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## The Future of Vegetation Management & Field Analytics

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# Executive Summary

- ❑ A better solution...half the cost, fully automated & environmentally friendly.
- ❑ Advantage...first-to-market, channel strategy & patent barrier.
- ❑ Experienced industry executives...lived the frustration and developed a better solution.
- ❑ Actively serving customers...under contract, **potential over \$330M first year & \$100M recurring revenue**
- ❑ **US utility scale solar expected to grow 6x by 2030**
- ❑ Serving a large addressable market – TAM > \$250B; SAM > \$30B; SOM > \$5B

# Voice of the Customer

## Cost

- ☐ Up to 60% of plant OPEX and increasing
- ☐ Unpredictable labor costs - difficult to model
- ☐ Exceeding budget - \$100 - \$150/cut/acre

## Complexity

- ☐ Labor difficult to find & unreliable
- ☐ "Spend too much time on something so basic"

## Environment

- ☐ Critical to site performance - albedo, erosion
- ☐ Current solutions are polluting







# Renu Robotics' Answer

## Cost

- ☐ Cost average \$35 - \$60/acre/cut
- ☐ Fixed costs for 5 years

## Complexity

- ☐ Fully autonomous
- ☐ No Hassle/Dependable
- ☐ Low profile & programmable
- ☐ Mowing at night

## Environment

- ☐ Customer performance reports
- ☐ Carbon-free operation
- ☐ Environmental monitoring

# Renubot Gen 3 - Mowing & Data Collecting

## AUTONOMOUS

Renubot operates from a stored site map, following paths while safely handling obstacles.



## RTK POSITIONING

Real Time Kinematic GPS positioning provides horizontal accuracy within 2 cm.



## SENSOR DATA

Combining multiple sensors; ensures the robot knows its surroundings; Tactile, Lidar, Cameras & More.



## LITHIUM-ION BATTERIES

Uses the latest battery technology to reduce weight, increase storage, and provide fast charging.



## 1 Patent Issued - 17 Pending



## ROBUST SOFTWARE

Uses industry-leading Robotic Operating System (ROS) open source framework, which enables robust, cutting edge features and capabilities.



## SELF CHARGING & UPDATING

Renubot returns itself to the docking bay, charges, performs automated checks, updates, & uploads data.



## AI/MACHINE LEARNING

Renubot improves its tasks through experience to maximize efficiency and performance..



## WIRELESS DATA

Continuous information available on progress, status, maintenance, new object recognition, and security.



# Mission Control

- ❑ Highly profitable RaaS model
- ❑ Monitors robots and reports performance & provides eyes on site
- ❑ Shifts mowing from a burden to a customer value
- ❑ Add new capabilities for solar field analytics

The screenshot displays the RenuBot Mission Control interface, titled "Mission Control > RenuBot View v2". The interface is divided into several sections:

- Top Bar:** Includes "RenuBot Dev Access production", user "Scott", and "Realtime - last 5 minutes".
- Left Panel:** Shows "Discharging" status with a VDC bar (57) and "BATTERY STATE" bar (83%). It also lists "Current state", "Available States", and "Drive State".
- Center Panel:** Displays "Stopped - Not Docked", "E-Stop Status", "Disengaged", and "Remote Operation Not Active". It includes toggle switches for "Remote Control" and "bump stop override", and "Mowers on?" and "lidar active?" status indicators.
- Right Panel:** Features a large red "Stop RenuBot" button and a "Realtime - last 7 days" log table.
- Bottom Left:** A map view showing a field with a red boundary and a black robot icon.
- Bottom Right:** A calendar view for "27 June 2021 - 07 August 2021" with a grid of dates and tasks like "Mow...", "first 8 rows", "TEST", "secti...", "block...", "Inver...", and "Block...".
- Bottom Bar:** Contains various control buttons like "Left Live", "Left Still", "Left OFF", "Rear Live", "Rear Still", "Rear OFF", "Front Live", "Front Still", "Front OFF", "Right Live", "Right Still", "Right OFF", "Cost Map On", "Costmap OFF", and a "SHIFT key + up/down/right/left" instruction.

Timestamp	/call_home.ros_message.message	/call_home.ros_message.reason
2021-07-16 12:08:08	acknowledged	ERROR state timeout
2021-07-16 11:40:45	acknowledged	Mowers not at commanded speed.
2021-07-16 11:38:05	acknowledged	Stopped for obstacle
2021-07-15 22:54:04	acknowledged	Charging stopped
2021-07-15 18:52:33	acknowledged	Charging started
2021-07-15 14:47:00	acknowledged	Charging stopped
2021-07-15 14:31:31	acknowledged	Charging started



# ADVANCING THE **VALUE** OF DATA

## **Renubot Mower**

Mowing Performance  
Problem Identification

## **Inspection-bot Security-bot**

Panel performance  
Site issue ID

## **Soil Sensing-bot Panel cleanliness Irradiance**

Erosion detection  
Environmental Tracking  
O&M Scheduling

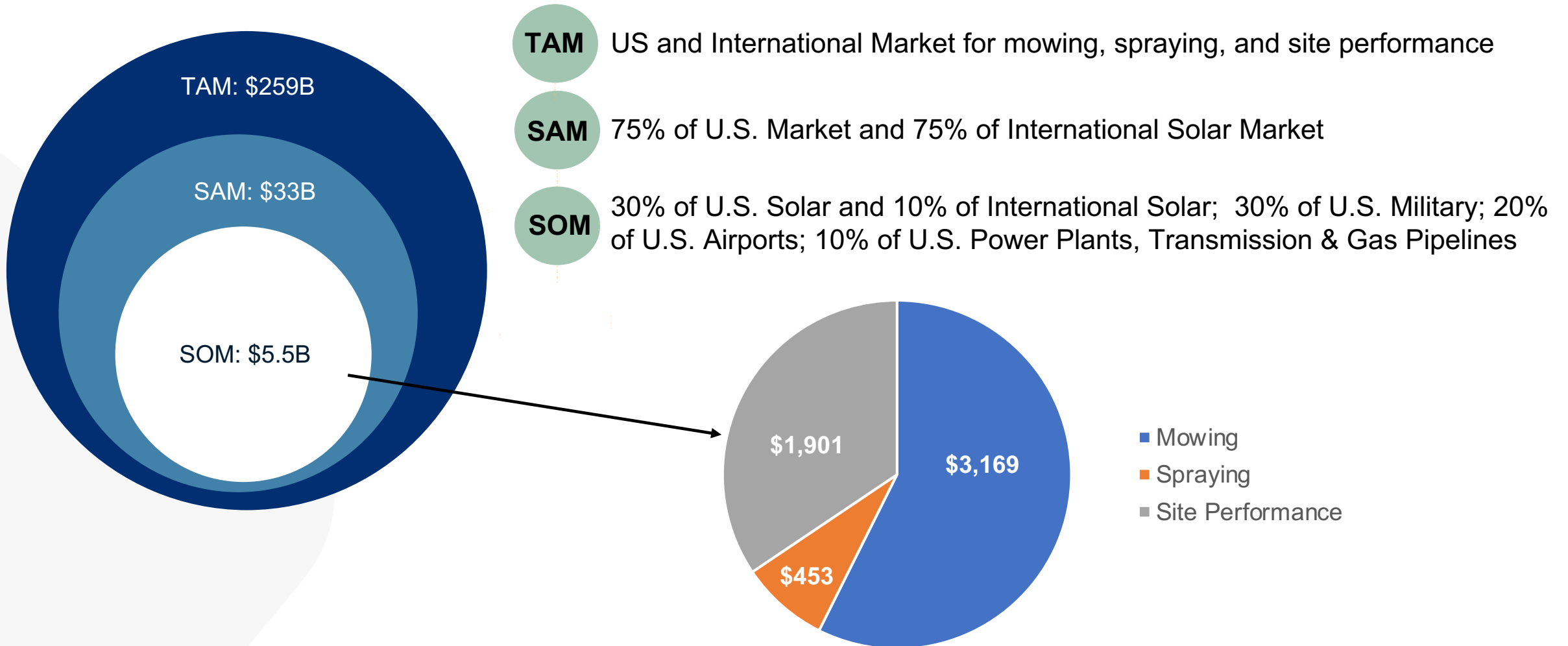
## **Data rover Virtual O&M**

## **DIGITAL TWIN**

- Current flows, voltages, panel output
- Facility performance vs. expectations Location specific data collection
- O&M site management

# Target Market

## Solar, Military, Airports, Power Plants, Transmission & Gas Pipelines





# CUTTING GRASS AND SLICING BUDGETS



[WWW.RENUBOT.COM](http://WWW.RENUBOT.COM)



