

# Thinking worker-centric

Calit2 envisions empowering smart workers to have greater autonomy and decision-making responsibilities, resulting in not only a more satisfied, masterful workforce, but also plants and factories that are more energy-efficient, productive and safer.

## EMBEDDED WIRELESS COMPUTER

**VIDEO CAPTURE**  
High-speed/slow-motion video camera.

**HEAT IMAGER**  
Infrared camera, thermal imaging.

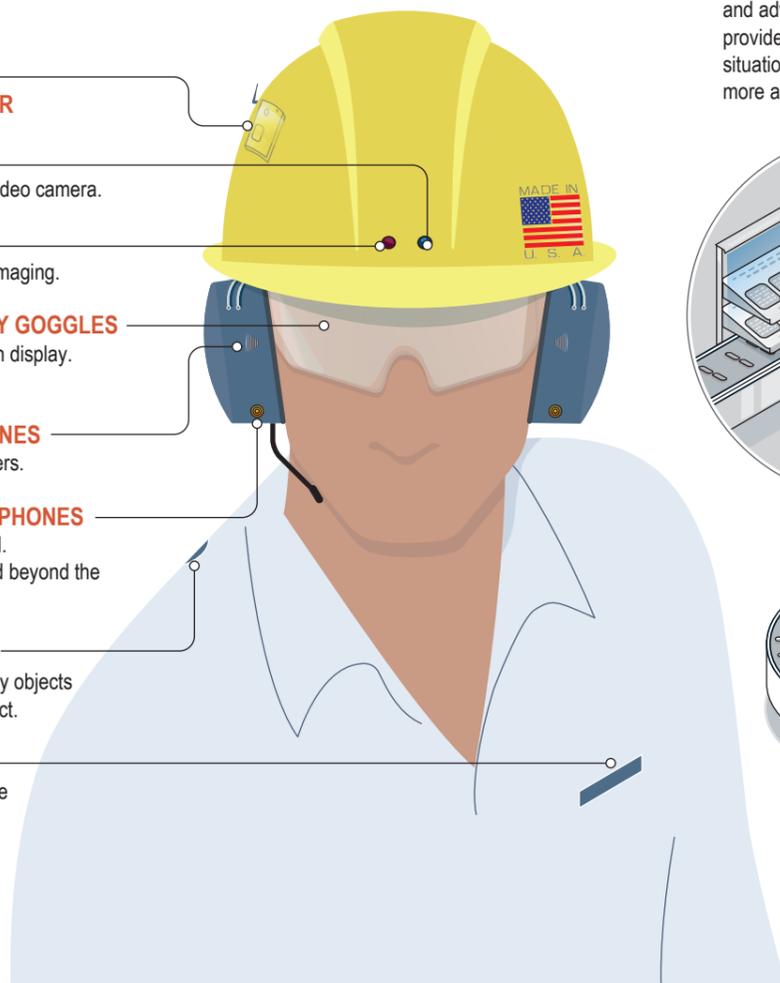
**AUGMENTED REALITY GOGGLES**  
Safety glasses, information display.

**ACOUSTIC HEADPHONES**  
Advanced dynamic speakers.

**DIRECTIONAL MICROPHONES**  
Sensitive up to ultra-sound.  
Records frequencies found beyond the range of human hearing.

**PROXIMITY SENSOR**  
Detects presence of nearby objects without any physical contact.

**ID BEACON**  
Pings content and real-time information to co-worker and machinery.



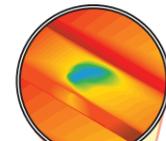
**1 SIMULATOR TRAINING**  
Instructional environment with sensors and controls that simulate the actual work station for training and advanced scenarios. System provides low-cost, safe, controlled situation-awareness training and more accurately assesses progress.



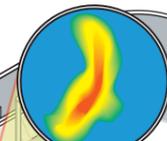
**2 REAL-TIME TRAINING EXPERT ASSISTANCE**  
Inexperienced workers receive remote coaching. Off-site coach has access to data and sensors to see, hear and sense the workspace and provide immediate instructions.



**3 CROWD-SOURCED TROUBLE SHOOTING**  
Worker notices problem (loose wiring), takes photo and gathers data via helmet computer/camera and uploads for evaluation. Audio can be included. Maintenance and efficiency are improved by encouraging real-time, worker-intelligence to solve problems.



**4 IMAGING ENERGY CONTROL**  
Infrared, thermal heat imager identifies irregular and excessive heat. Irregularities can create stress and product defects. Excessive heat is an energy-waster that also damages machinery.



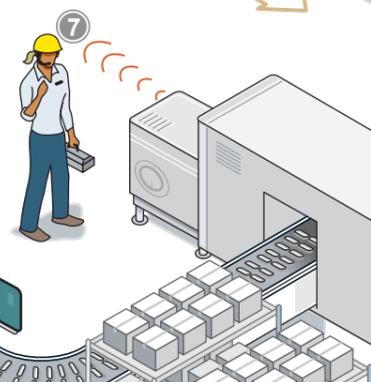
**5 PRECISION EFFICIENCY**  
Augmented vision records and displays speed and position of any object – from production lines to a moving forklift. Assists in providing greater efficiency and accuracy in reporting output and environmental conditions.



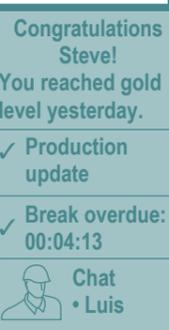
**6 EXTRA SENSORY POWER**  
Proximity sensor delivers a stimulation when a box (or any item) is in close proximity, or in a worker's path. Workers get a "super sense," like eyes in the back of their head.



**7 BAT HEARING**  
Ultrasound, highly directional audio recording checks sound emitted by equipment to detect abnormalities. Inaudible sound is recorded, amplified, filtered and played back for the worker who listens for discrepancies. Detecting malfunctions keeps equipment operating at peak condition and prevents small maintenance issues from becoming catastrophic system breakdowns.



**11 PERSONAL WORKSPACE**  
ID beacon activates an interface that:  
• Adjusts lighting and equipment.  
• Provides team and personal motivational goal-setting.  
• Optimizes worker activity and workflow.  
• Minimizes energy use by shutting down nonessential equipment when worker leaves area.



**10 PRODUCTIVITY IN PLACE**  
Real-time data from ID beacon shows employees' locations and activities. Allows assessment of workers' well-being and productivity.

**9 HANDS-FREE ACCESS**  
ID beacon ping allows employees access to certain machinery and secured areas for more efficient workflow.

**8 LOOK OUT, HUMAN HERE!**  
ID beacon pings to machinery and vehicles when a human is nearby. Vehicles alert drivers to human obstacles they don't see. Machines can shut-off immediately to avoid potential injuries.

