Bir Shrestha Jahangir X1 Remotely Operated Vehicle (ROV) ROBOT for Improvised Explosive Device Disposal (IEDD) Operation

Objective

- Build a military usable ROV Robot Platform for IEDD operation
- Future development goal for design/reuse n other military operation.
- Specific focus of the current project is the Medium Robot Platform of IEDD Robots.

Project Overview

- The design, drawing and development through indigenous method of the ROV Robot platform is the first step by Bangladesh Army with a view to create a Military Grade Robot building capability in Bangladesh.
- It will also lessen the foreign technological dependency of Bangladesh, especially in security and defense sector.

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Scope of the Project

- Understanding the capability of indigenous development of ROV platform.
- Understanding Strength & Weakness
- Acquiring knowledge for future improvement and development.
- Creating capabilities for future different military Robots.

Important Specifications

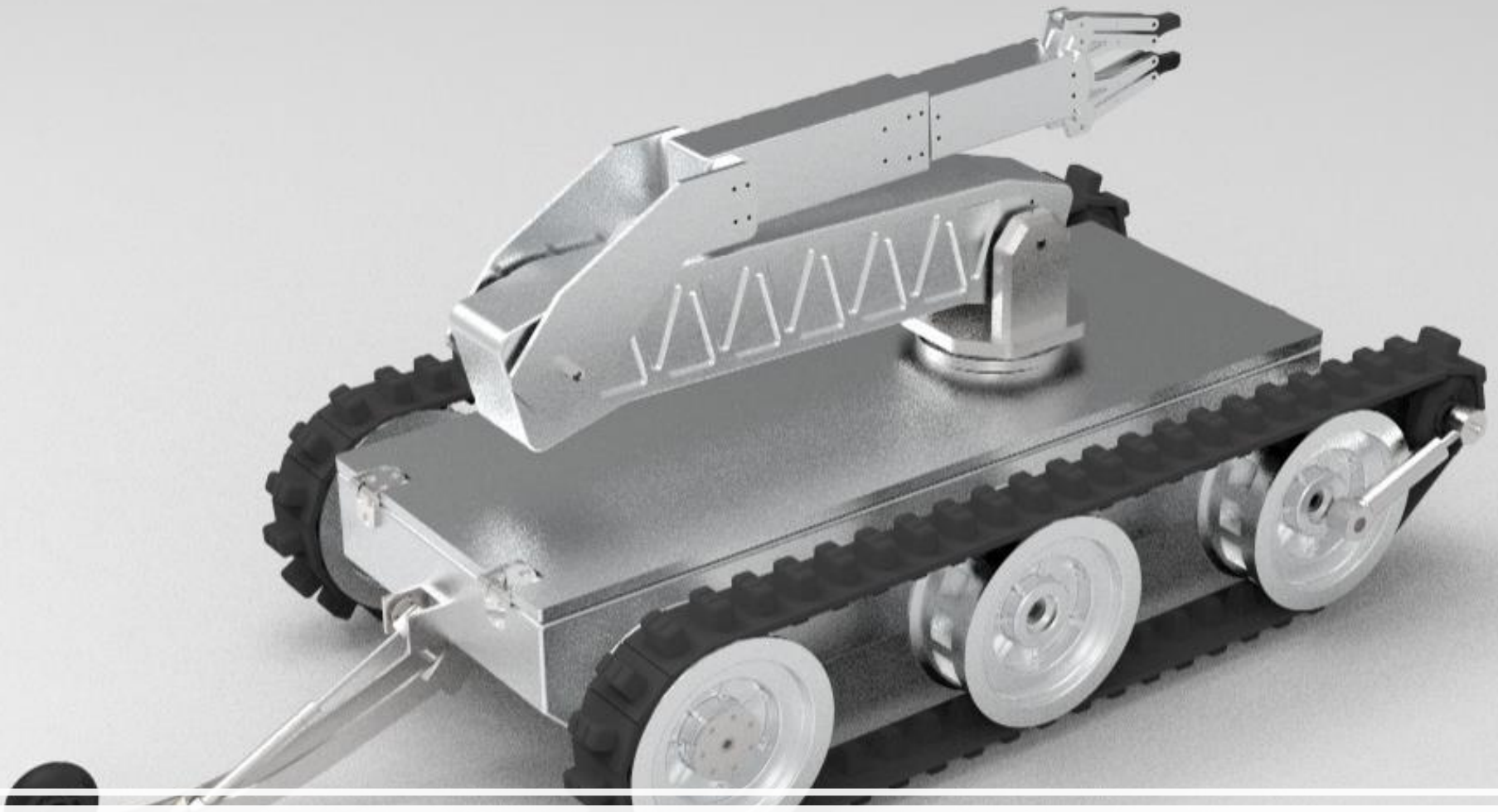
Description	Technical Specification
Drag /Towing Capability	Minimum 45 kg
Pay Load	Minimum 25 Kg with arm at standard position Minimum 8 Kg with arm at fully extended position
Ground Clearance	Minimum 8 cm
Obstacle Clearance	
a. Stairs	Minimum 40°
b. Slopes	Minimum 40°
c. Slide Tilt	Minimum 30°
Speed	Minimum 3 km/hour
Standard Manipulator Arm	
a. Degree of Freedom	5 DOF
b. Turret	0° - 240° (Minimum)
c. Shoulder	0° - 180° (Minimum)
d. Elbow	0° - 200° (Minimum)
e. Wrist	0° - 300°
f. Gripper Width	130 mm (Minimum)

Important Specifications

DESCRIPTION	TECHNICAL SPECIFICATION
Camera	
a. Description	4 Cameras (Front Camera, Rear Camera, Claw Camera, Pan-Tilt Camera)
b. Detailed Configuration	All Cameras are 0.38 Megapixels CMOS Camera (Minimum).
Night Operation	Front and Rear High Luminosity LED Lights for Night Operation.
Mission Endurance	
a. Battery (Type, No, Volt and Capacity)	2 x 10 Ah VDC Lithium Ion Rechargeable Battery
b. Battery Backup Time	2-4 hours (In all operation condition)
c. Recharge Time	4 hours
d. Charger for Battery	Will be provided
Operating Range with Remote	Minimum 300 meters in Line of Sight

Important Specifications

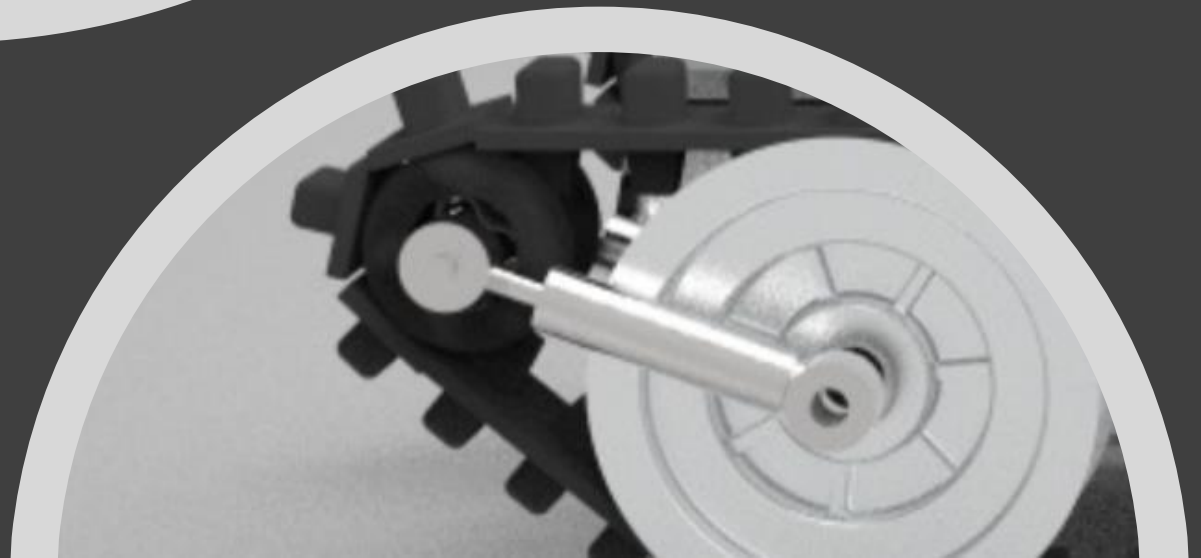
DESCRIPTION	TECHNICAL SPECIFICATION
Operator Control Unit	
a. Control Unit to Operate Robot	Will be provided
b. Multi-Functional Control	Variable Speed Joystick
c. Day light readable LCD screen	Configuration to be mentioned
d. Display	HD High Brightness
e. RF System	Data and Video Wireless System
f. Video jack output to auxiliary monitor	To be provided
g. Audio output and MP3 audio input (Optional)	To be mentioned
h. Casing	Robust and Mobile Operation Case
i. Battery Status Indicator	To be provided
j. Battery (Type, No, Capacity and Volt of Control Unit)	1 Qty-Built-in, 12V 10 Ah Lithium Ion Battery. CCU Battery is not field replaceable.
Continuous Operational Time with Full Pay Load	2 hours



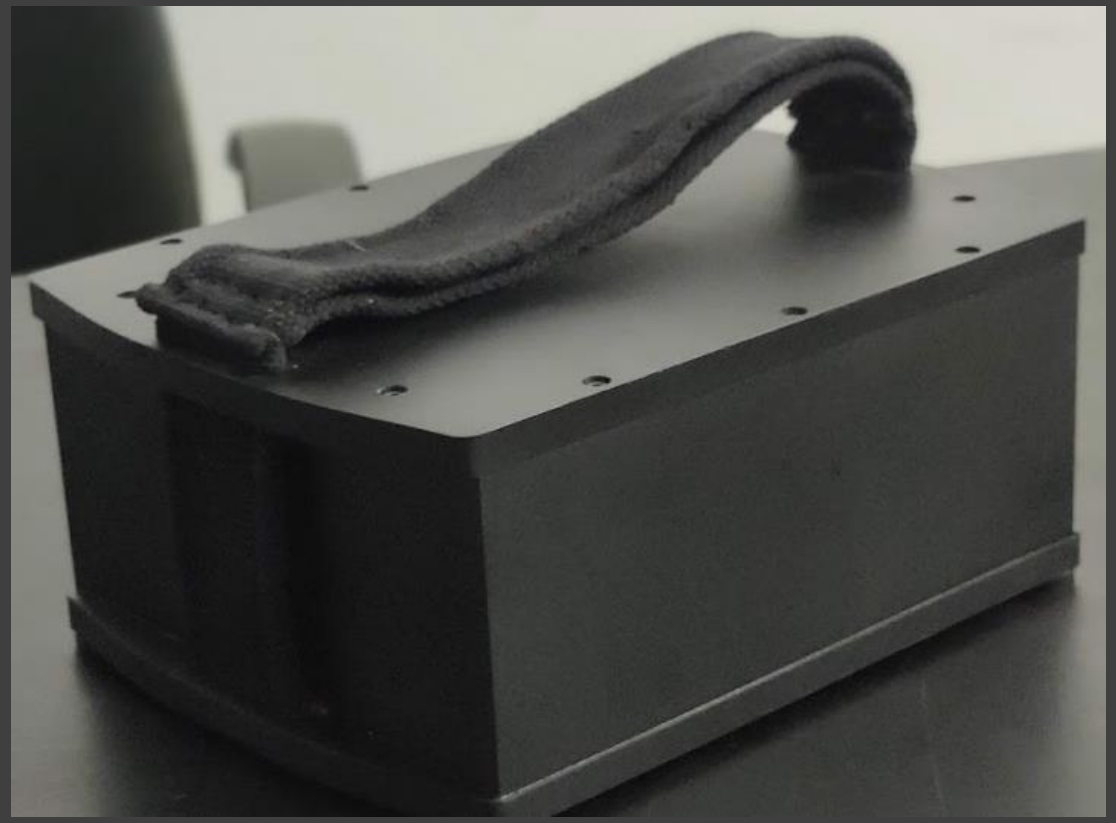
BSJX1: Bir Sreshtha Jahangir X1 EOD Robot

Dynamic Tensioning Arm

- Increase the attack position of the belt.
- Smooth Stair Climbing Ability
- More obstacle clearance ability
- Tested for 7.5 inch stair step



Custom Designed 48 V 10 Ah Battery



Single press stop switch

4 Cameras:
a. Front
b. Rear
c. Arm
d. PT Camera

Front and Rear High Luminosity Light

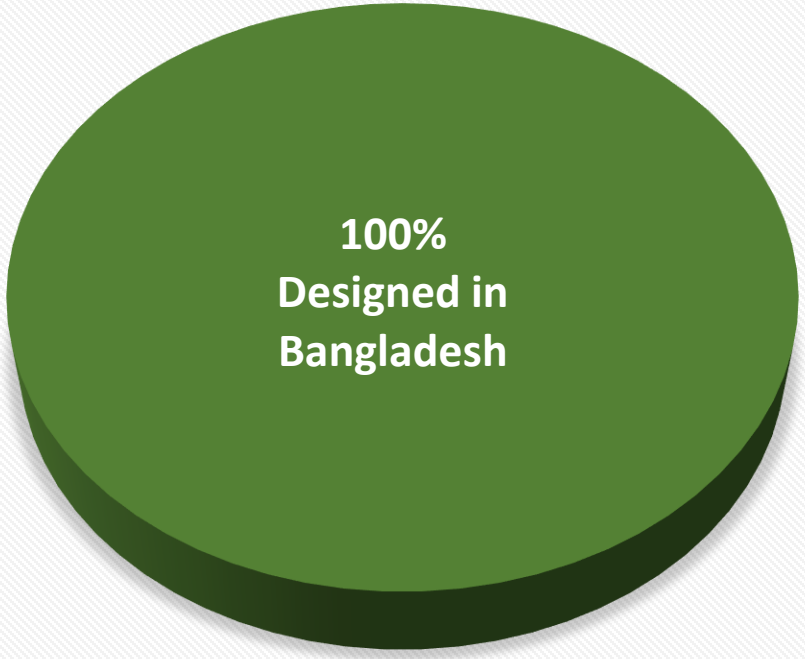
Portable Command and Control Unit

Features

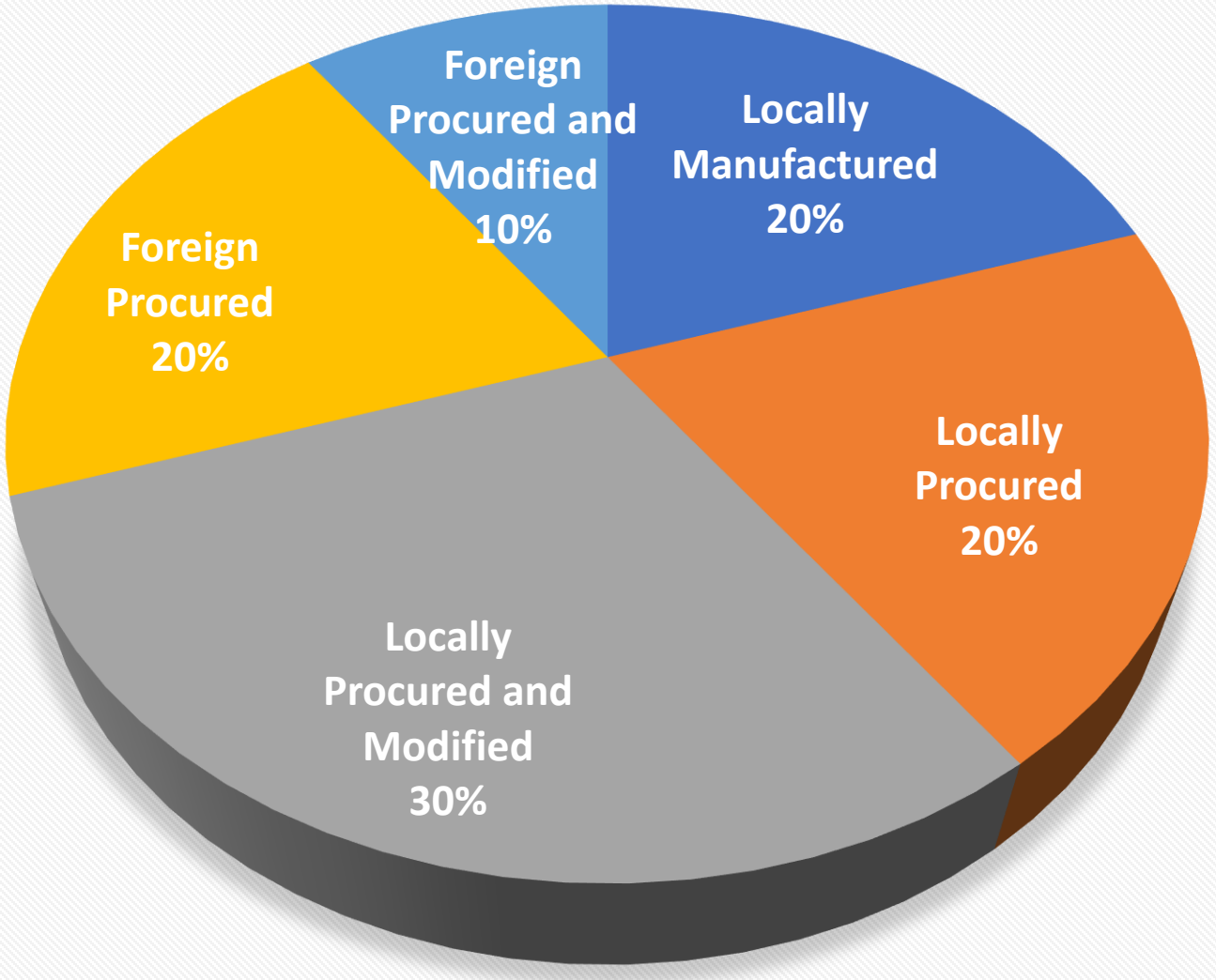
Lift Capacity (Arm Retracted)	25 Kg
Lift Capacity (Arm Extended)	8 Kg

Features

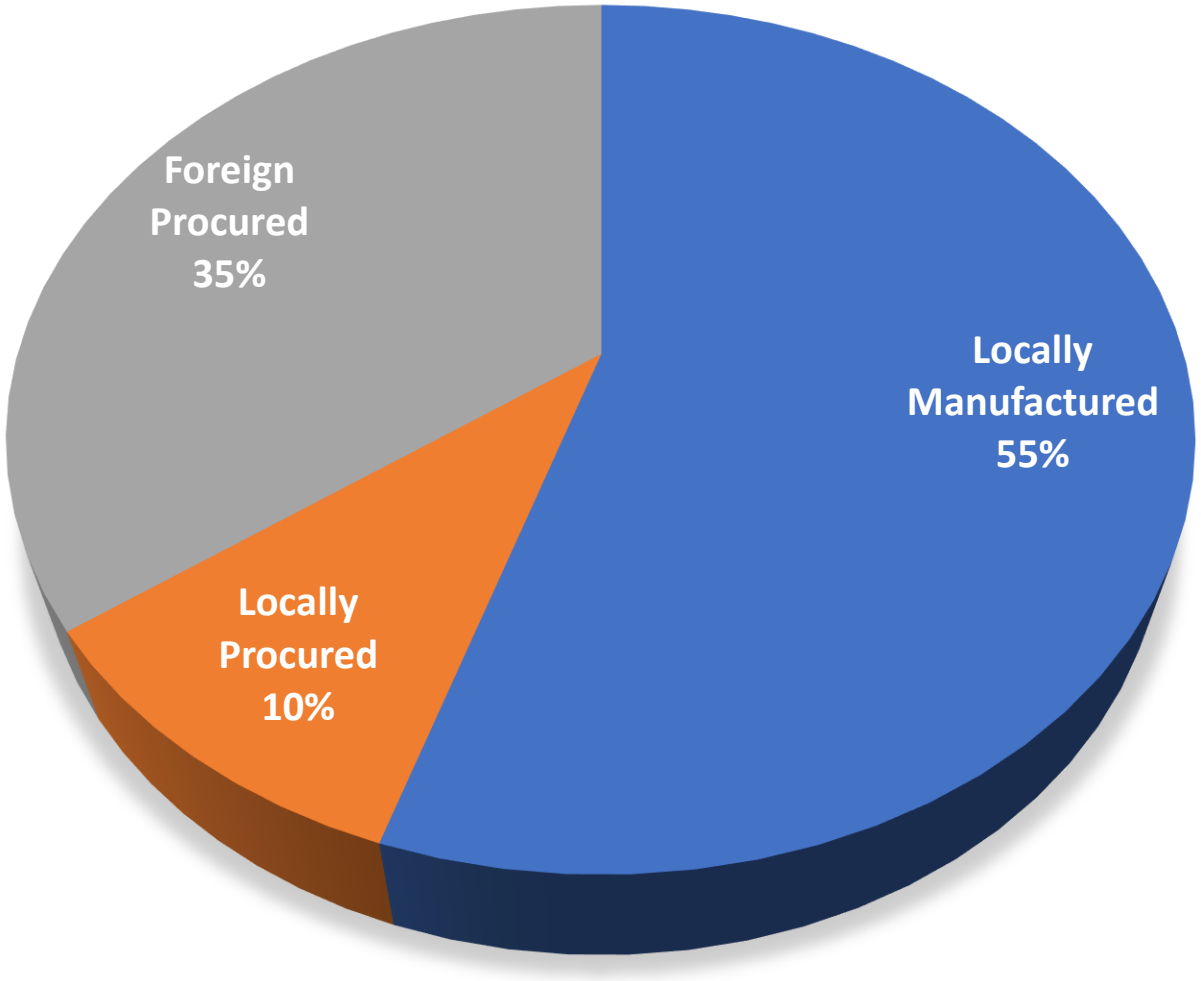
Stairs	**Minimum 40°**
Slopes	**Minimum 40°**

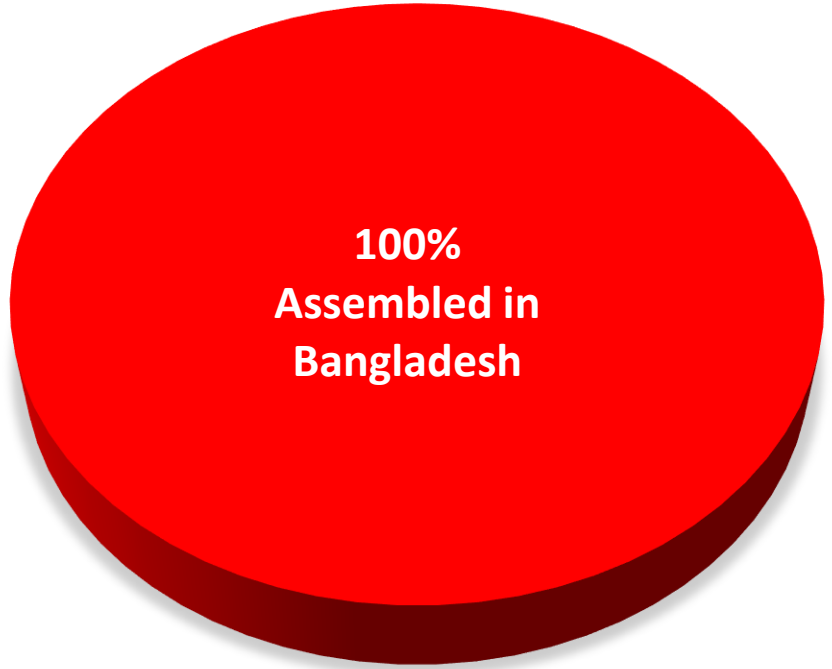


Electrical and Electronics Parts



Mechanical Parts





Challenges Faced: Material

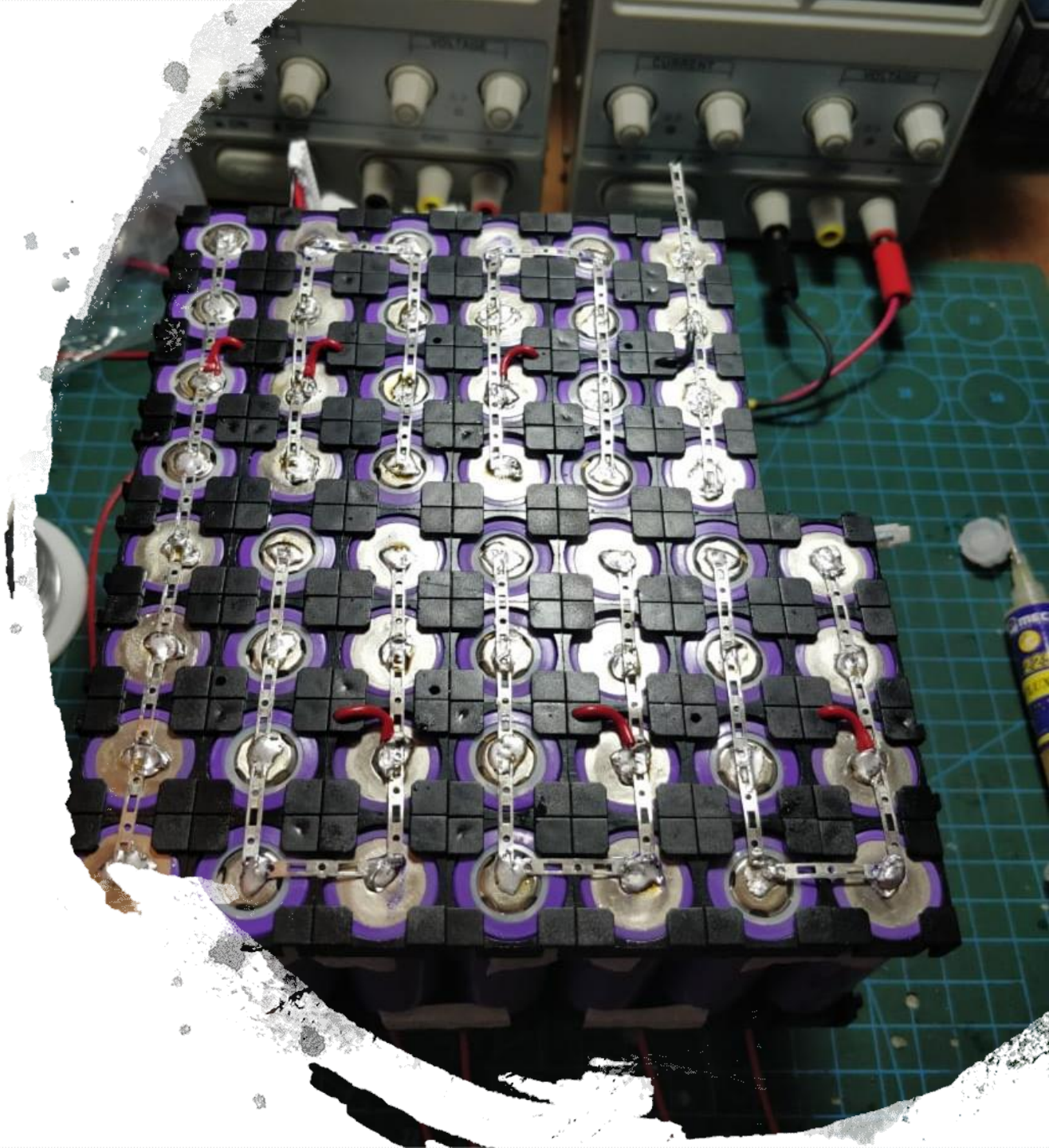
- Unavailability of Proper Material
- Lack of Material Knowledge in the local market

Challenges Faced: Fabrication Facility

- Very few options for Machining
- Long Queue Time
- Lack of operators in Educational Institutes

Challenges Faced: Local Procurement

- Less Number of Options
- Quality Assurance



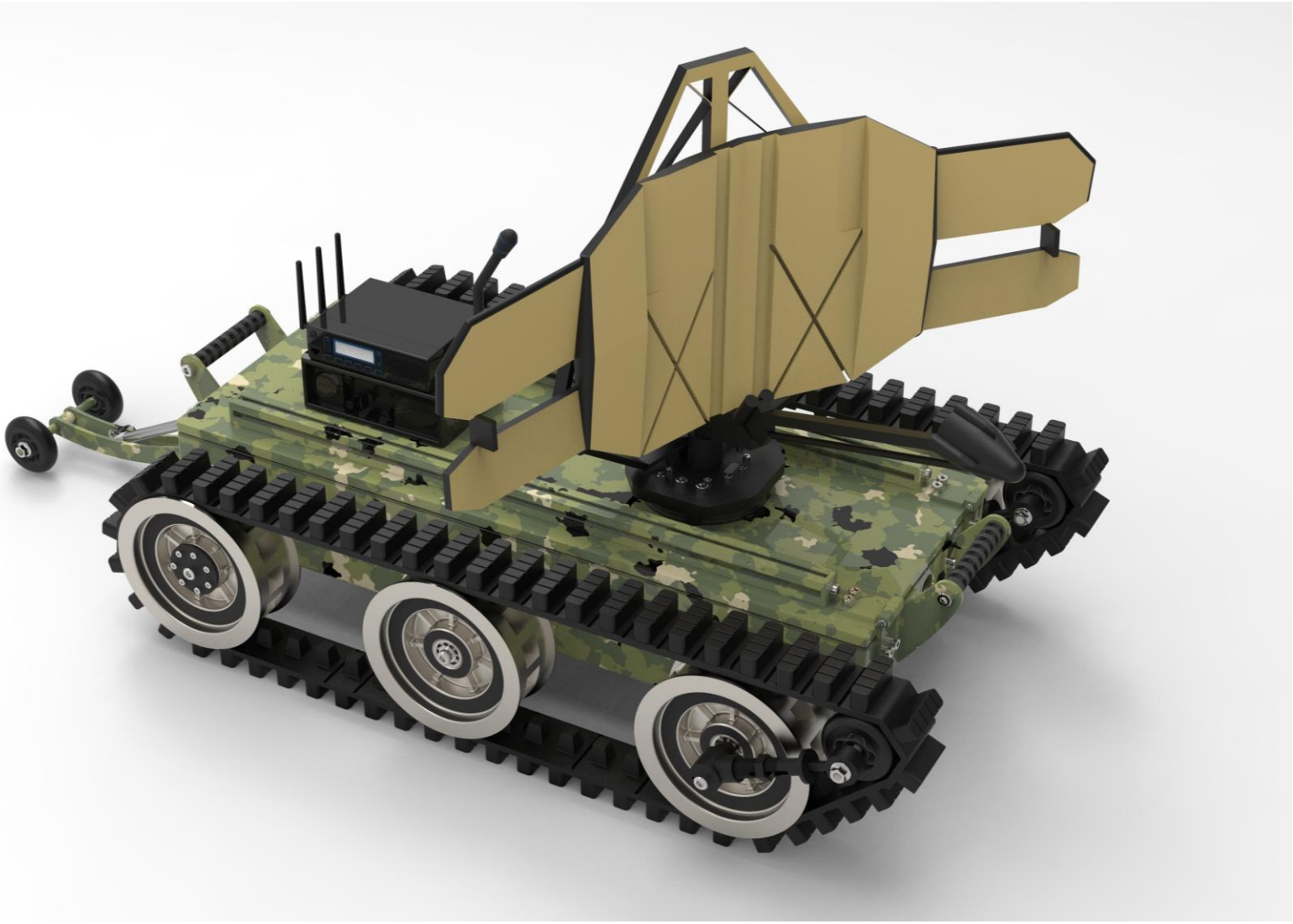
Challenges Faced: Foreign Procurement

- High Lead Time
- Quality Assurance

Future Possibility

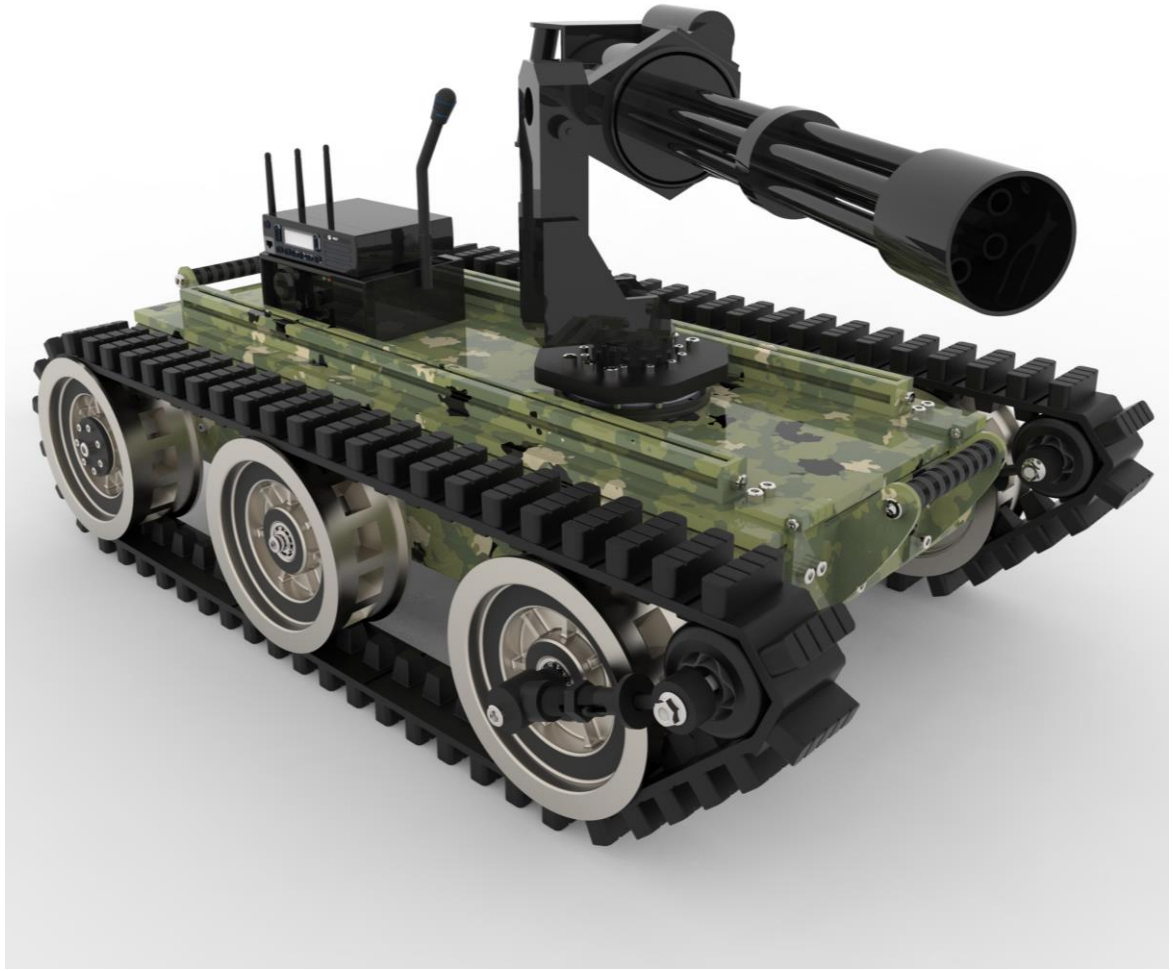
- Enhanced capability with overcoming shortfalls for current EOD Robot.

Future Possibility: Spy Robot



Future Possibility: Radar Carrier

Future Possibility: Arm with Disruptor



Future Possibility: Firearm Carrier

Future Possibility: Ammo box Carrier

Thank You