch to break (0 pts).	25 pounds causes winch to slip (5 pts).	Supports 25 pounds with large deformations (9 pts).	Supports 25 pounds with small deformations (12 pts).	Supports 25 pounds consistently with no complications (15 pts).
Gear Ratio (10 pts)	Not functional or prohibitively slow (0 pts).	Functional but much lower than predicted gear ratio (4 pts).	Functional but slightly lower than predicted gear ratio (6 pts).	Matches predicted gear ratio (8 pts).	Exceeds predicted gear ratio (10 pts).
Rate of Travel (5 pts)	<0.5 inches per second (1 pts).	0.5+ inches per second (2 pts).	0.75+ inches per second (3 pts).	1+ inches per second (4 pts).	1.5+ inches per second (5 pts).

PERFORMANCE EVALUATION #2

DogHouse™ Frame



PERFORMANCE EVALUATION #2

DogHouse™ Frame



Before loading



During loading (~50 lbs)



After loading

PERFORMANCE EVALUATION #2

DogHouse™ Frame

Category	Level 0	Level 1	Level 2	Level 3	Level 4
Visual/Photographic Inspection (20 pts)	Broken components (0 pts).	Notable deformations (12 pts).	Minor deformations (15 pts).	Minor cosmetic damage (18 pts).	No visible damage or deformation (20 pts).
Structural Integrity (30 pts)	Frame does not remain functional (0 pts).	Frame remains functional with notable deformation (15 pts).	Frame remains functional with some deformation (20 pts).	Frame remains functional with low deformations (25 pts).	Frame remains fully functional and rigid (30 pts).

PERFORMANCE DEMONSTRATION



PERFORMANCE DEMONSTRATION

- Mounting and clamping demo
- Rottwinder™ lifting demo

LAPDOG™



LAPDOG™



DESIGN IMPROVEMENTS

- Lower, more accessible handles
- Quicker, easier connection to LiftLoop™
- Faster winches/lead screws
- Make frame assembly easier
- Make table attachment (clamping) easier
- Foldable assembly
- Reduce material in oversized components
- Overall housing

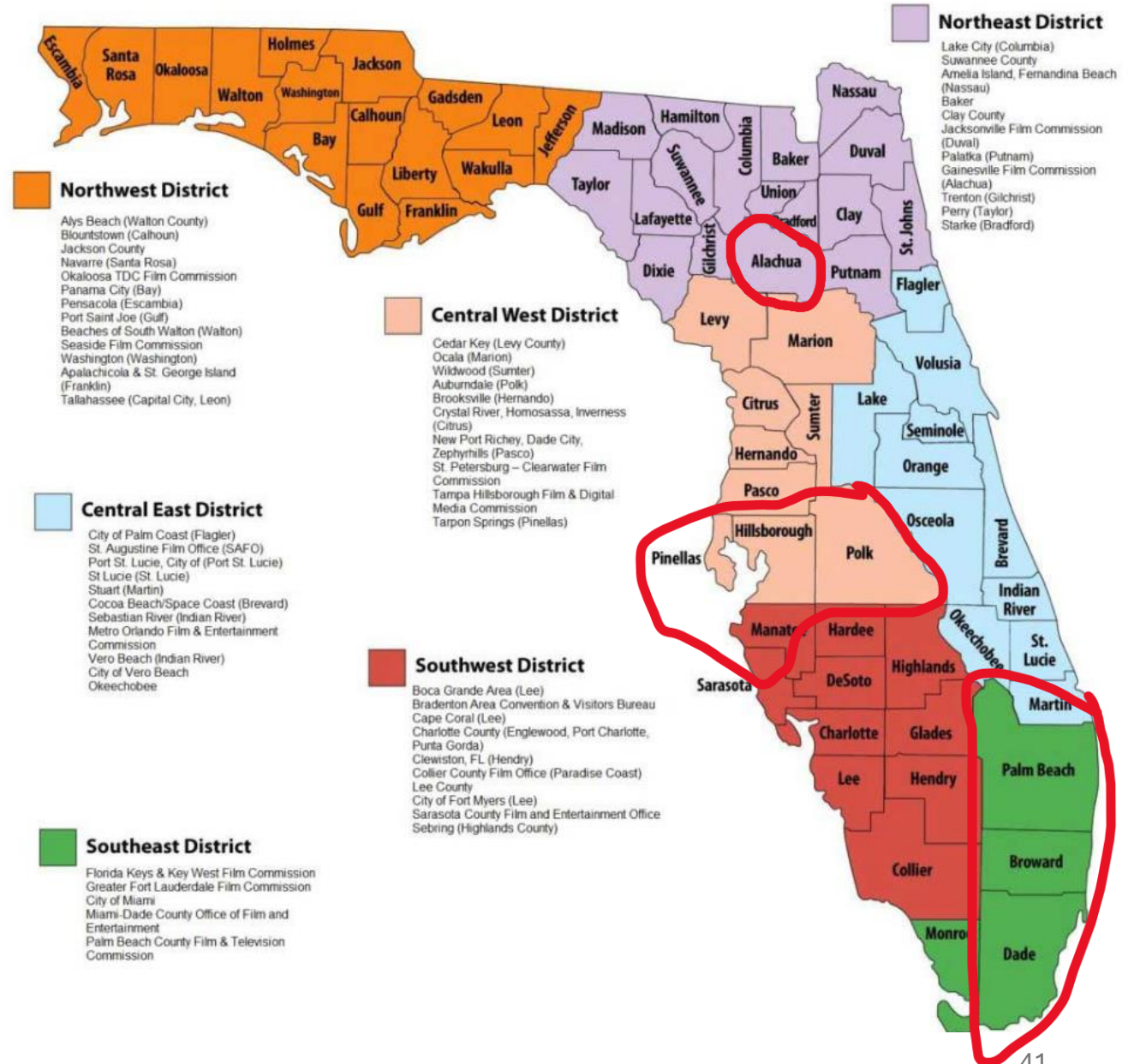
MARKET OPPORTUNITY

48,000

Total vet clinics in the country

2,400+

Vet clinics in the state of Florida



COMPETITION

Design Opportunity Map



2,250 USD

Manufacturability

Price

**featuring insufflation devices*



2,400 USD*

vetovation

40,000 USD*



7,800 USD*

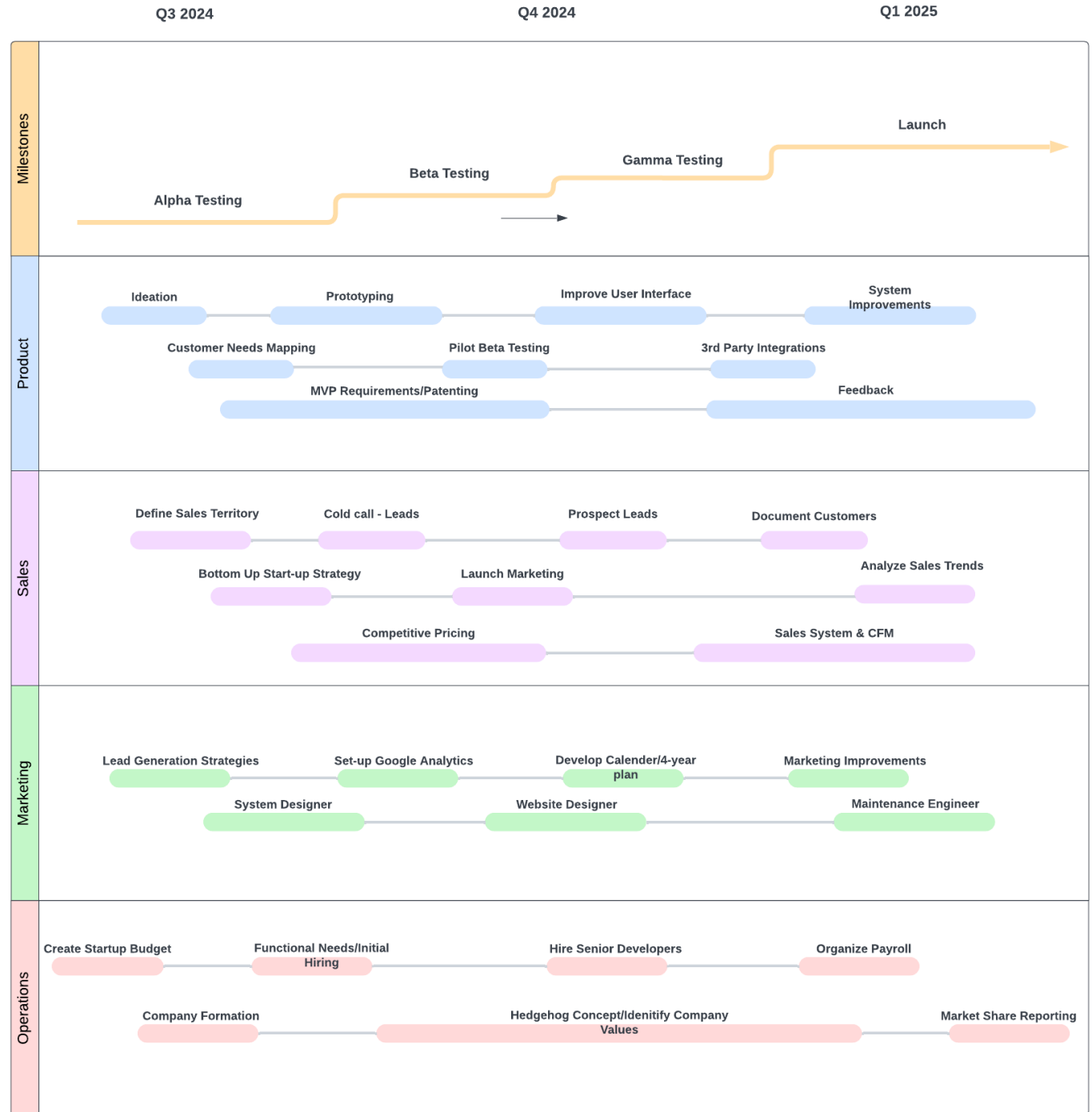
stryker®

19,140 USD*

COMPETITIVE ADVANTAGES

- A **blue ocean opportunity** in lift laparoscopy
- Abdominal wall lifting is **safer** for use in small animals
 - Also is **cheaper than insufflation**
- Raw materials are **under \$1,500**

TRACTION

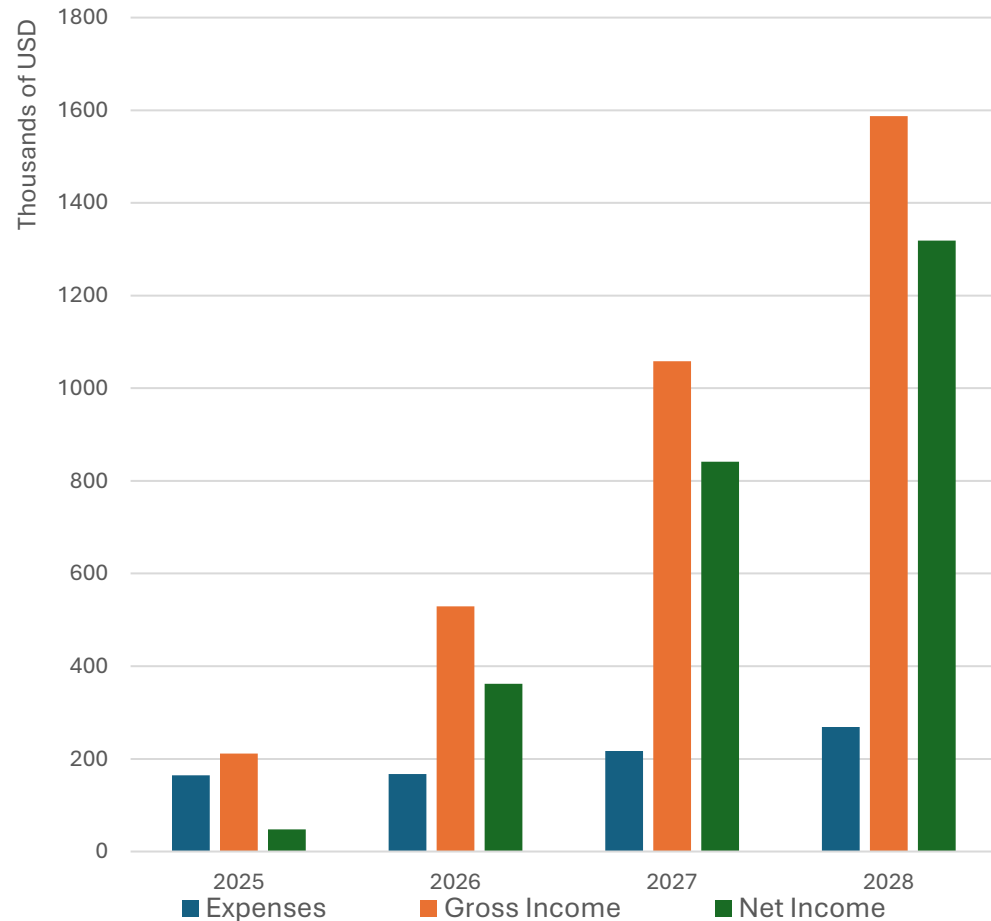


FINANCIALS

Expense	Cost (\$)
Raw Material – Single Unit	1,426*
Raw Material – Batch Order (10 Units)	12,154*
3D Printers (20)	22,780
Mill/Lathe (2)	10,000
MIG Welder	1,000
Equipment Total	33,780
Single Unit Total	35,206
Batch Total	45,934

*40%-50% of raw material cost is associated with T slot linear bearings and corner brackets. We plan to 3D print the linear bearing housings in the future and can attempt to find a cheaper method of manufacturing the corner brackets ourselves, potentially reducing material cost drastically.

FINANCIALS



	2025	2026	2027	2028
Revenue	210,000	530,000	1,100,000	1,600,000
Expenses				
Labor	45,000	92,250	142,000	200,000
Marketing	25,000	25,000	25,000	25,000
Office	50,000	50,000	50,000	50,000
Equipment	34,000	0	0	0
Business	160	0	0	0
Patents	10,000	0	0	0
Total Expenses	130,160	167,250	217,000	275,000
Net Profit *Before Taxes	79,840	362,750	883,000	1,325,000

INVESTMENT

- Seeking \$150,000 investment
 - Creating 10 DogHouse™ units
 - Testing of these units in clinics around FL
 - Establishing a shop with 3D printers, mill, lathe, and MIG welder



LAPDOG™

