WORKFORCE TRANSFORMATION

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INDUSTRY CHALLENGES

ASPECTS OF WORKFORCE TRANSFORMATION

COMPETENCY – SMART TRAINING ROOMS

PRODUCTIVITY – CONNECTED WORKER

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INDUSTRY CHALLENGES

Workforce Churn (Skillset shortage)

- New Workforce - learn faster (upskill), reduce time to competency
- Jobs are transformed by the technologies of the 4th Industrial Revolution – Existing Workforce must be reskilled

Improve Productivity (Do more with Less)

- Provide right tools that help workers perform their tasks efficiently
- Make workforce ready to use Software & Analytics on demand, improve situational awareness

Improve Collaboration

- Unite Machine to machine, human to machine and human to human collaboration / interaction that turns insights into intelligence, and intelligence into action

Jobs Evolving Continuously

- Increasing complexity of assets & process
- Due to changing business needs and technological landscape, organizations' skill requirements are evolving and emerging – framework for continuous monitoring of skills gap and improvement is need of the hour

1 INCIDENT EVERY 3 DAYS - (Petrochemicals Industry – Source: ASM reports)

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WORKFORCE TRANSFORMATION

COMPETENCY

01 **Blended learning approach**

02 **Personalized and Self-paced learning**

03 **Evolved Evaluation**

PRODUCTIVITY

01 **Enhanced Productivity**

02 **Better communication and Integrated Systems**

03 **Automation and AI**

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COMPETENCY – SMART TRAINING ROOM

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SMART TRAINING ROOMS

Innovative Concept that enhances the effectiveness of training sessions by leveraging technologies for interactive and engaging learning experiences by bringing Physical and Digital worlds together

- **Increase Interactivity**
- **Improve Real time collaboration**
- **Offer Remote training capabilities**
- **Improve Content Delivery**

01

DESIGN, IMPLEMENT & MAINTAIN TRAINING CENTER

- **Honeywell can support customer with design, implement and maintenance of training centers to deliver the best in-class experience to students**

02

AUGMENTED REALITY

- **Using enhanced, interactive version of on field equipment's and tools through digital elements**

03

VIRTUAL REALITY

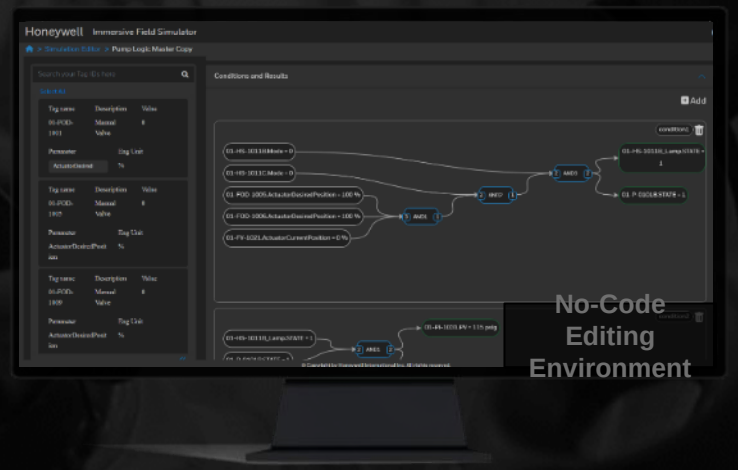
- **Honeywell Virtual Reality solution – Immersive Field Simulator aimed for field Operations, Maintenance and HSE teams.**
- **Honeywell IFS is closely integrated to the OTS systems.**

TECHNOLOGY ENABLER

IMMERSIVE FIELD SIMULATOR

Boost workforce efficiency and reliability with Honeywell's Immersive Field Simulator (IFS), utilizing digital twin technology to create an immersive virtual environment for plant standards simulation.

IFS Dashboard



- A realistic, safe, and standardized training environment.
- Inbuilt authoring tools for specific scenarios.
- Trigger disaster and abnormal scenarios based on operator action.
- Triggers process value-based animations.
- Automate portions of a procedure typically done by the panel operator.
- Ability to create standalone lessons or OTS connected lessons.

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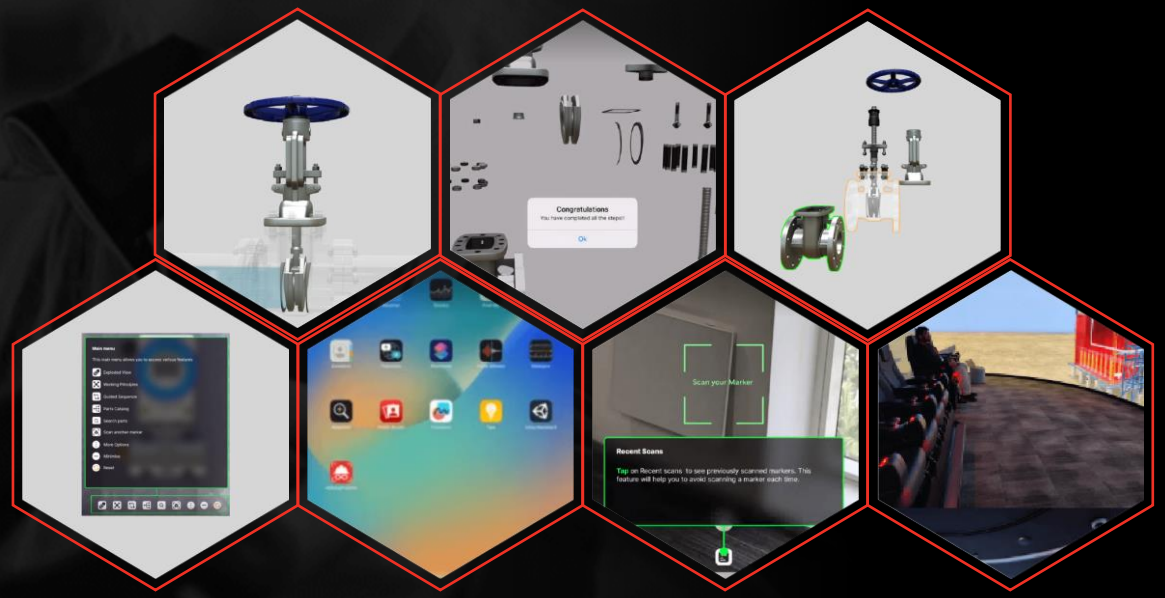
IMMERSIVE FIELD SIMULATOR
HONEYWELL IMMERSIVE EQUIPMENT VIEWS

Train operators and technicians in surface detection, object placement, and asset observation to perform step-by-step tasks like equipment assembly or dismantling. This enhances asset understanding and facilitates troubleshooting using augmented reality.

- An Augmented Reality Feature of IFS for Digital augmentation of equipment and simplifying complex tasks
- Digital augmentation blends real-life environments with digital elements for meaningful interactions.
- Access additional information and immersive, detailed visuals on a handheld device
- Augmented reality can identify machinery and display step-by-step instructions for use.

3D visualization	Touch interactions	Interactive animations
Zoom, rotate and reposition	Custom sequence creation	InDepth Exploded view



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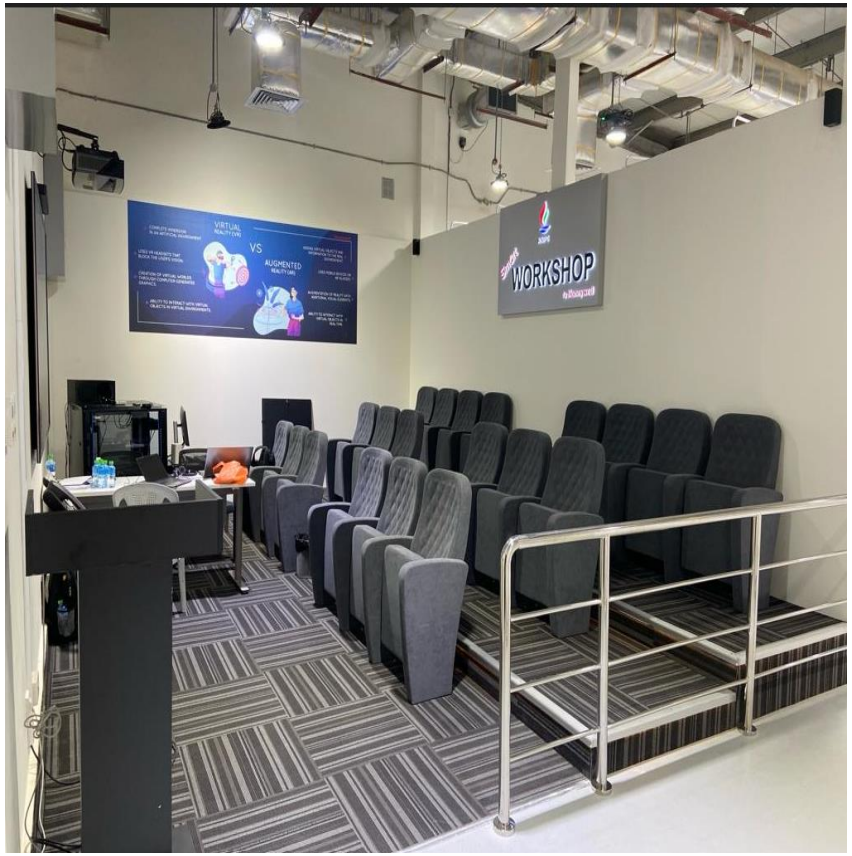
REFERENCES & CASE STUDIES

SMART TRAINING ROOM



BLENDED LEARNING

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Immersive Field Simulator for Cheniere Energy

THE CHALLENGE

Need for a collaborate learning center in a safe environment

OUR APPROACH

Collaboration training center with Immersive Field Simulator

- Provide realistic & safe environment to train field operators
- Integration with OTS to train panel and field operators together

THE RESULT

- **Improved communication & teamwork**
- **Accelerated learning, from training room to the field**
- **Increased efficiency**
- **Reduced costly errors**

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PRODUCTIVITY – CONNECTED WORKER

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CONNECTED WORKER ENABLERS

TECHNOLOGY & ASSETS

DATA ANALYTICS PLATFORMS

COMMUNICATION & COLLABORATION PLATFORM

INTEGRATION & SUSTENANCE

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FIELD AI SOLUTION | FIELD PKS

ERP SYSTEM

- Work Order
- Past Maintenance Records
- Spare Inventory

DCS

- Realtime & Historical Data
- Alarm & Trend

DOCUMENT REPOSITORY

- OEM Documentation
- Plant Specific Procedures
- Safety Guidelines

OT SYSTEMS

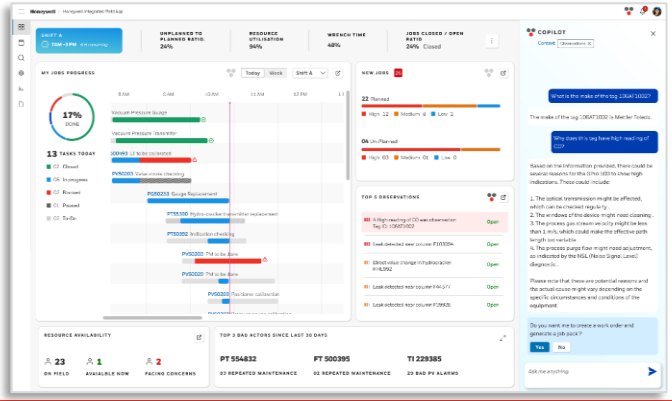
- Alarm Management System
- Asset Performance Management
- Operations Management

HONEYWELL FORGE AI PLATFORM

01

SUPERVISOR & PLANNER

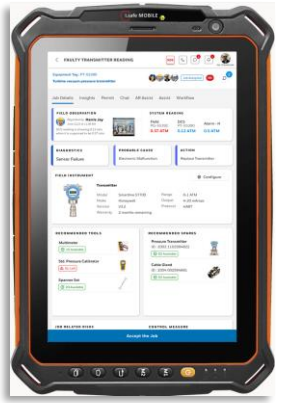
- Job Pack Creation
- Troubleshooting guide
- Analytics & Reporting



02

FIELD OPERATOR / TECHNICIAN

- Gen AI based Assist
- Contextual Information in the field



CONTEXTUAL INFORMATION & TROUBLESHOOTING – ENABLED BY AI

CONNECTED WORKER FUTURE STATE

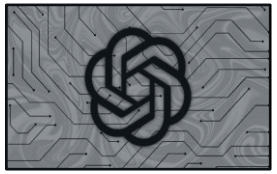
MANAGERS' DASHBOARD

- Task planning , scheduling & assignment
- ePermit / task status
- Workforce Competency Levels
- Field workers' location and safety status
- Report generation
- Operational Efficiency KPIs

Standardized 3rd party interfaces

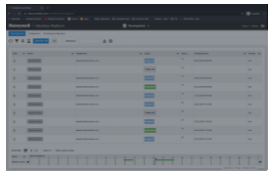
- LMS
- SAP
- Doc Sys
- ePermit
- OPC Interface

1 GENERATIVE AI MODEL CHAT BOT

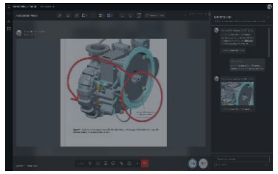


2 PLANT DIGITAL TWIN

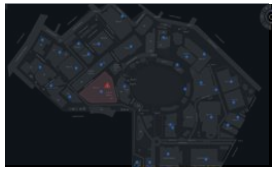
3 TASK PLANNER



4 COLLABORATION



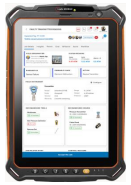
5 LOCATION ENGINE



Honeywell System Interfaces

- DCS & Safety
- Historian
- Forge APM
- HFOM
- FDM

A day in the life of a worker



PREPARE → EXECUTE → TROUBLESHOOT → UPDATE RESULTS

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COMPETENCY & PRODUCTIVITY

FASTER STARTUP WITH IMPROVED COMPETENCY

Comprehensive operator training and competency programs

DIGITIZED OPERATOR ROUNDS

Improve operator productivity and avoid operator error with efficient digital rounds

FIELD WORKER MANAGEMENT

Improve effectiveness of field workers performing procedural tasks

STANDARDIZED PROCEDURES

Ensure compliance and avoid process errors through digitized procedures

*Calculation based on observed outcomes of Honeywell Forge & Honeywell Sine customers in the period 2019-2022.

THE HONEYWELL ADVANTAGE

Up to 50%

Reduction in Training Time

Up to 20%

Improved Worker Utilization

Up to 20%

Reduction in variation to plan

2X

Improved Worker Productivity

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DIGITAL SERVICES OFFERINGS

	Sense	Make-Sense	Decide & Act
Process **Connected Services**	Process Monitor Benefits: $1-5M/Unit	Process Technology Analytics, Exception Based Alerts, Benchmarking	Performance Reviews with UOP Experts PremierPLUS Services
Asset **Performance Management Solutions**	Plant Historian & Insight Process Monitor Benefits: $5-10M/Unit	Asset Performance Management	Performance Solutions – Elite, EPP, Heater Performance Audit services etc
People **Training & Simulation**	Competency MAP Connected Worker Benefits: $10M+	Curated Training Operator Training Simulator Immersive Field Experience	Curriculum based Approach, Outcome Based Training

Connected Services

Performance Management Solutions

Training & Simulation

- ✓ Improved Production
- ✓ Better adaptability to varying conditions
- ✓ Optimal Energy Consumption
- ✓ Improved Operator Productivity
- ✓ Faster On-boarding

Technology + UOP Expertise = Digital Services Differentiated Value

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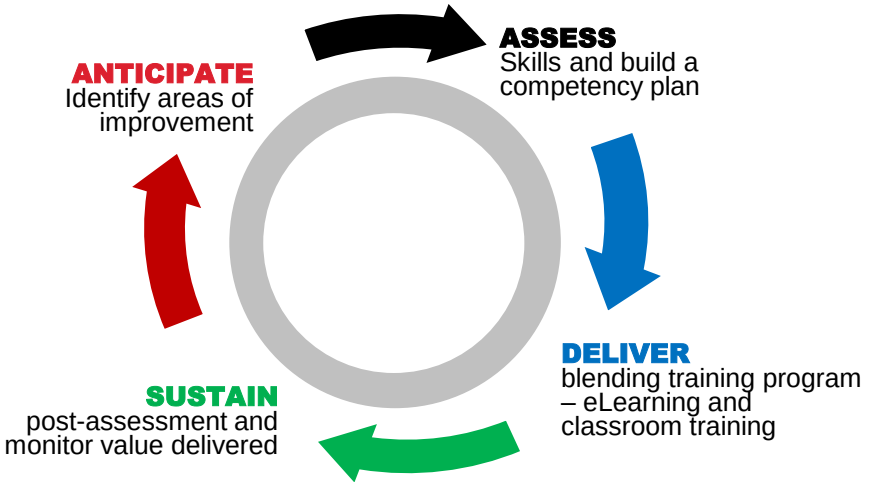
PEOPLE | TRAINING AND SIMULATIONS

- **Hiring consultation,** including strategy review, job description review & CV assessment to identify target hires
- **Learning Management System** integration and hiring consultations
- **Skills assessment and identification** for different roles, including process engineers, safety, operators
- **Reskilling and upskilling** the workforce
  Onboarding/Ramp up → Performing → Expert Development
- **Blended training** combining eLearning modules, in-person/virtual classroom training, and on-the-job training

End-to-End Competency Offering



Benefits of Competency Management

Organizational Benefits

- Reduced time to competency
- Better knowledge retention
- Improved hiring & retention of talent
- Development of in-house expertise

Operational Benefits

- Higher profitability and safety
- Better operational performance
- Reduced unplanned downtime

Partner with Customer to Assess Skills with Competency Mapping & Increase Training Scope

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Regional COE – TRAINING & SIMULATION APPROACH

aramco

ENHANCE – LEARNING MANAGEMENT SYSTEM

UOP Content, Training Needs Assessment, Curriculum Design/Adjustment, Train the Trainer

Invest In Region To Realize Value Of…

- Improved operations & profitability
- Reduced downtime & abnormal situations
- Improved employee engagement & retention
- Reduced safety and operational risk

UOP - Early Engagement → **COE - Performing** → **Expert Development**

Workshop/MoU → CMAP → Program Design and Management → UOP ILT Offerings → COE → Advanced Training → OJT/OTS/Workshop

AVAILABILITY - NOW

- Residency Program
- 1600+ Hours Industry Fundamentals
- 22 Categories
- General Web-Based Training for Safety, Operations, Maintenance
- Training Needs/Skills Assessment Evaluation
- UOP Licensed eContent
- Interactive Tools & Guides
- CMAP Framework
- UOP Technology Framework
- Needs Analysis
- Development of Activity
- Explore Curated Training Opportunities to Identify, Resolve, & Measure key challenges
- Scheduled Course List
- Scheduled UOP Courses
- COE Roadmap
- Includes Pre & Post Tests
- Builds on Pre-requisite WBT
- GA-Industry content

AVAILABILITY - ONGOING

- Residency Program In-House
- Continuous ILT learning
- Continuing Education
- Customized eLearning WBT
- OTS/IFS Exercise
- KSA Synergy Identification – UOP Based
- Virtual Workshops
- Supervisors to Encourage Preparation and Interaction

AVAILABILITY - ONGOING

- Virtual Progress Meetings
- Sustain
- Optional: OJT Projects
- Annual Blended Training Cadence
- Persona Specific
  - Process Engineer
  - Supervisor
  - Operator
  - Inspection Lab/QC
- Your Time Assessments and Tests
- Continuous Improvement metrics

3-5 YEAR SOLUTION | **CURRICULUM BASED** | **COHORT PROGRAM**

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