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September 10, 2021

VIDEO ENABLED DIAGNOSTICS & MONITORING TECHNOLOGY FOR THE HVAC INDUSTRY

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The Institute of Heating and Air Conditioning Industries, Inc. - IHACI, is a nonprofit trade association of contractors, manufacturers, distributors, utilities, and related businesses actively engaged in the heating, ventilation, air conditioning, refrigeration, and sheet metal industries. IHACI Board of Directors, collectively have over 200 years of experience in HVAC field services and they serve as strategic advisors to Visual Service.

The Problems

Contractors

Technicians

Today it takes 3-5 years for a technician to become an asset to a contractor

Contractors report that finding trained and qualified technicians is the number one problem in meeting demand and growing their business

Manufacturers

Improper installation remains the number one cause of equipment failure

Government

Energy efficiency, compliance with energy codes, and climate goals remain elusive and challenging

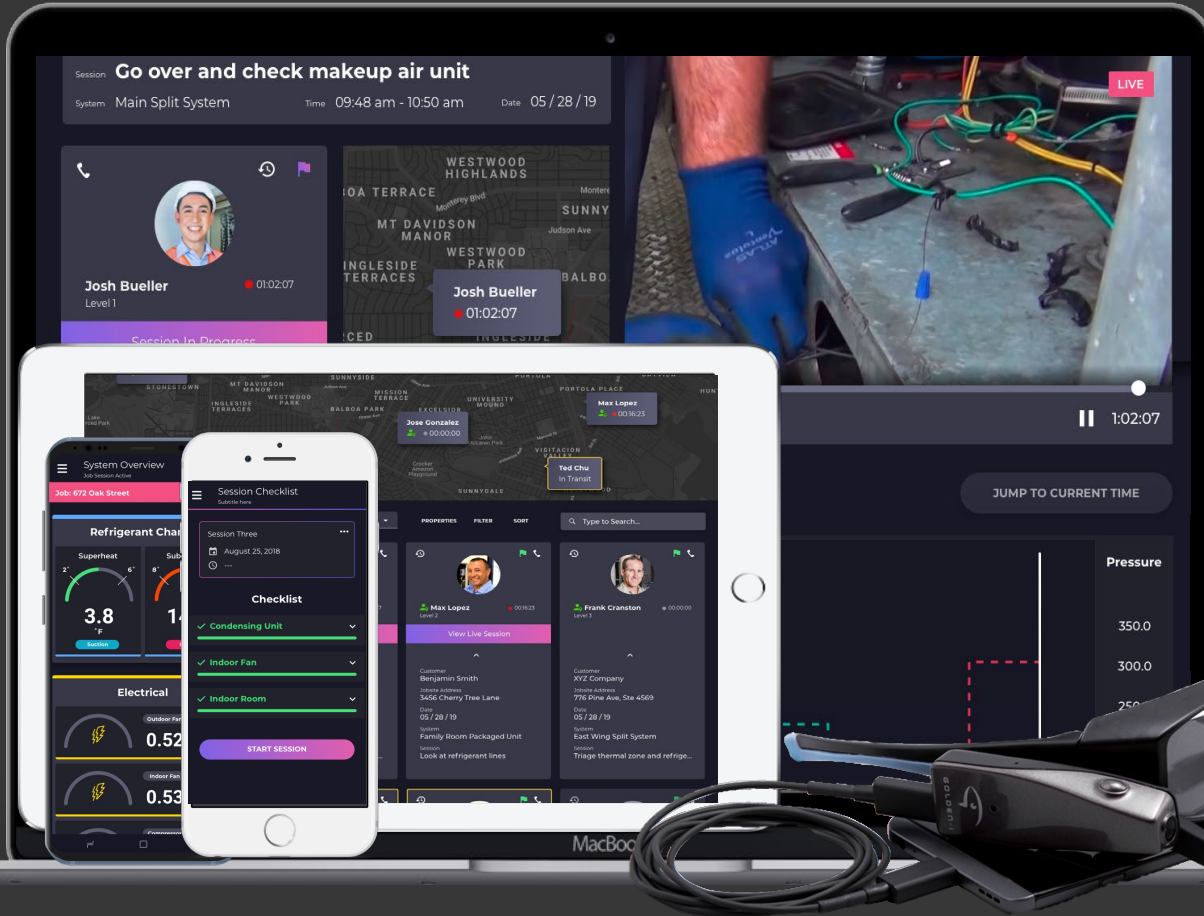
Consumers

Consumers lack trust in contractors. The only information most consumers receive is billing

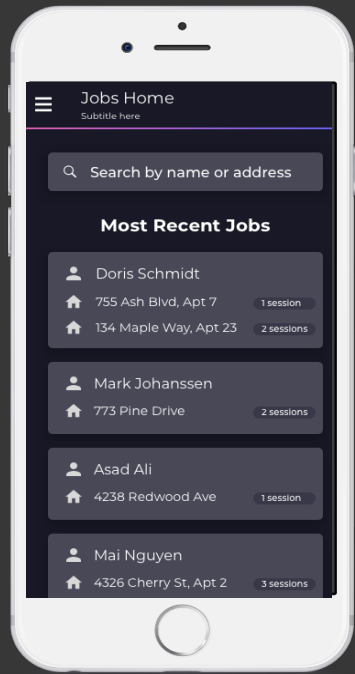
MEET VISUAL SERVICE – A LIVE VIDEO ENABLED DIAGNOSTICS & MONITORING TECHNOLOGY FOR THE HVAC INDUSTRY

WITH VISUAL SERVICE WE USE

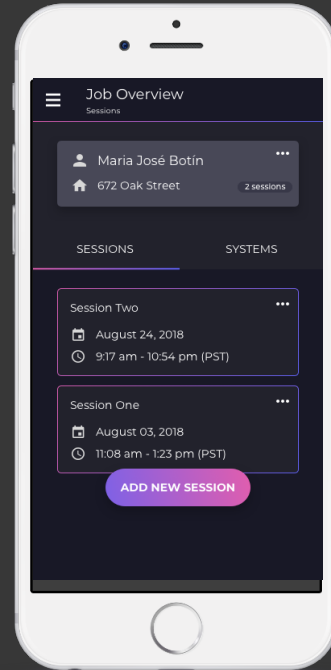
- **Bluetooth Enabled tools** in order to transmit LIVE data to a Service Manager.
- **Live Video** through smart glasses or a cell phone.



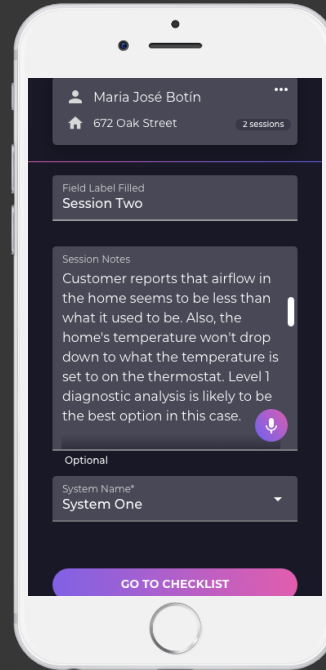
THE SOLUTION: FIELD TECHNICIAN APP



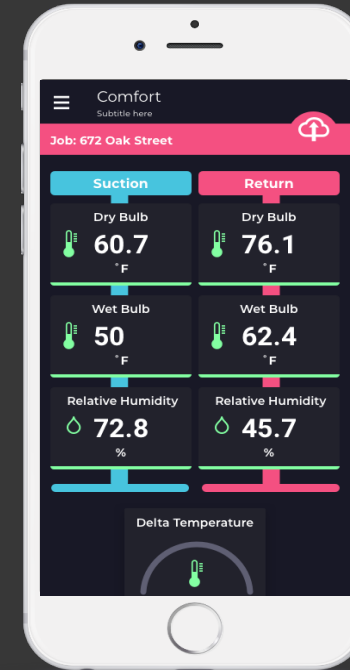
Technicians start a new job by identifying an existing or adding a new customer site



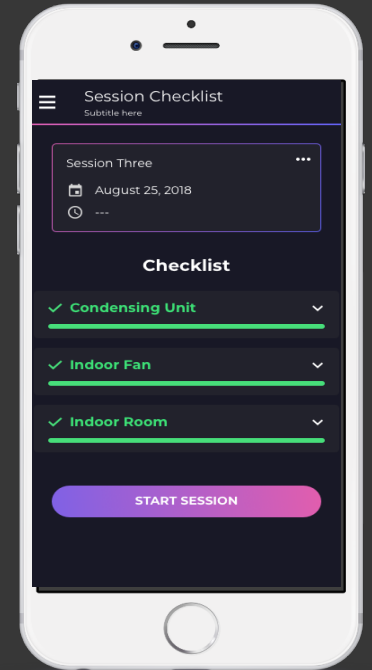
Next, they select the type and specifics of the system and equipment at the job site



Technicians then record the problem and select the system parameters from the library



They then pair their instruments and take comprehensive, diagnostic measurements



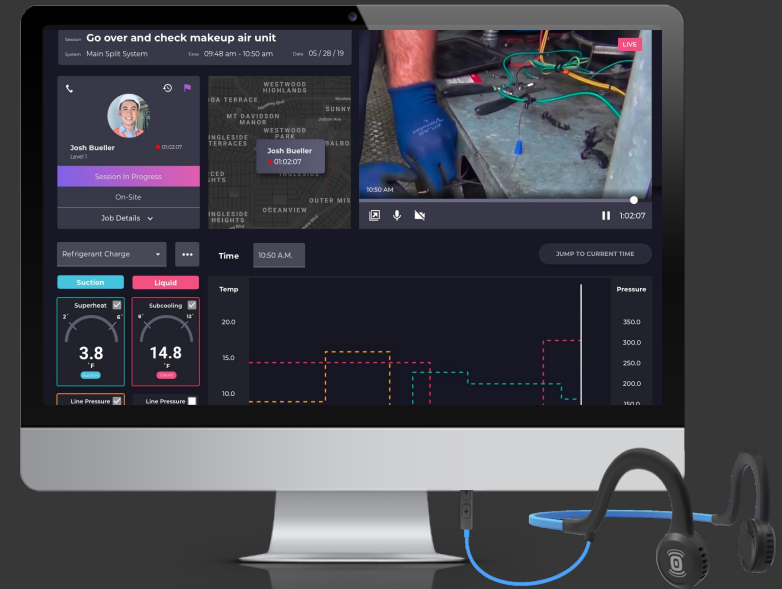
After the repairs, technicians check their work against system health indicators

THE SOLUTION: SERVICE MANAGER APP



Service managers can track every technician's job status in real time and throughout the day. They can connect to the video stream of any technician and support them remotely.

Service managers can make informed recommendations on system repairs and upgrades based on the live diagnostics data displayed on their dashboard. They can group and manage their team of technicians according to how they work every day and can even assess and develop technicians' skills by remote mentoring.



Technician Benefits

- When needed in the field, technicians receive timely and correct assistance less than 50% of the time
- It takes 3-5 years for technicians to become self-reliant in the field and make livable wages
- Most technicians don't have access to high quality hands-on training or ongoing mentorship by experienced technicians

TECHNICIANS

WITH VISUAL SERVICE

- **Technicians** can make diagnostics driven decisions, receive instant support, and on-the-job training
- **Technicians** can become productive employees in weeks rather than years. After safety orientation and basic training on using the diagnostic tools, a technician become the eyes and hands of a service manager
- **Technicians** learn their trade much more quickly with the positive accountability and live mentoring abilities built into Visual Service
- **Technicians** gain confidence through successful diagnostics of HVAC equipment

Customer Benefits

- Customers lack trust in contractors.
- Customers don't receive actionable data about the health of their equipment at the time of the service or over time
- Customers do not have access to details of their overall HVAC system diagnostics and indicators
- Customers have low awareness of their system's energy footprint

Customer

WITH VISUAL SERVICE

- **Customers** can view reliable, independent third-party data showing the operational status of their system. This will build trust as a basis for honest and transparent dialog between the contractor and homeowner.
- **Customers** can view actionable data about the status of their equipment over time. For example, they can watch the effect of amp draws on aging motors that reduces the efficiency of their system.
- **Customers** can have access to reliable information on their HVAC system with fewer visits in a much shorter period.
- **Customers** will have a window to the efficiency and overall health of their HVAC system that they have never seen before.

Government Benefits

WITH VISUAL SERVICE

- Energy Efficiency is elusive because of poor installation quality.
- Compliance with energy codes remains challenging because it is viewed as cumbersome.
- Climate Change goals are ambitious and require out of the box thinking.
- Government lacks trust in contractor performance.

Government

- **Visual Service** is a way to train a more qualified workforce to properly install and maintain HVAC equipment.
- **Visual Service** leverages existing and emerging technologies to provide real-time feedback during equipment installation.
- **Visual Service** provides Quality Assurance that documents installation and service from a job's beginning to end.
- **Visual Service** is a pathway to improve HVAC systems that can help meet climate goals through better installation practices, including those such as proper refrigerant management.
- **Visual Service** provides a means for high performing contractors to transparently demonstrate quality in EVERY installation.

Please contact me for further discussion.

September 10, 2021

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