Liberty Reach

GUIDING INNOVATION

Matthew Somerville
810-220-9467
msomerville@libertyreach.com

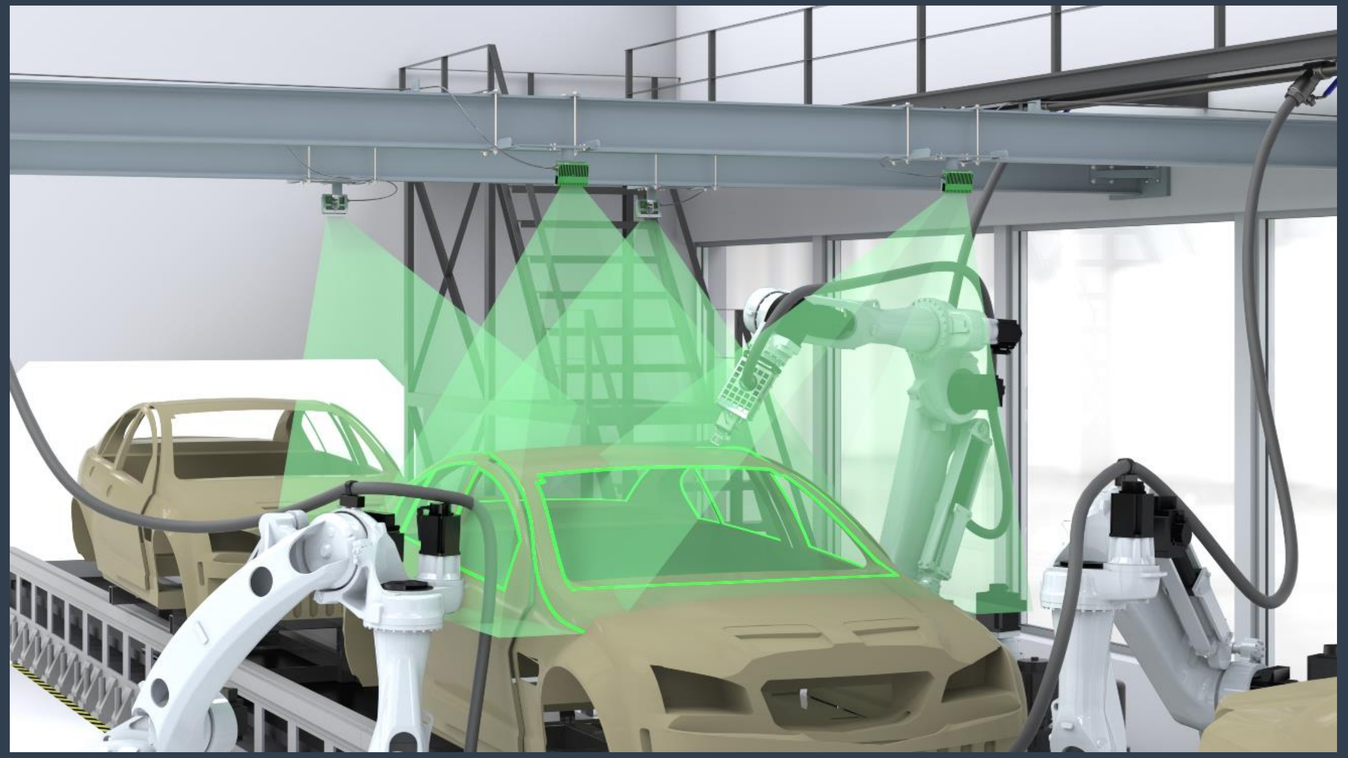
Implementing the Next Generation of Automation

> I know that together, we have made a significant contribution to a machine that builds the machine, which without your technology, building our product would not have been possible.
>
> -OEM Electric Car Manufacturer

Since 2005, Liberty Reach has specialized in Robotics and Artificial Vision, for both the automotive and aerospace industries. With over 200+ years of combined experience in the machine vision industry, our staff delivers the most robust solutions for industrial automation guidance. Our technology utilizes high-performance volumetric and two-dimensional sensors in the visible, and non-visible spectrums. This results in advanced robotic control techniques.

VFix™ & V-Guide™

Robotic Volumetric Guidance



01 Sensor utilizes point cloud data to fit the object's measured data against a reference model, allowing for lightning fast, reliable calculations

02 Not susceptible to ambient lighting, part color, or reflectivity – no external lighting required

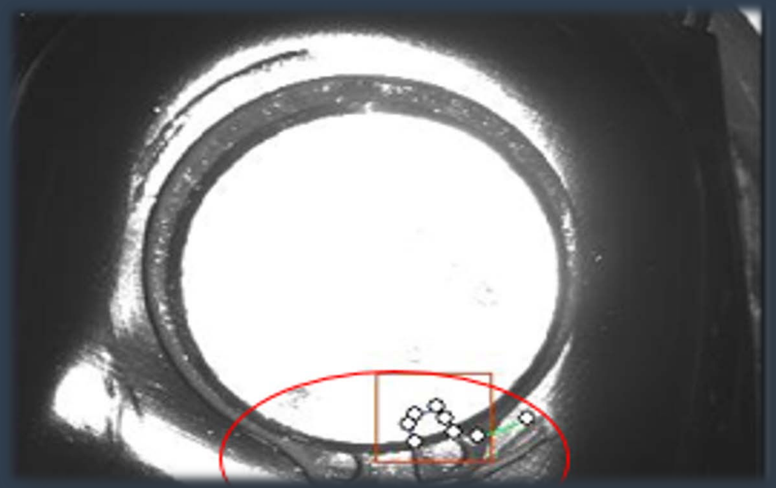
03 Does not utilize features like holes or edges, allowing for larger positional movements of the part

04 Utilizes a "single snapshot" to gain a full (6)-DOF offset, sent directly to the robot or PLC

Liberty Reach
Guiding Innovation

Why Choose Liberty Reach?

2D/Inferred 3D Systems



Uses discrete features (holes, edges, etc.)

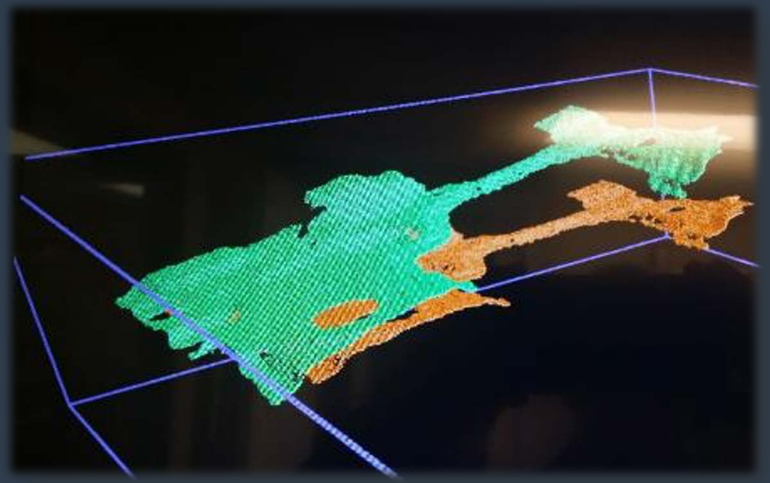
Limited FOV; large shifts cause faults

Susceptible to lighting and contrast variations

Requires multi-point measurement (long cycle time)

Complex registration and programming process

What V-Guide Sees (True 3D)



Uses a comprehensive view of the part

Large FOV; handles extremely large part shifts/rotations

Near infrared spectrum, no effect from ambient light

Single-snapshot, under 1 second cycle time

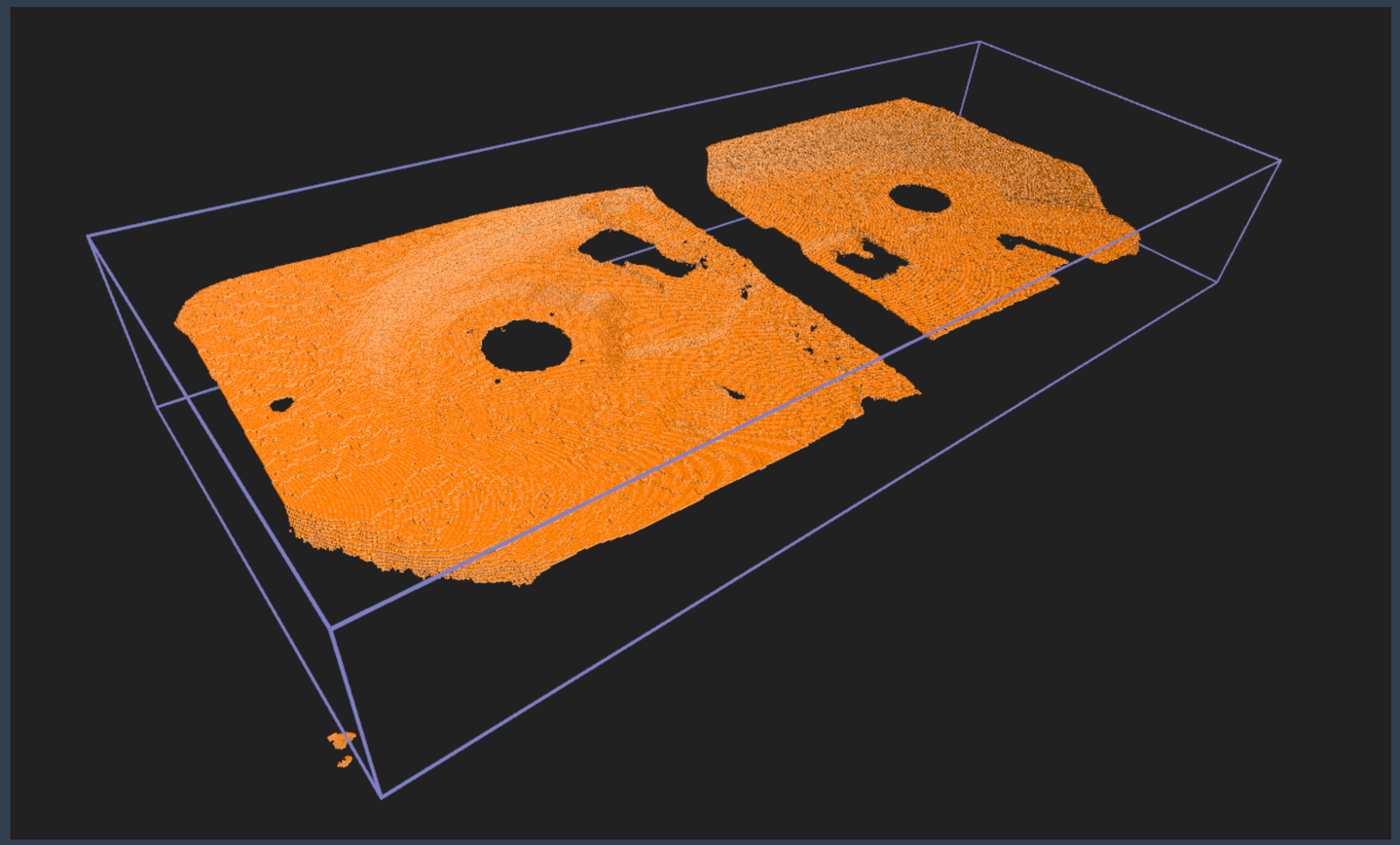
Simple and user-friendly install, setup and recovery

Ability to handle “part flex” (plastic and sheet metal)

Liberty Reach
GUIDING INNOVATION

VFix™ & V-Guide™

Robotic Volumetric Guidance

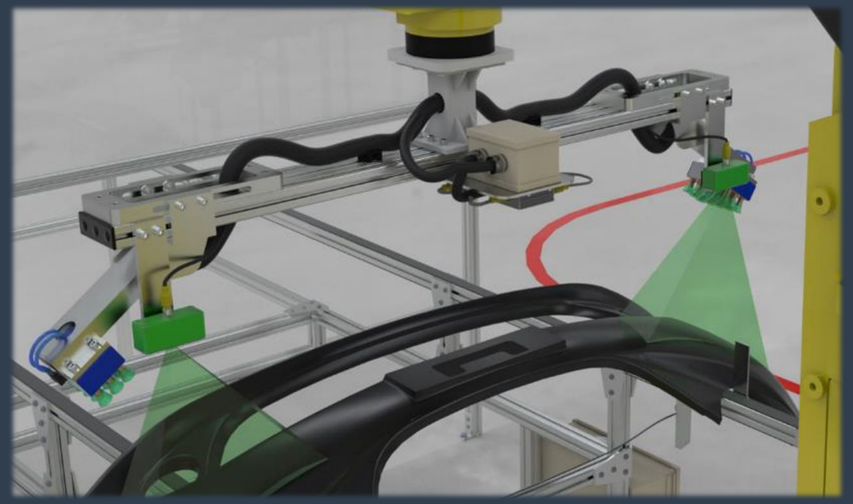


- Offsets are generated from a single sensor or multiple sensors for larger parts
- Massive samples of data points (Voxels) are used in the calculation
- System capable of generating an accurate offset with only a percentage of the part visible to the sensor

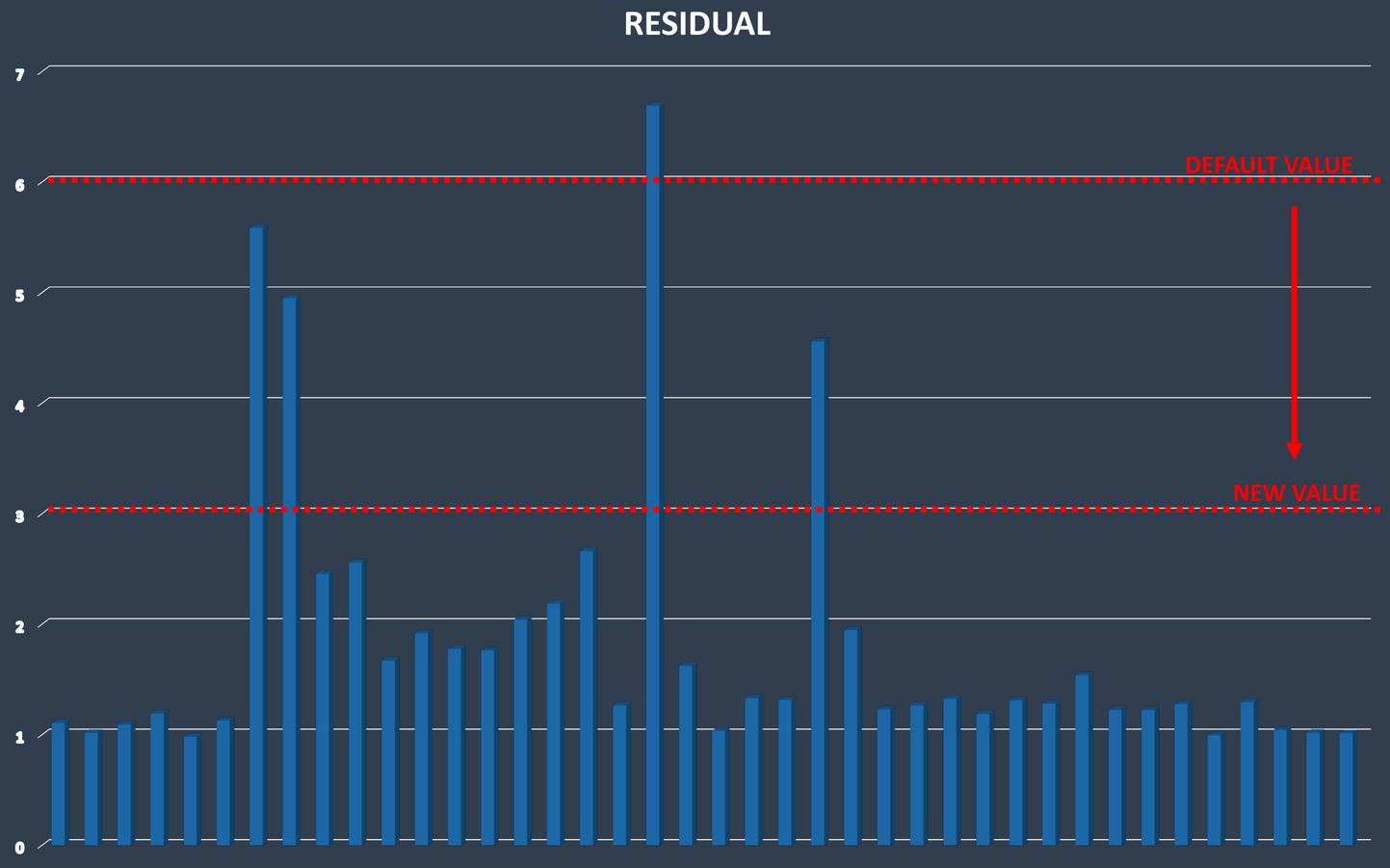
Liberty Reach
Guiding Innovation

VFix™ & V-Guide™

Part Flex



- Part flex is seen in Plastic, Sheet Metal, and most Large Parts
- Residual is a measure of sample-part deformity compared to the trained reference part
- Residual Value is an adjustable software parameter within VFix and V-Guide
- This allows customers to use the software to set acceptable part flex and flag possible out-of-tolerance parts



Liberty Reach
Guiding Innovation

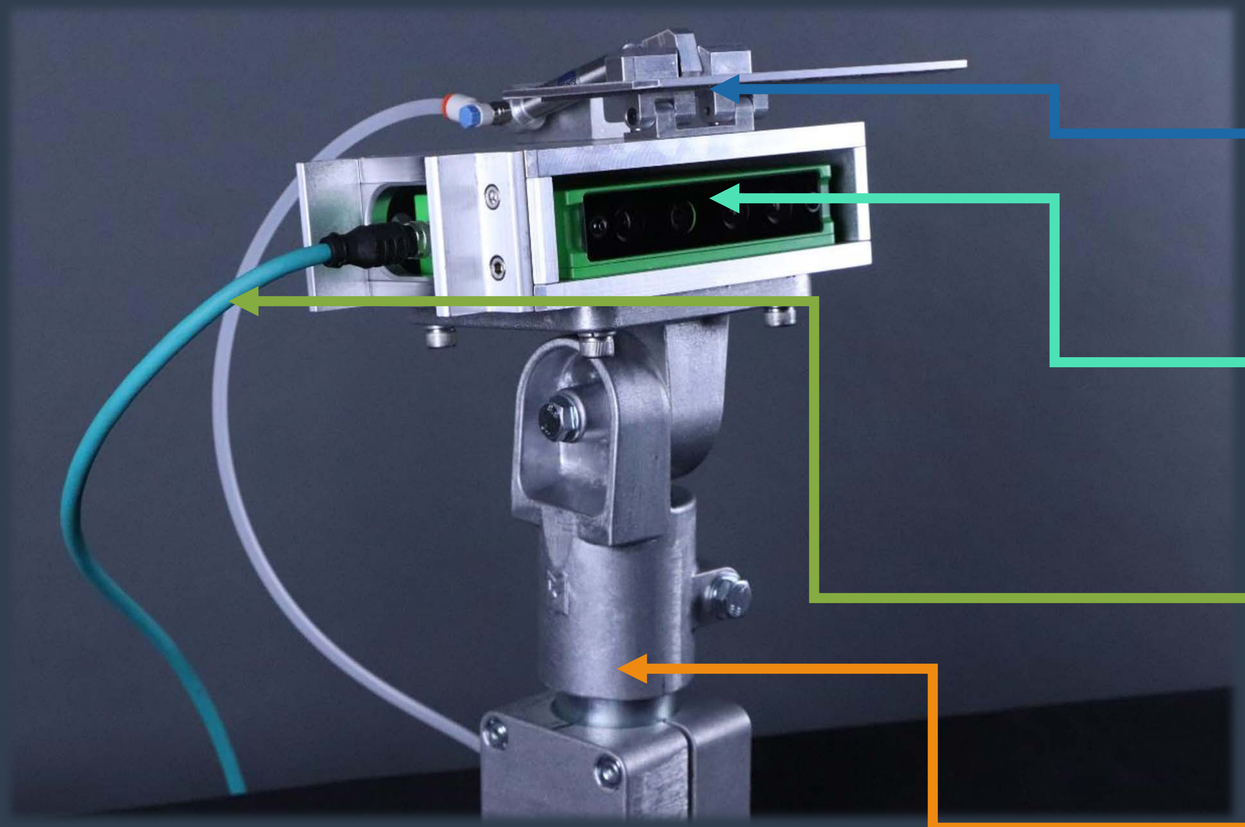
Sensor Model

Robot Mounted or Stationary (VSx)

- Specs
  - 1.5 kg
  - 124mm x 28.5 mm x 86.8 mm
- Power over Ethernet (POE) GigE
- Sensor to part distance = 350mm – 1500mm
- Single-cable Data and Power Xcode connection
- Large field of view and variable depth range enable capture of varied parts
- IP65 Protective Rating

Liberty Reach
Guiding Innovation

Plant-Ready Hardware



01

Heavy-duty modular case protects sensor and allows for additional modules added post-installation (Shutters, Filters, etc.)

02

IP65 rated sensor ready for plant-floor use in a variety of environments

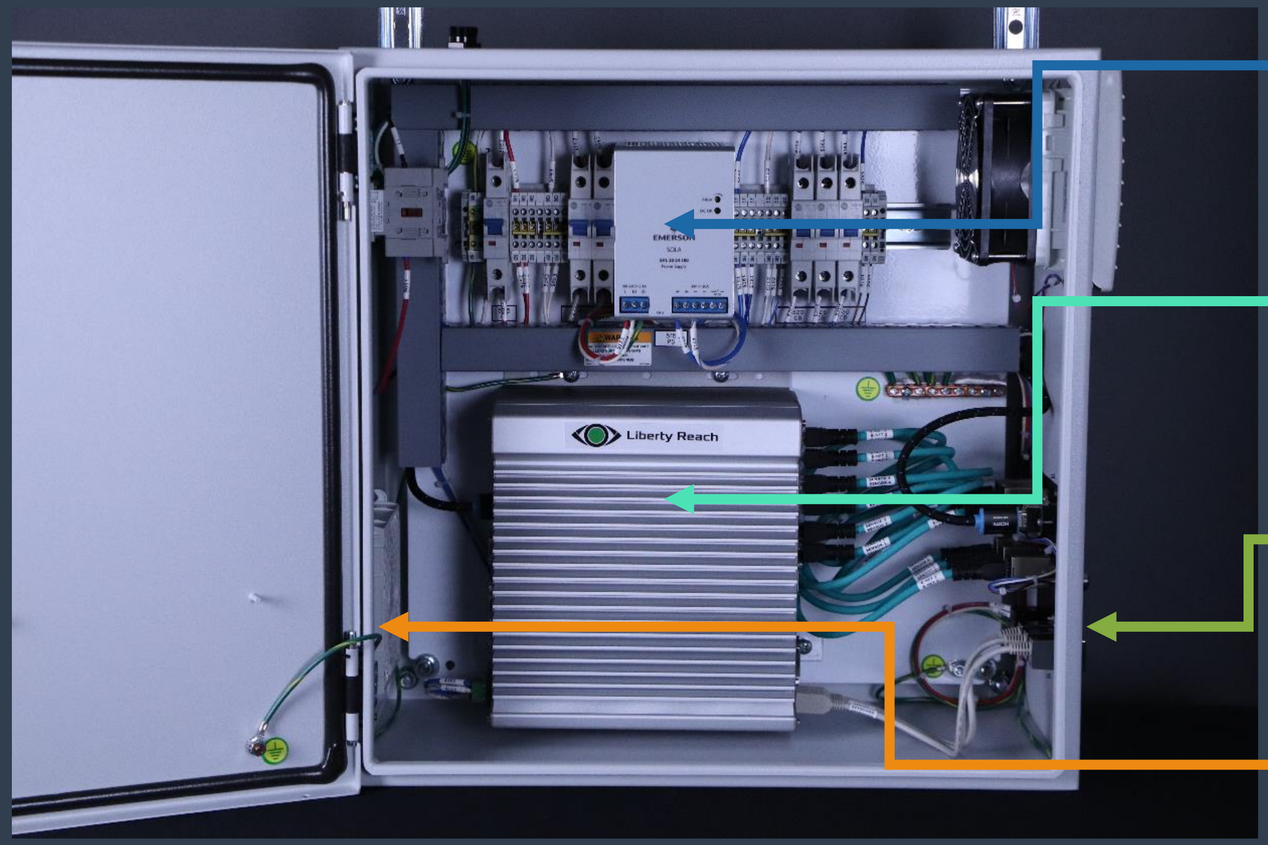
03

M12 Power-over-Ethernet single-cable connectivity, along with protective kick-plates for connection point

04

Fully adjustable mounting stands for flexibility in installation, and rigidity during operation

Plant-Ready Hardware



01

All cabinet internal equipment powered by 24VDC PSU allowing external power input from any country’s standards

02

Custom-built Industrial PC w/ embedded Windows 10. Solid-state machine with large heatsinks for continuous operation.

03

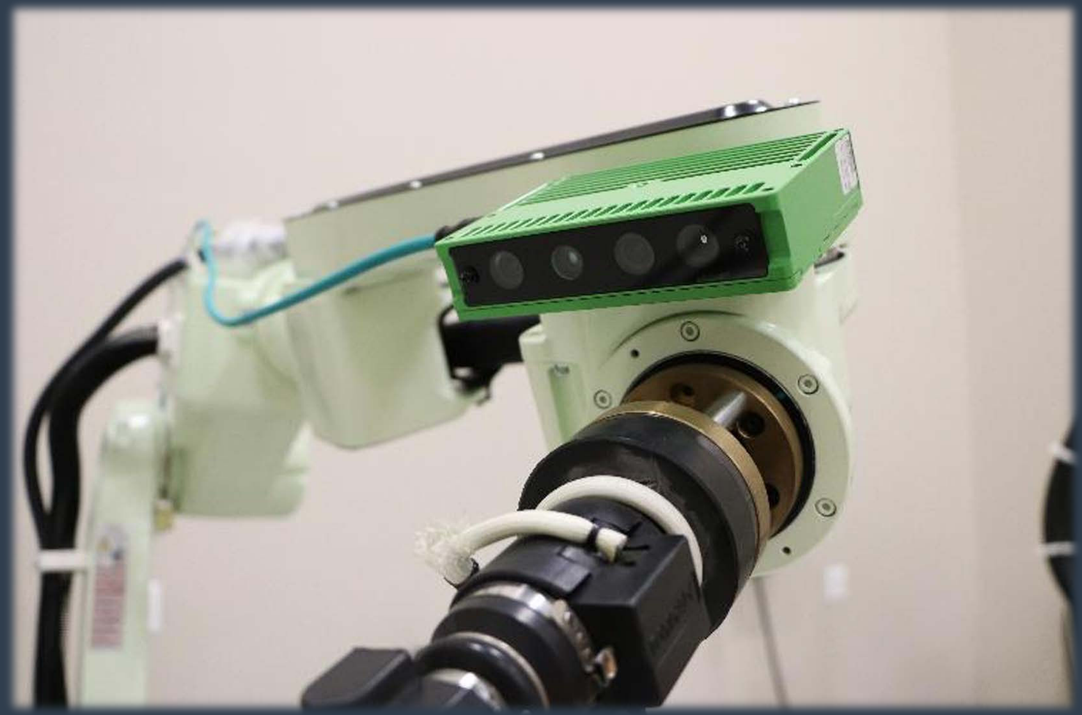
External M12 Bulkhead connections for secure connectivity for all cables

04

Upper and lower cooling fans for air circulation in hot plant environment

Flexibility in Mounting

Modular heavy-duty enclosures with optional shutters for factory floor reliability



Small size, low weight allows easy EOAT mounting, along with integration-ready communication packages for many major robot/PLC brands

Liberty Reach
Guiding Innovation

Applications

Racking/De-racking
Rack dimensions vary and are prone to damage

Cassette Pick
Parts will shift while indexing to pick position in racking

Picking off conveyor
Position/orientation variations in part

Picking off AGV
AGV location and fixture condition can vary, shifting the part

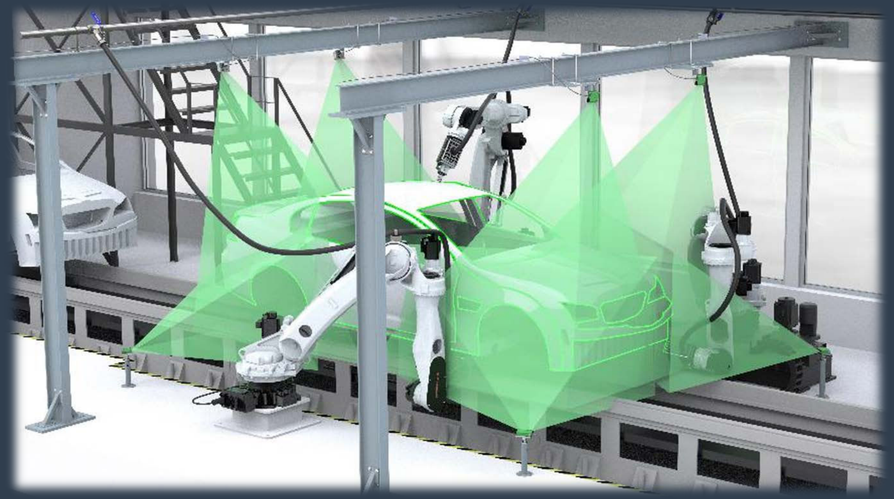
Picking from semi-structured stack
Stacked parts can shift/move while being stacked

Sealer Dispense
Fixtures can deform over time and parts can shift on a moving line

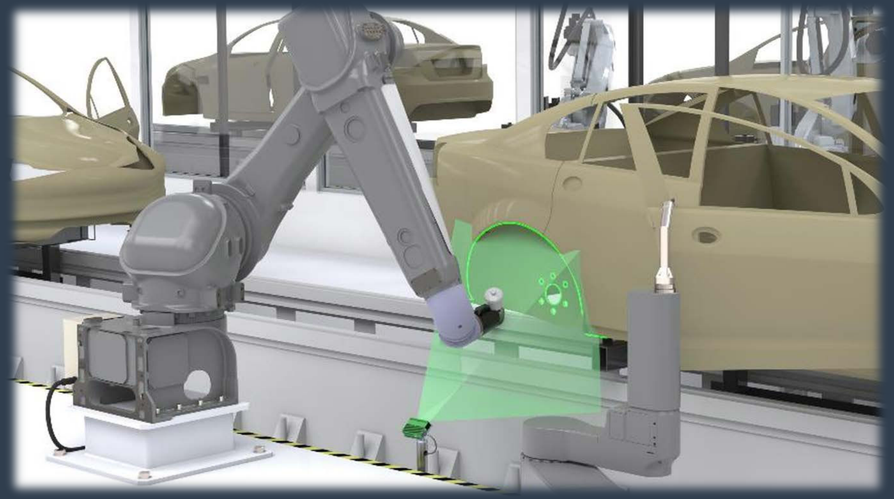
Paint and coating
Parts and fixtures can change orientation while on a moving line

Customer Driven
Do you have a tricky application that needs vision guidance? Let our vision experts know

Stationary Applications



Full Body Location



Under Body Coating

Mixed Case Palletizing

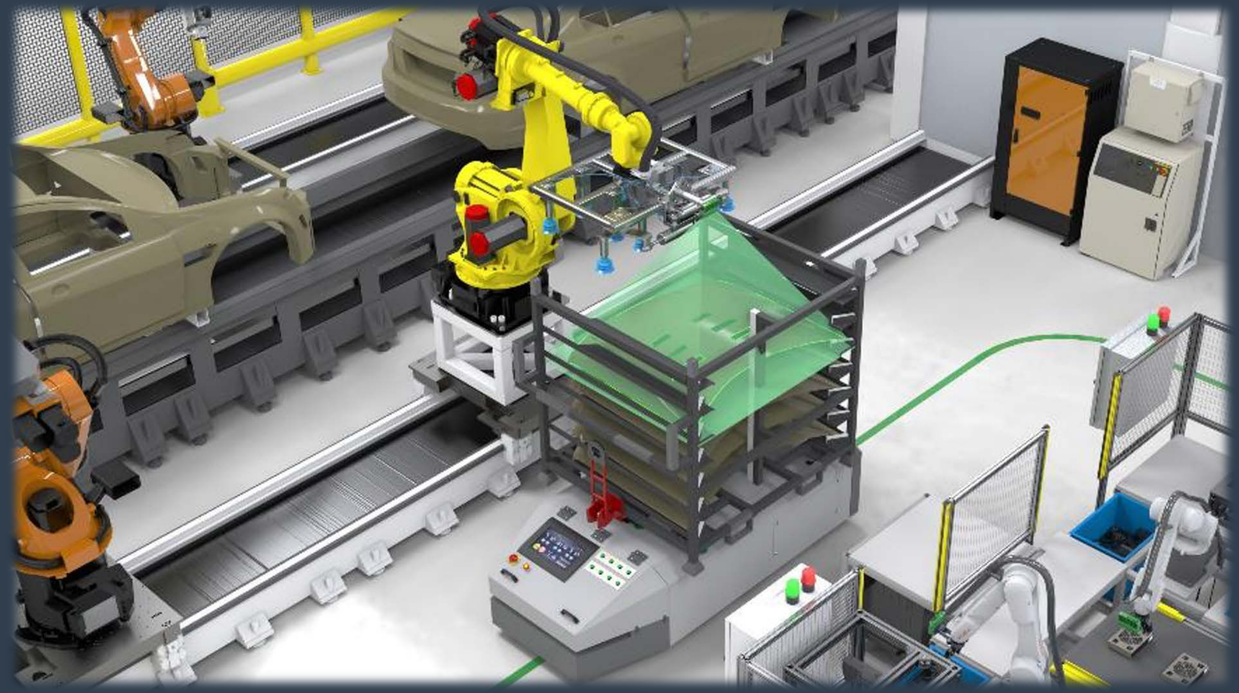
Liberty Reach
Guiding Innovation

Robot Mounted Applications

Conveyor Pick

Structured Stack Picking

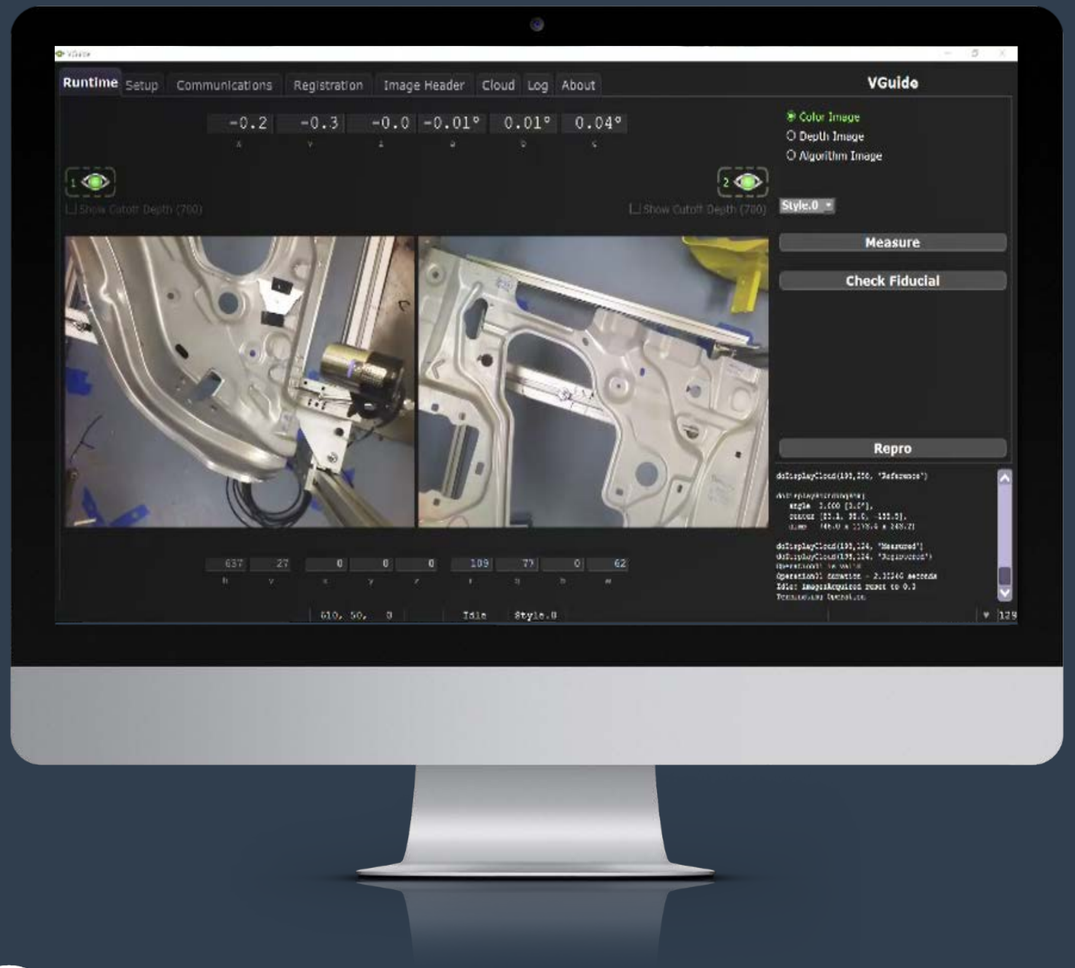
Robot Mounted Applications



AGV Stack Pick

Racking/De-racking

Intuitive Software Design



We understand vision programming usually comes with a steep learning curve and in-depth training. Liberty Reach designed a proprietary software interface to be easily adopted in every manufacturing facility.

01

Feedback-driven, user-friendly interface

02

Monitor up to (4) sensors in real-time

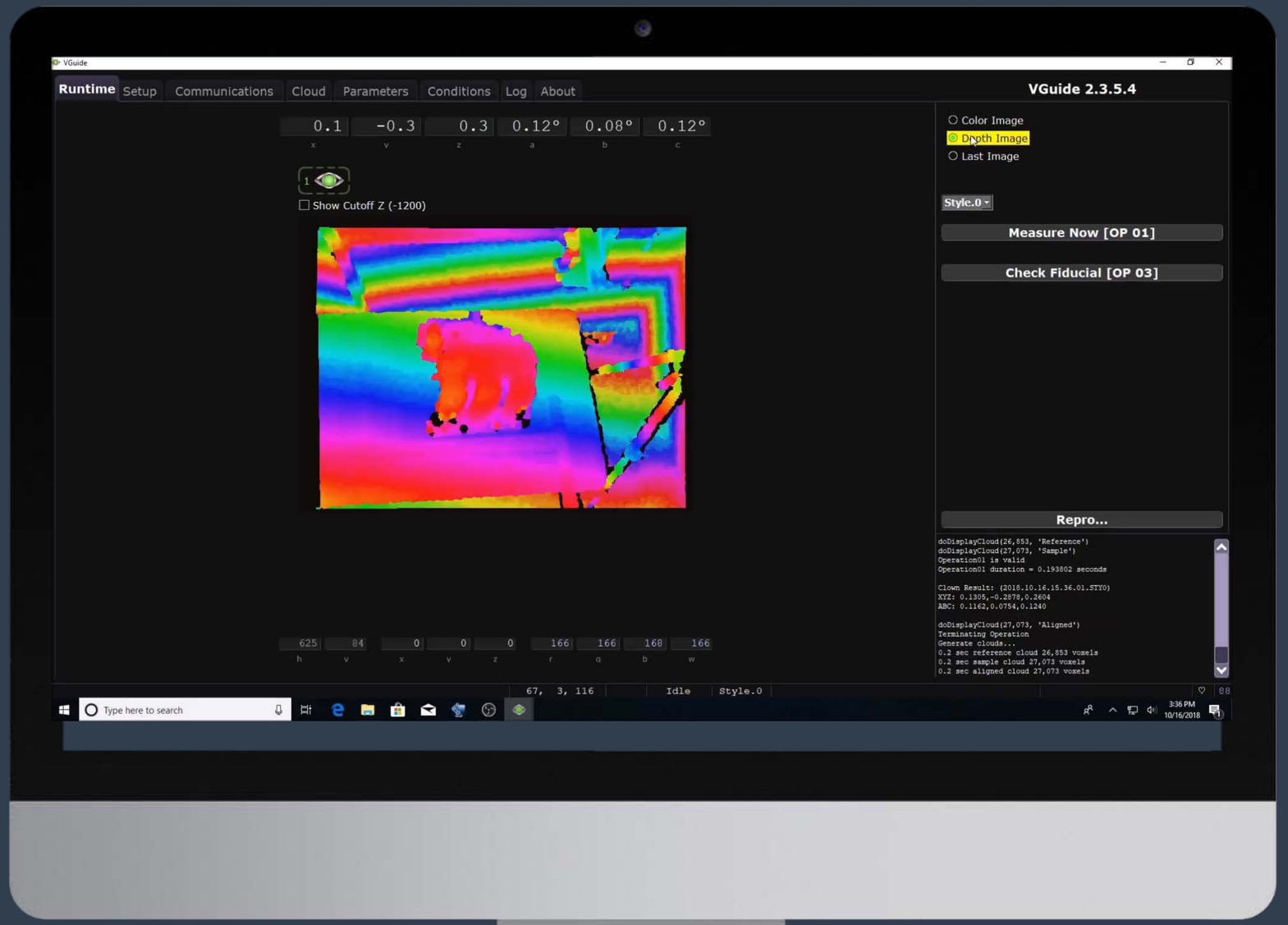
03

Connect multiple systems to a single display

04

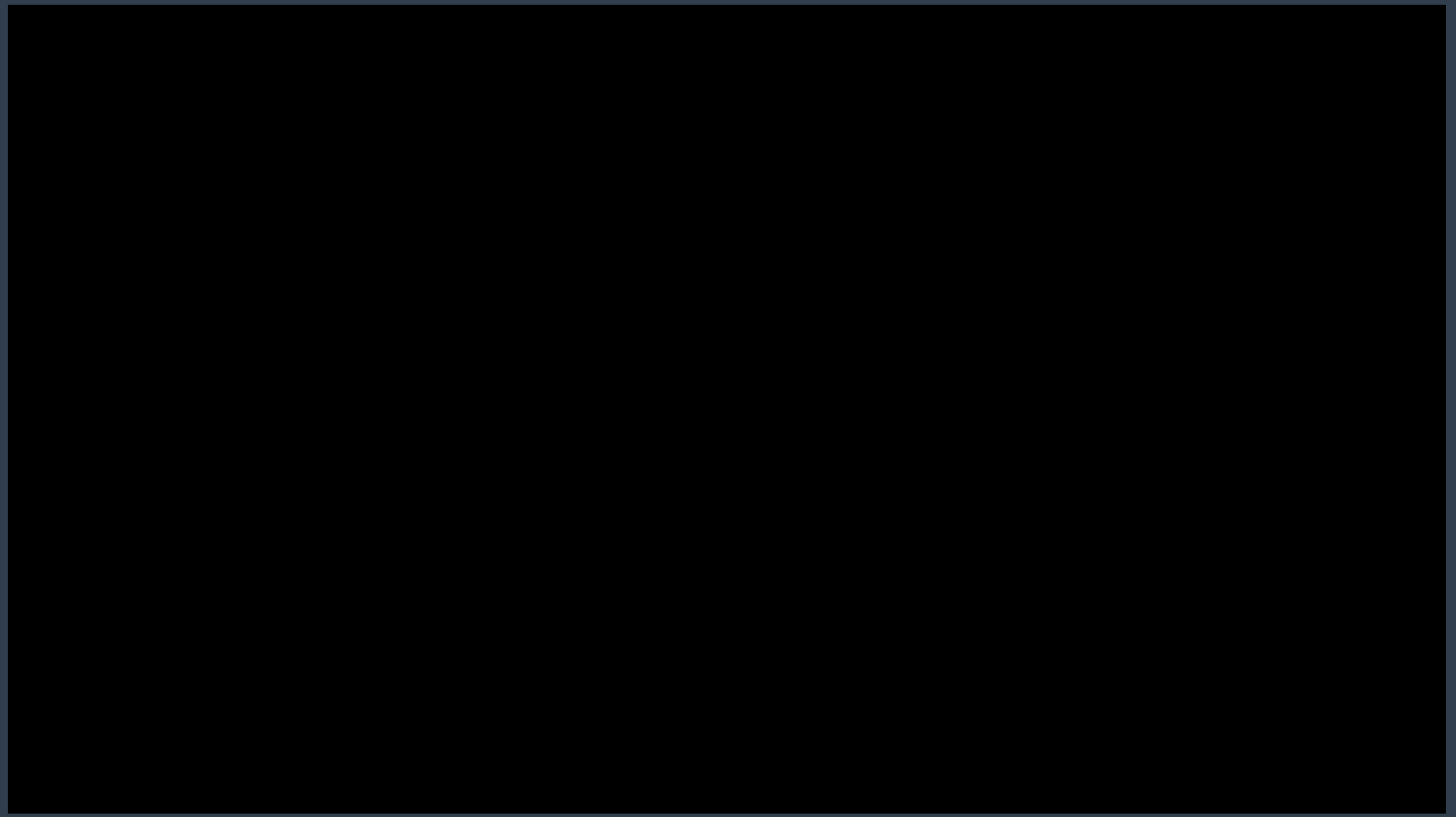
Tab based interface for seamless navigation

Liberty Reach
Guiding Innovation

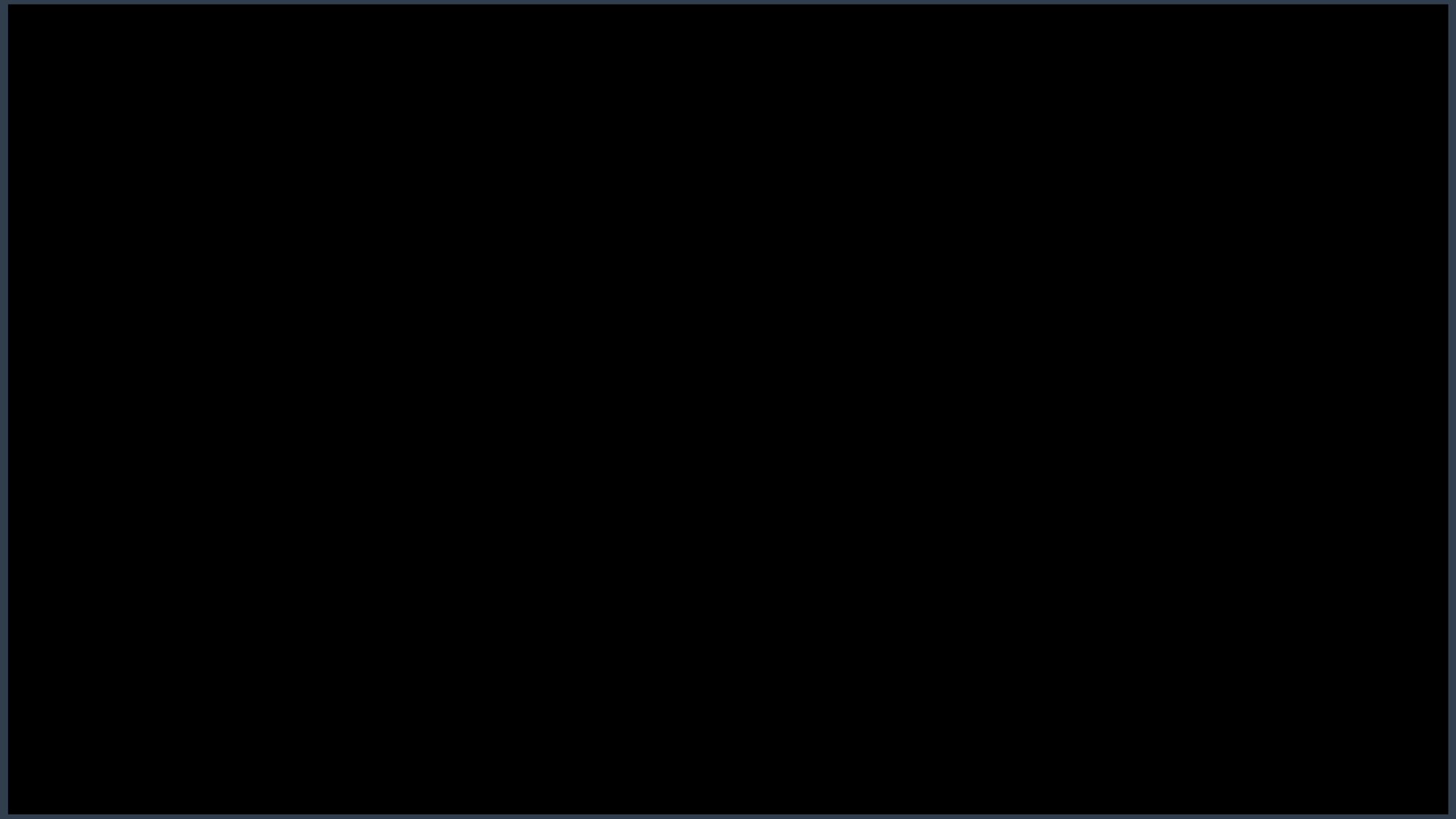


Liberty Reach
GUIDING INNOVATION

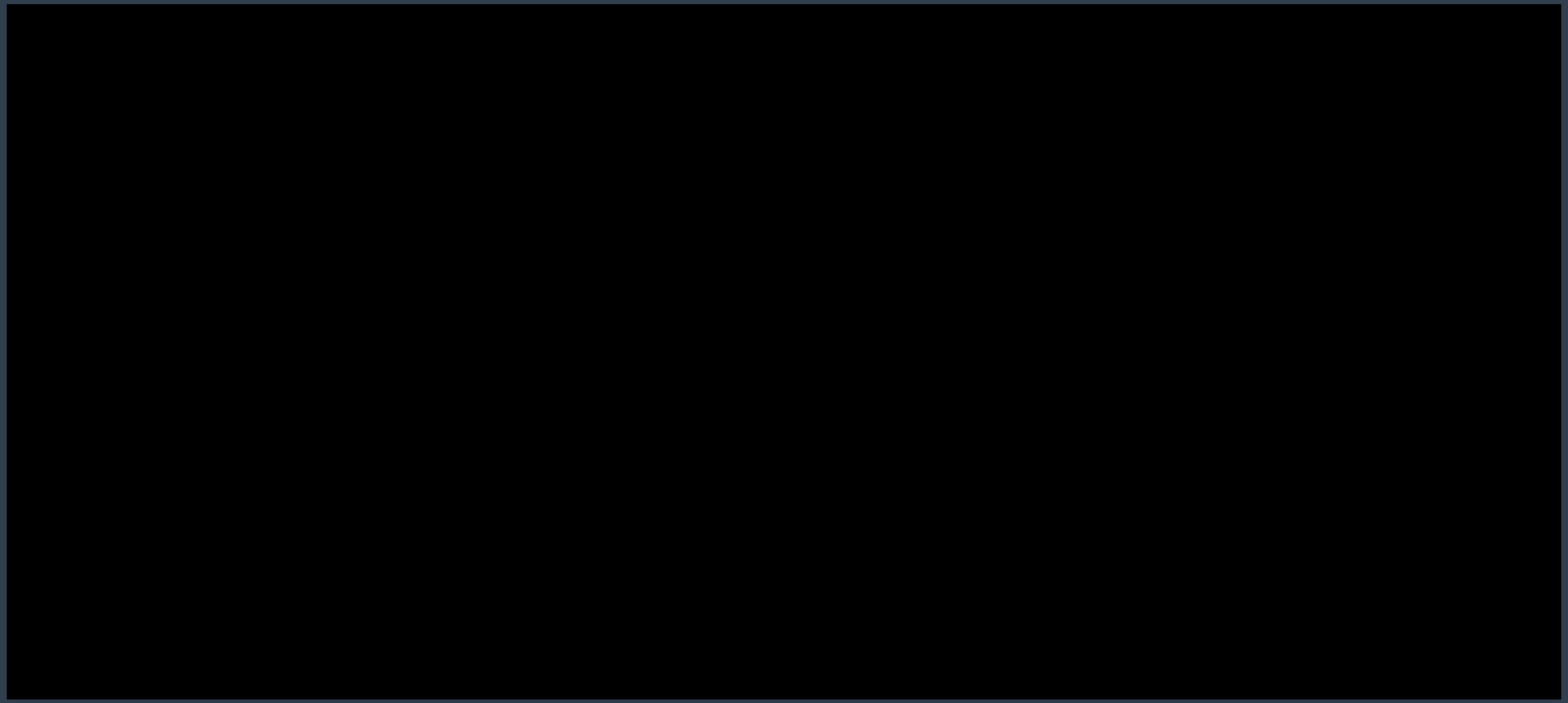
Reduce Cycle Time with Liberty Reach



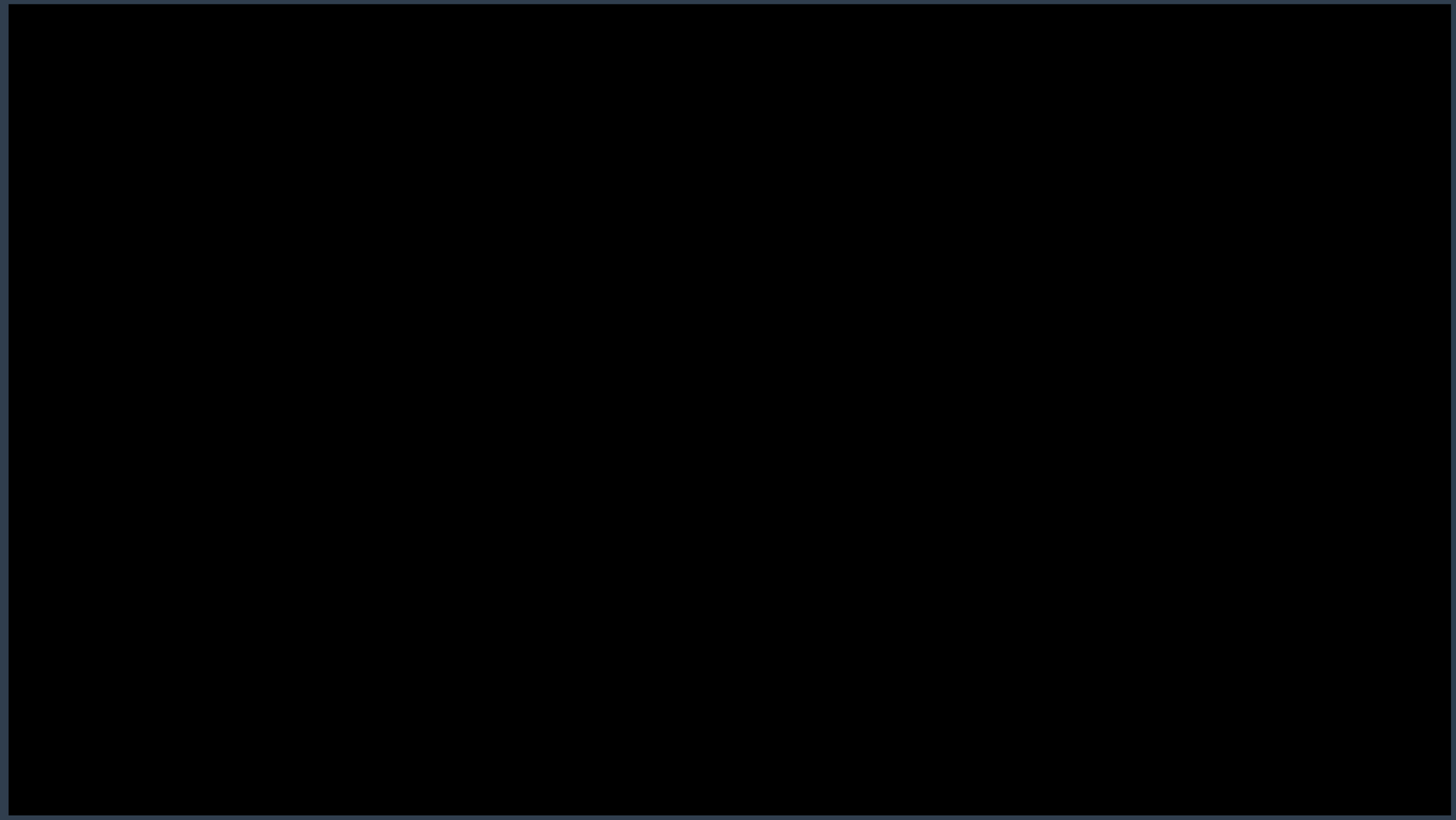
Roof Ditch



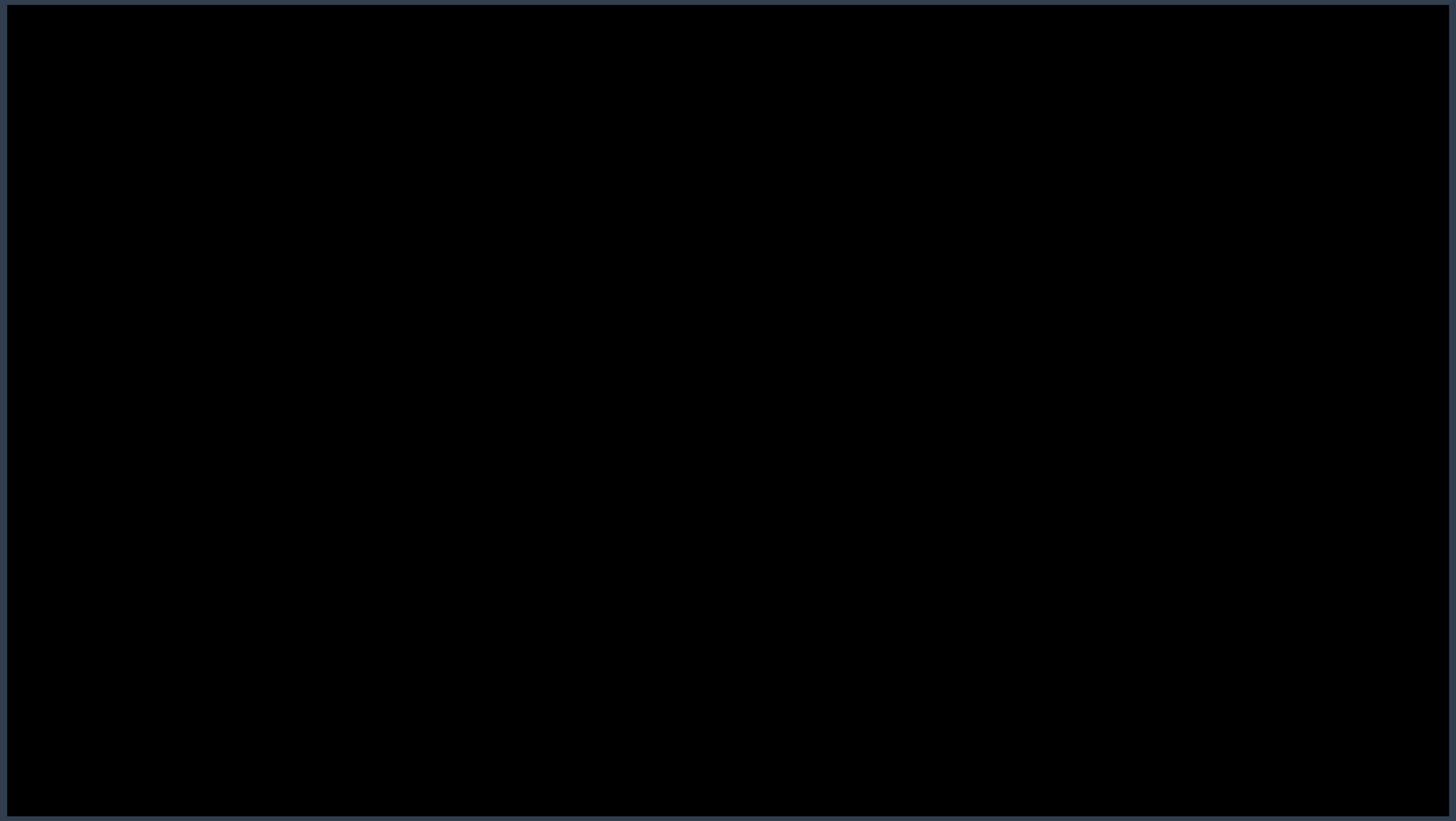
Bumper Pick



Hem Sealer



De-Racking



Liberty Reach
System Training & Support

24hr Support Hot line
Day or night connect with a Liberty Reach Engineer for your support needs

Improve Processes
Get the most out of your system when the TMs most familiar with a system set parameters

Reduce Downtime
Trained team members fix issues without delays

Maintain Equipment
Keep equipment running longer by knowing critical maintenance practices

Save Money
In-house experts eliminate the need for service calls and reduce line stoppages

Keep Updated
Training can be regularly scheduled to on-board new TMs and refresh from previous classes

On-site Convenience
Classes offered on-site at your facility with mobile classroom

Visit Liberty Reach
Our Dexter office has multiple robots and demo systems for training across all Liberty Reach products

Liberty Reach Installations

1
Toyota
Tesla
Ford
GM
Honda
FCA
BMW
Nissan
Subaru

2
Embraer

3
Toyota UK
Toyota Turkey

4
Banzai
Daihatsu

Liberty Reach
Guiding Innovation

Thank You

Call Us
(810) 220-9467

Write Us
info@libertyreach.com

Visit Us
1046 Baker Rd
Dexter, MI 48130

Follow Us
www.linkedin.com/company/liberty-reach
www.facebook.com/libertyreachinc

Liberty Reach
Guiding Innovation