

## **DIGITAL TURNAROUND (TAR) MAINTENANCE FOR PROCESS INDUSTRY**

Pre-Integrated digital solutions enabled over a wireless network providing higher transparency and visibility of people and assets post shutdown, leading to a faster and cost effective turnaround

Unprecedented scenario being faced by Oil & Gas and other manufacturing industry with higher levels of production and low consumption due to COVID-19 initiated lockdown.

Enterprises are looking at accelerating their planned shutdown. Post Shutdown turnaround maintenance poses several execution challenges that cannot be addressed by planning and scheduling actions alone. Higher concentration of contractor workforce leading to heightened safety risks and budget overruns due to low productivity and billing leakage discrepancies. Improved execution efficiency combined with a good planning can help enterprises save 10-15% of their turnaround costs.

Typical industry spend for turnaround maintenance – 10-100 M\$ for an intense activity spread over 1-2 months.

TechM TAR solution suite addresses these key issues enabling enterprises to cut down their TAR duration, improved Safety and higher Transparency & Visibility of people and assets today and future proofing today's investments to drive plant efficiencies post turnaround.

## KEY CHALLENGES



Significant dollars being spent on small pit stops shutdowns (10-30\$Mn) to large complex programs Turnarounds (100- 200\$Mn+) with individual activities amounting to 150000. 80% go over budget more than 10% of time. \*

Shutdown delayed by 20% of time for approximately 50% of the project.\*



Safety risk is heightened: 300% greater usage of contractors (3000-7500+) in an intense 20- 60 day single event



## HOW IS TECH MAHINDRA COMING INTO PLAY?

TechM's TAR maintenance solution suite comprising a set of pre-integrated, production ready digital solutions over wireless network.



**CONNECTED WORKER**



**SAFE WORKER**



**CONNECTED ASSETS**



**CONNECTED PLANNING**

## TECH MAHINDRA SOLUTIONS

Tech M's Turnaround Maintenance solution suite leverages technologies like AI/ML, AR/VR, IoT, Smart Wearables to deliver faster Turnaround, improved Safety & higher Transparency & Visibility of People, Assets and Plants post shutdown



Planning & Scheduling:  
Increased productivity  
(5-15%)



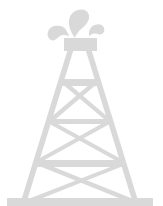
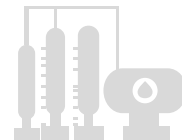
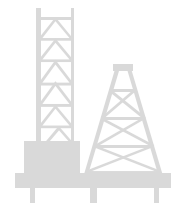
Work Force Management:  
Reduced billing  
discrepancies (5-10%)



Maintenance:  
Reduced MTTR

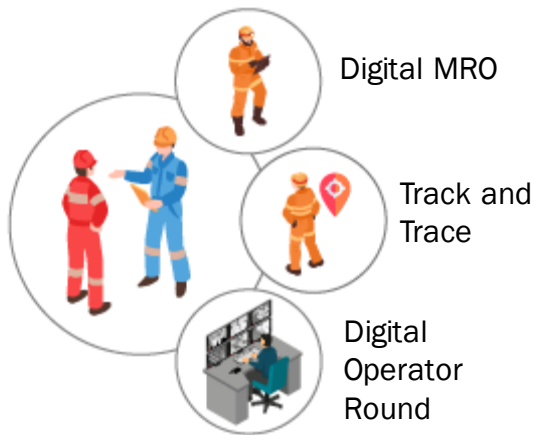


Health & Safety:  
**360 deg** Safety  
Monitoring



# PROCESS INDUSTRY MAINTENANCE

## CONNECTED WORKER



AR assisted maintenance, Remote Technician Support, Real time Track & Trace of personnel



Augmented Reality assisted maintenance



Remote Technical Support through See What I see



Track and Trace of personnel - area, zone

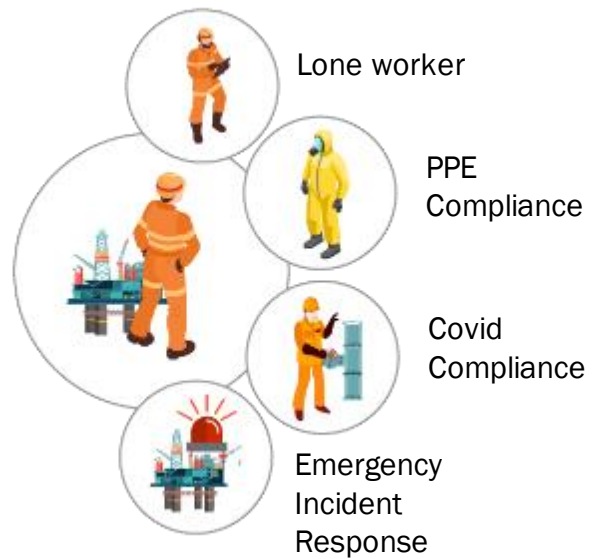


Automated Checklist For asset start up



Automated E-log of maintenance actions/ observations

## SAFE WORKER



Worker Safety & compliance through PPE enforcement, Social Distancing norms and emergency response



Vitals measurement by smartphone cameras



Confined work space and Fall Detection



PPE adherence



Emergency Call and Virtual Buddy



Thermal screening & whole body sanitization

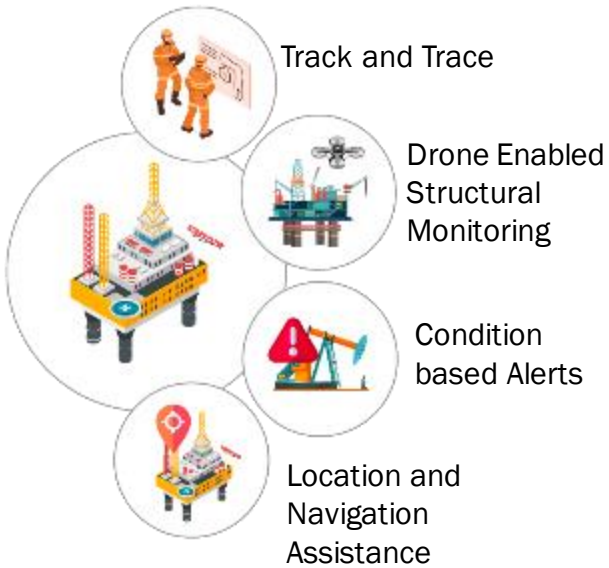


Automated social distance



Alert/Alarm to first responder

## CONNECTED ASSETS



Real time visibility to spares, Tools/Assets Improve productivity through drone inspection



Track and Trace of Spares for maintenance



Track and Trace of Tools and assets like cranes, drilling equipment



Hazardous area inspection like flare stacks, tank farms



Inspection of corrosion, leak detection of pipes and structures



Environment safety, dangerous gases, heat, oxygen level alerts



Map assist to assets for maintenance

## CONNECTED PLANNING



Enable End to End planning for turnaround work management



Automatic logging of Maintenance Actions & observations integrated with Asset Management



Integrated Planning and scheduling



Integrated spares plan



## SOLUTION FEATURES

### CONNECTED PLANNING

Integrated planning and scheduling for faster turnaround work management

### CONNECTED ASSETS

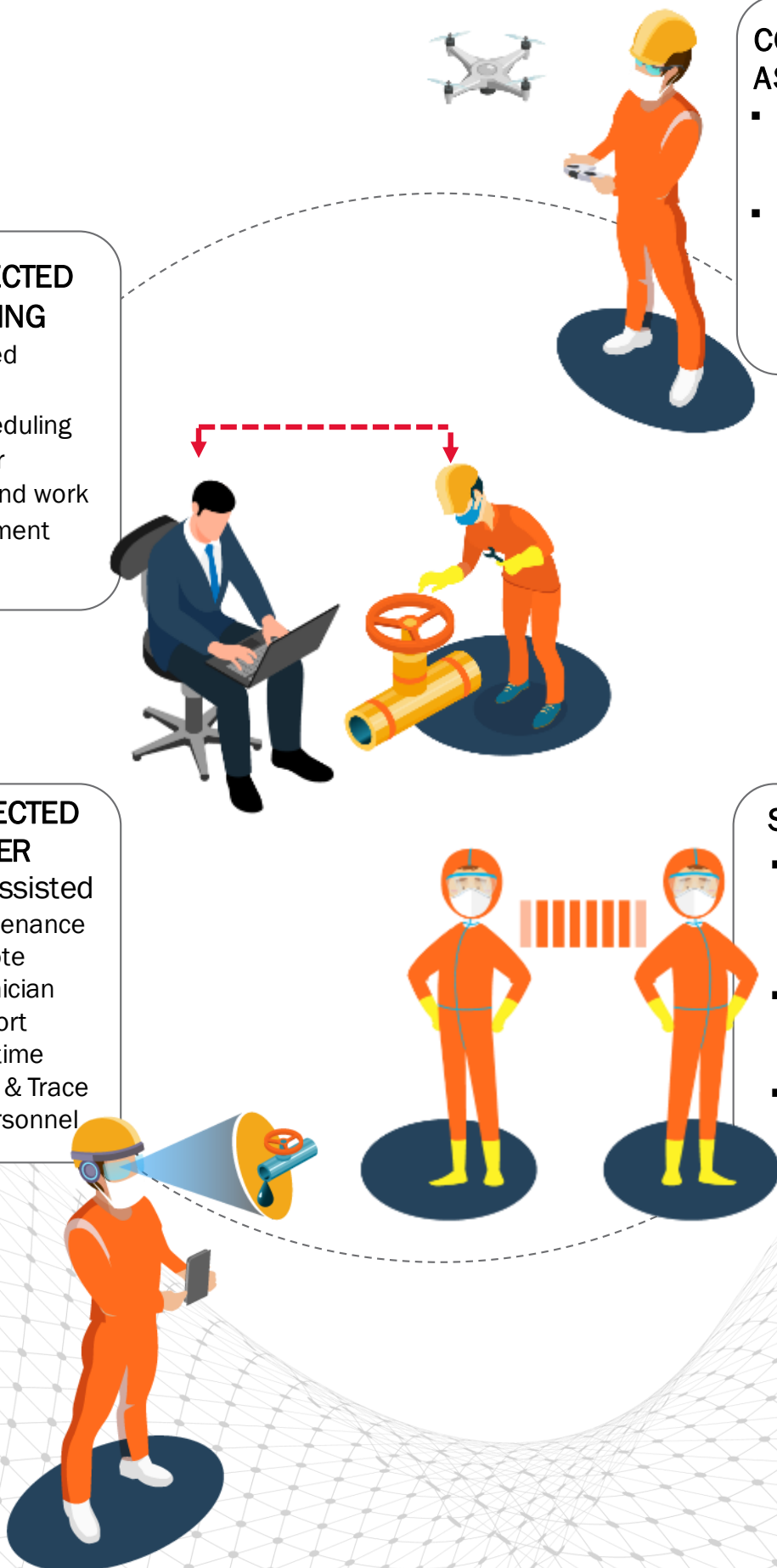
- Real time visibility to spares, Tools/Assets
- Improve productivity through drone inspection

### CONNECTED WORKER

- AR assisted maintenance
- Remote Technician Support
- Real time Track & Trace of personnel

### SAFE WORKER

- Worker Safety & compliance through PPE enforcement
- Social Distancing norms
- Emergency response



A man wearing a yellow hard hat and a safety vest stands in front of an industrial facility. The background shows various industrial structures and pipes under a clear sky. The man is smiling slightly and has his arms crossed.

## TECH MAHINDRA ADVANTAGE:

Pre-Integrated Production  
Ready Secure e2e Enterprise  
digital solution

Solutions enabled through partnerships  
and alliances with industry leading  
technology providers

Complete Turn-key Technology solution  
provider from connectivity, devices, digital  
solutions, set of services ranging from  
system integration, network deployment,  
Application engineering and Security





## INTEGRATED ENGINEERING SOLUTIONS (IES)

Is a Connected Engineering Solutions business unit of Tech Mahindra. At Integrated Engineering Solutions, customers are at the core of every innovation. We align Technology, Businesses and Customers through innovative frameworks. We deliver future-ready digital convergence solutions across Aerospace and Defense, Automotive, Industrial Equipment, Transportation, Consumer Products, Energy and Utilities, Healthcare and Hi-Tech products. Our 'Connected' solutions are designed to be platform agnostic, scalable, flexible, modular and leverage emerging technologies like Networking, Mobility, Analytics, Cloud, Security, Social and Sensors, that enable launching of smart products and deliver unique connected consumer experiences, weaving a connected world. Coupled with this, our strong capabilities in Electronics, Mechatronics and Mechanical Engineering along with domain understanding and product knowledge, bring excellence to the entire lifecycle of these connected ecosystems.



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Connected World.  
Connected Experiences.