

Version 01

Yonder[®]



CONTROLS IT.

Yonder is a platform that enables many Crew Chiefs to direct the work of many robots.

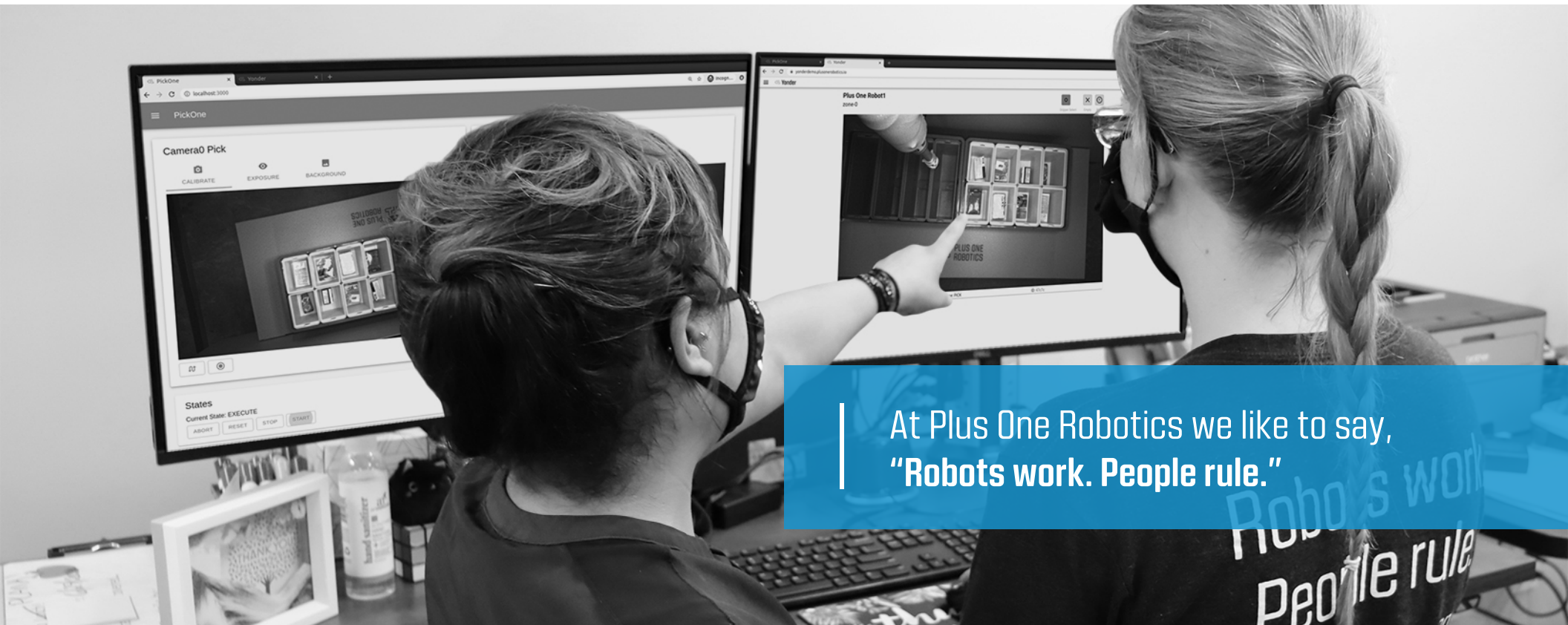


PickOne, Plus One Robotics' 2-D, 3-D, and AI-enabled perception solution for warehouse robots is fast, accurate, and flexible. However, the inherent variability of items to be handled in the warehouse require a graceful exception handling approach.

Yonder handles exceptions by adding a remote human-in-the-loop, a Crew Chief, who support many robots by simply looking at the same image as the robot and clicking on the item to be picked. In seconds, the robot is able to get back to work, and the system gets smarter.

Benefits

- Expand your labor pool through remotely supervised autonomy
- Eliminate technical risk of failure due to product variation
- Increase return on investment by deploying faster
- Eliminate walk-back time for exception handling
- Improved performance over time through machine learning
- Enhanced business decision making by performance data reporting



At Plus One Robotics we like to say,
"Robots work. People rule."

How it Works

Step 01

When items arrive in the picking area, the **PickOne Perception Kit** images the items.

Step 02

Using 2-D, 3-D, and AI algorithms, **PickOne** identifies each pickable item in the scene and assigns it an associated confidence score.

Step 03

Via the **PickOne** API, **PickOne** sends the robot controller an array of pick locations, poses, dimensions, and characteristic data for each pickable item.

If no items have high enough confidence scores, **PickOne** generates a **Yonder** request so that a remote Crew Chief can handle the exception in seconds.

When the Crew Chief selects the item to be picked, Yonder updates **PickOne**, and **PickOne** sends the data to the robot.

Step 04

In parallel, **Yonder** stores the Crew Chief's response, allowing the machine-learning algorithms to make the system smarter as it works. This ensures even higher performance over time.

Plus One has developed different packages with robust features to suit typical applications.

Yonder | 03



Human-In-The-Loop

Our Human Experts Close the Gap in your Automation Tasks.

Our crew chiefs, trained remote supervisors, are available 24/7 to step in when your automated systems need a helping human hand. They direct and execute robotic work from afar to solve all your production exceptions within seconds.



Smart Queue Management

One Crew Chief Can Handle Many Systems.

Gone are the days of having a dedicated single on-site employee to handle a single mundane and repetitive task. We provide the future: a force multiplier where one remote worker handles several tasks at once.



Data Dashboard

The Yonder Dashboard Reveals Business-Relevant KPIs.

Want to know how your system is performing overall? How much walk-back time (downtime) has decreased? How about your Overall Equipment Effectiveness (OEE)? We measure and report these figures for you.



Multi-Device, Multi-User Design

Human-Centered Design Allows Seamless Use for All.

Whether you are accessing our software as an operations executive or a seasonal worker, our app works with a touch or click on mobile and desktop devices, requiring minimal training and support.



Multi-Cloud Compatibility

Avoid Dependence on a Single Vendor and Maintain Flexibility.

We can connect Yonder software to all major cloud service providers, addressing any changes planned in your cloud roadmap now or later.



User-Centric Security Standards

Fully Encrypted Cloud and On-Premise Network Available.

Do you want to secure your data in the cloud? Would you prefer to store your data locally? Yonder provides a safe and flexible network to meet your security needs.

Details

Yonder

Specifications

- **Typical Round Trip Response Time:** 5 seconds
- **Supported Clouds:** Google Cloud Platform, AWS, Azure
- **Supported Browsers:** Chrome
- **Standard Web Traffic Port:** 443
- **Max Bandwidth Required:** 6 Mb/s
- **Max Number of Robots:** unlimited
- **Max Number of Crew Chiefs:** unlimited

What's Included

Yonder (P/N 1001-002-0001-01)

- Qty Required: 1 per robot per month 1 month subscription to Yonder
- Plus One Robotics' remote robot management suite

Yonder Plus (P/N 1001-002-0002-01)

- Qty Required: 1 per robot per month 1 month subscription to Yonder
- Plus One Robotics' remote robot management suite
- Plus One Robotics provides Crew Chief as a service



Features

Yonder

Yonder® YonderPlus®

Many Robot to Many Crew Chief Support – Yonder is a multiple robot to multiple Crew Chief platform. When Crew Chiefs sign in, they are added to their authorized robot zones and in the queue to receive Yonder requests.



Crew Chief Alert – Since most Crew Chiefs have Yonder open on a secondary monitor, when a request is received, Yonder alerts the Crew Chief audibly with beeps and visually by flashing the browser window tab.



Pick Focus – Yonder makes the Crew Chief’s job easier and faster by augmenting the image to focus the attention on the available items to pick.



Item Selection – In the Yonder image, the cursor is represented as a rectangle. When the cursor is over a pickable item it turns from red to green indicating a valid selection. The Crew Chief selects both the location on the item to be picked as well as the orientation.



Multi Gripper Selection – If the system making the request has more than one gripper mode. They are displayed so that the Crew Chief can not only select the pick location and orientation, but the gripper to use as well.



Empty Pick Zone Confirmation – If the zone, pallet, or tote is empty, the Crew Chief can select the “Empty” button to confirm.



Message – If the Crew Chief needs to communicate to an operator on-site. This can be done directly through the Yonder interface.

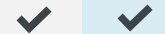


Rapid Message – For common responses, the Crew Chief can select from a drop down menu of messages such as, “Clear Jam”, “Damaged Vacuum Cup”, “Damaged Item”.

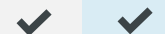


Yonder® YonderPlus®

Place Verification – Robots can request verification that an object was placed correctly at the target destination.



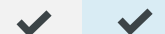
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Smart Shape Item Selection – In some applications, such as depalletizing, it is preferable to select the item by defining the bounding box around the item. This also allows the Crew Chief to label the image for subsequent AI enhancements.



Touchscreen Support - Yonder is supported by Chrome on touchscreen devices such as smartphones and tablets.



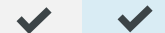
Administrative Rights – Administrators can create, delete, and edit Crew Chief accounts.



Escalation Hierarchy – Before a robot’s requests times out due to no answer from a crew chief, there will be an alert sent to managers regarding the impending timeout to give them time to respond to the request and get the robot back to work.



Analytics Dashboard – Yonder enables enhanced operational decision making by visualizing Yonder metrics, Crew Chief metrics, robot system performance metrics, and PackML metrics.

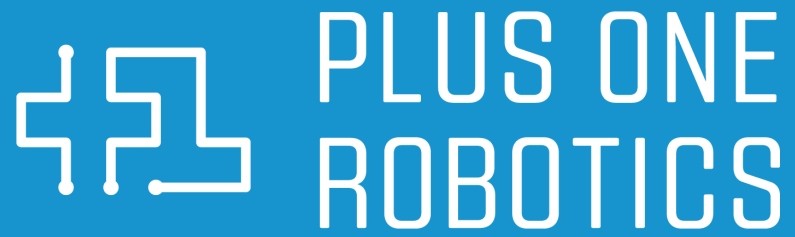


Crew Chief As A Service – Plus One Robotics has a team of trained Crew Chiefs that may be contracted for your operation.



Yonder Local – If your organization would prefer to host Yonder on-premise to eliminate the requirement for a cloud connection. With Yonder Local, Yonder can be hosted on a local server.





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See our software in action at youtube.com/PlusOneRobotics.