

Digital Approach to Foster a Proactive Safety Culture in Organizations

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STEAG Energy Services

Voltage Sensing Bands - Tool Talk

The OneEHS Digital team is working with Business to pilot use of voltage sensing bands at Business sites. Please review with your business Labor Relations Council, Human Resources, and Site Personnel prior to deployment.

Smart eyewear at [FILL IN] site is being piloted to [FILL IN]

About

The voltage sensing band is a wearable device that detects energized assets and alerts the wearer when in close proximity, preventing contact with known and unknown energized assets. The device does not record or transmit data nor does it capture or record GPS location info during use.

Battery: up to 12 hours of use and the battery is rechargeable

Sensitivity: minimum 24cm @ 110 VAC

Response Time: ~ 0.1 seconds

VoltaBusiness RanBusiness: Required 100 to 1000 VAC

Frequencies: 50Hz, 60 Hz

Operating ranBusiness: -40 to 120 degrees Fahrenheit

Humidity raBusiness: 0 to 100%

Haptic Feedback: Audible alarm, vibration and visual



Do...

Use the voltage sensing band to make processes easier and safer

Verify operation on a known source before and after use

Stop work when alerted by the device and confirm the source of energy

Provide feedback to your site lead on comfort and usability

Limit use of the band to specific work area identified for the Pilot

Report any concerns to your manager, your EHS, HR or compliance leader or your business legal counsel

Don't...

Submerge the band into water or other liquids

Use the device as a primary defense for electrical safety

Take the device off-site

Use the device when the battery is low

Use the device to detect Direct Current (DC) (it only detects AC)

New, smaller battery (3+ hours)
(about 1/3 of the weight)

Redesigned Head Unit
(Smaller & Lighter, no lateral band)



SmARt Helmet 2.0

Benefits from Units

Benefits
project efficiency (time saving)
T&L avoidance
OJT / training improvement
Customer satisfaction
Work permit etc...
Experts utilization (time spent on expert
To be evaluated on yearly basis, in kUSD

RealWear HMT- 1



RealWear®, the global leader in Augmented Reality (AR) hardware technology for industry, has built the first hands-free ruggedized head-mounted wearable device for Connected Worker programs, the HMT-1.

RealWear HMT-1 is the powerful, fully rugged Android computer that is worn on the head and replaces the touch screen with an articulated micro-display, giving the appearance of a 7-inch tablet screen.

Maximize EHS Productivity & Safety using the HMT-1: Prepare for and deploy the HMT-1 smart device leveraging best practices and outcomes from the global EHS Pilot consisting of 50 devices and 30 global GE sites and locations.

Cost savings of more than 95%¹

Experts can now resolve technical issues by guiding teams remotely, thereby avoiding expensive travel.

Up to 70% savings on training costs²

Teams can actively communicate with each other, even while working with both hands in industrial environments, satisfying all safety requirements.

Quicker issue resolution time resulting in over 50% cost savings³

Technical experts can accurately provide resolution across facilities by visually communicating instructions to team members remotely

RealWear HMT Wearables



HMT -1®



HMT -1Z1™

FEATURES



100% Hands-Free
Articulated OS with local recognition for commands



Unmatched Noise Cancellation
Four digital microphones and advanced algorithms



Waterproof
IP68 – Protected against heavy seas or powerful jets of water



Just Tight
Complete protection from micro-particles



Drop Proof
Resistant to 2 meter drops onto concrete from any angle



Built Rugged
Fully operational from -20°C to +50°C MIL-STD-810G

Access the correct information for the task at hand while fully engaged in the work

- Keep reference information in view for easy accessibility for a smarter and more efficient workflow

- Completely suitable for enterprise-level environment, health and safety (EHS)

The Problem

When high value equipment have outages, the cost of production downtime is substantial.

Sending experts physically to the problem location during a planned or an unplanned outage can be costly and time-consuming.

Traditional methods of problem solving via the phone or helpdesk is difficult for experts to diagnose and correct the actual issue.

New technologies are unable to withstand the rugged environment necessary for industrial usage.

The Solution

RealWear HMT-1 is built rugged to handle harsh, industrial environments.

RealWear HMT-1 hands-free technologies allow field technicians to access point-of-work instructions even while engaged with both hands at work.

Remote mentor software solution enables RealWear HMT-1 wearers to make a hands-free video call between remote teams members from the field.

HMT-1 heads up display can be positioned in-view and out of the field of view with ease.

The Results

Downtime and the cost of sending experts to remote facilities is significantly reduced.

RealWear HMT-1 wearers can easily acquire remote assistance from any location, group, or facility—significantly increasing issue resolution.

Easy access to information wherever and whenever needed, allowing for better quality management.

Decreases time exposed to EHS hazards by increasing productivity and risk identification

Free your hands.™

Safer. Faster. Smarter.

The RealWear® HMT-1 provides the foundation for Connected Worker programs. Use it in wet, dusty, hot, dangerous and loud industrial environments. A fully rugged head-mounted device, it optionally snaps into safety helmets or attaches to bump caps and can be used with safety glasses or corrective eyewear.

The high-resolution micro display fits just below your line of sight and views like a 7" tablet. It's an industrial dashboard: there when you need it and out of your way when you don't.

The HMT-1 works with powerful software applications from our solution partners in four core categories, each optimized for completely hands-free voice control. That means no scrolling, swiping, or tapping - just simple voice commands. Use it for remote mentor video calling, document navigation, guided workflow, mobile forms and industrial IoT data visualization.



Fully Rugged Performance

- 100% HANDS FREE**
Voice based operating system, local speech recognition in loud areas.
- UNMATCHED NOISE CANCELLATION**
Four digital microphones and advanced algorithms.
- POWERFUL AUDIO**
Integrated speaker and 3.5mm audio jack for use with hearing protection.
- PPE COMPATIBLE**
Designed to work with standard hard helmets, bump caps and safety glasses.
- FULL SHIFT INTERNAL BATTERY**
Field swappable for continuous use.
- OUTDOOR DISPLAY**
Appears size of 7" tablet, viewable in bright sunlight.
- WATERPROOF**
IP66 - Protected against heavy seas or powerful jets of water.
- DUST TIGHT**
IP66 - Complete protection against the ingress of micro particles.
- DROP PROOF**
Resistant to 2 meter drops onto concrete from any angle.
- BUILT RUGGED**
Fully operational from -20° C to +50° C. MIL-STD-810G.

RealWear Platform for Remote Mentoring



Technicians assessing an issue in the field wearing RealWear HMT-1.



Experts providing assistance to team members remotely with RealWear HMT-1 remote mentor solutions.

OVERVIEW

Remote Mentor solutions on RealWear HMT devices enable workers in the field to get assistance from experienced technicians ("mentors") through an enhanced video call in which the "mentor" is able to see and hear from the worker's point-of-view in real-time, regardless of where they are in the world.

Mentors can capture still images, zoom in to examine details, share documents, and annotate all documentation. The HMT device platform enables Mentors to coach workers in real time and provide guided instructions remotely.

KEY BENEFITS

- ✈️ Save on travel expenses by eliminating the need to send experts to facilities.
- ⌚ Save time, money, and headaches with the ability to diagnose and resolve problems quickly and easily.
- 💰 Save on servicing costs with the ability to inspect remote facilities regularly and easily for preventive maintenance.
- 👥 Train, mentor, and monitor workers for quality and safety.
- 🤝 Collaborate, Annotate ("telestrate") on images capture photos record video share screen, message, share notes & documents.

REMOTE MENTOR SOLUTIONS PARTNERS INCLUDE:



Present Digital Initiatives @ Bhilai Steel Plant



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सुरक्षा अभियांत्रिकी विभाग

Telegram based Safety Bot



@BSP_SAFETY_BOT

(Developed *in-house*)

Telegram based Safety Bot



Salient Features:

- **Menu driven navigation**
- **Data exchange in different formats**
 - ❖ Text, image, audio, video, office docs
- **Knowledge Bank**
 - ❖ Safety Standards, Cue Cards, Safety Alert Messages, Safety Circulars, Good Safety Practices
- **Quiz**
 - ❖ Safety topic based
- **Report UC&UA**
 - ❖ Report unsafe incidents with geo location, images and remarks
- **Scan QR Code**
 - ❖ Retrieve SOPs/SMPs/Dos & Don'ts
- **Feedback**
 - ❖ User experience

Way Forward



- Future Initiatives on Safety Bot:
 - ✓ Facility for training modules
 - ✓ Awarding certification
 - ✓ Group wise information broadcast
 - ✓ Real-time Safety notifications
 - ✓ Integration with Safety Software

Agenda

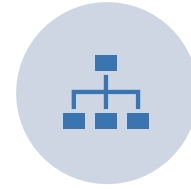
- Digital transformation taken by HSE function.
- Capturing and analysing Safety Observation for better Safety.
- Cultivating New Mindsets of Hazard Reporting through Mobile App
- How technology enables better collaboration and information sharing.
- Use of Mobile App to encouraging more employee participation.
- How e-SAFE web tool/ mobile app improve monitoring Safety Risks at plant.



Various digital transformation program the HSE function ..



1. HAZARDS
MANAGEMENT
SYSTEMS



2. BEHAVIOR BASED
SAFETY MANAGEMENT
SYSTEMS



3. ONLINE
APPOINTMENT FOR
SAFETY INDUCTION



4. PRE & POST
TRAININGS ASSESSMENT



6. MONITORING OF
CONTRACTOR
INSPECTION PROGRAM



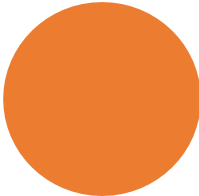
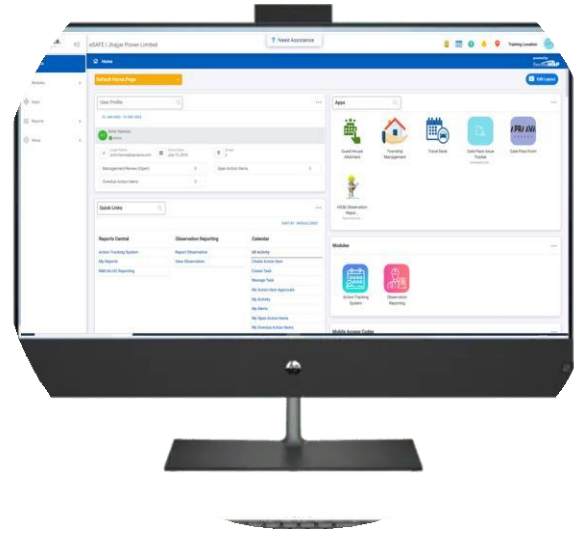
7. CONTRACTOR
MANAGEMENT
SYSTEMS



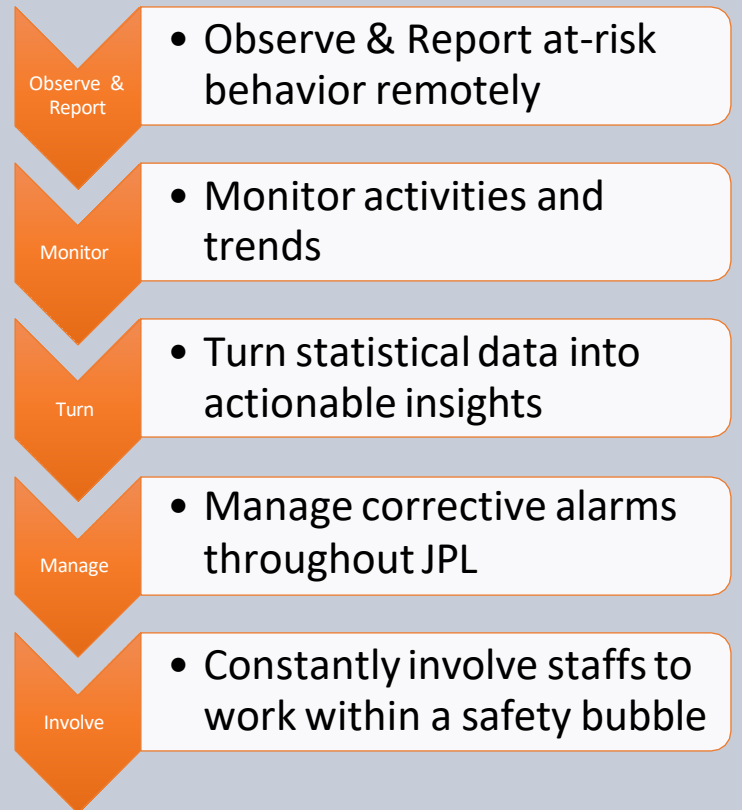
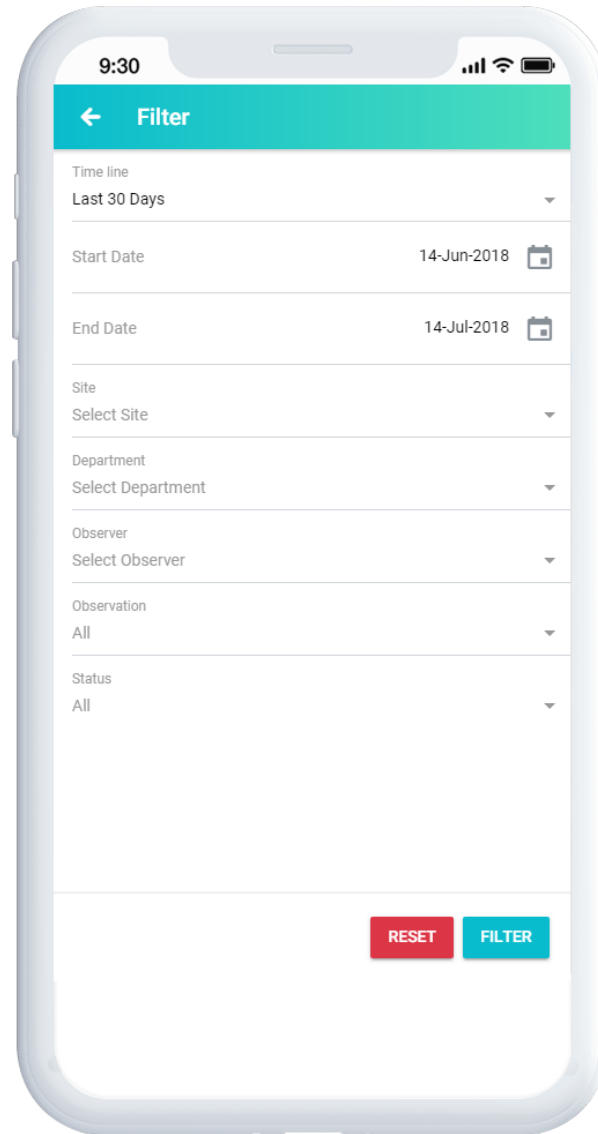
8. CONTRACT WORKER
SAFETY INTERACTION
PROGRAM

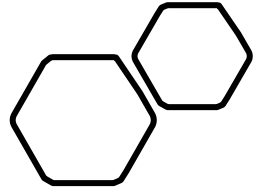


Hazards Management Systems –e-Safe Module

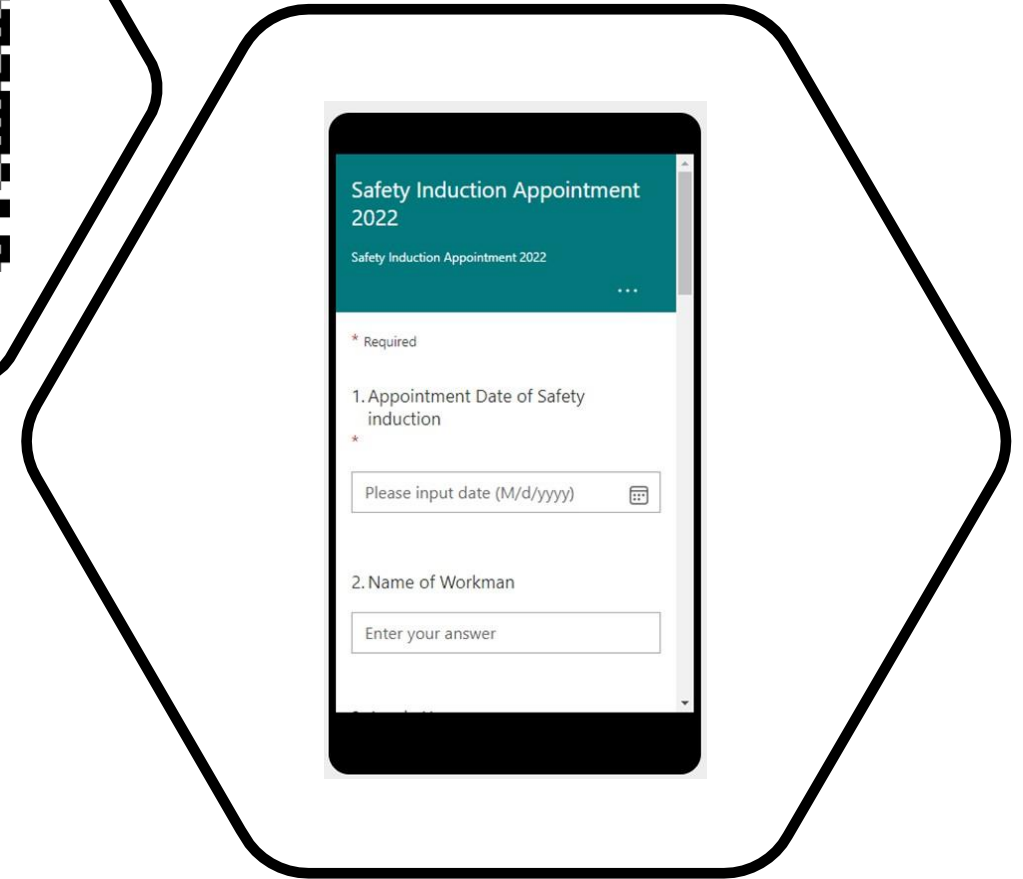


Behavior based Safety Management Systems





Online appointment for Safety Induction

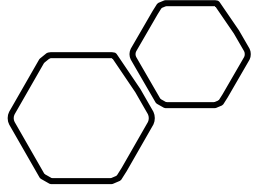


Representatives from contract partner will scan the barcode or link from any android mobile

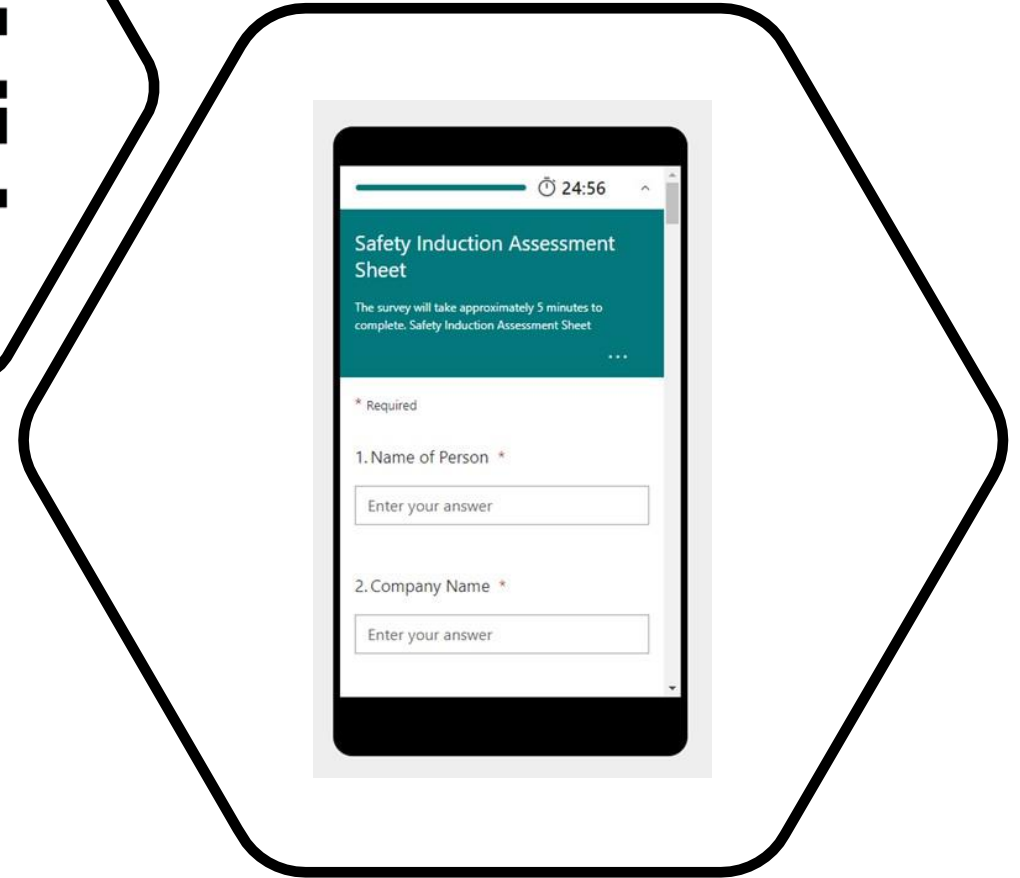
Fill the contract employee such as Name of contract employee, designation, gate pass number if available, department and

Select the date of appointment feasible for the

Submit the request

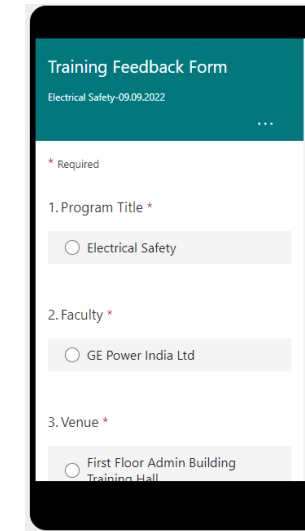
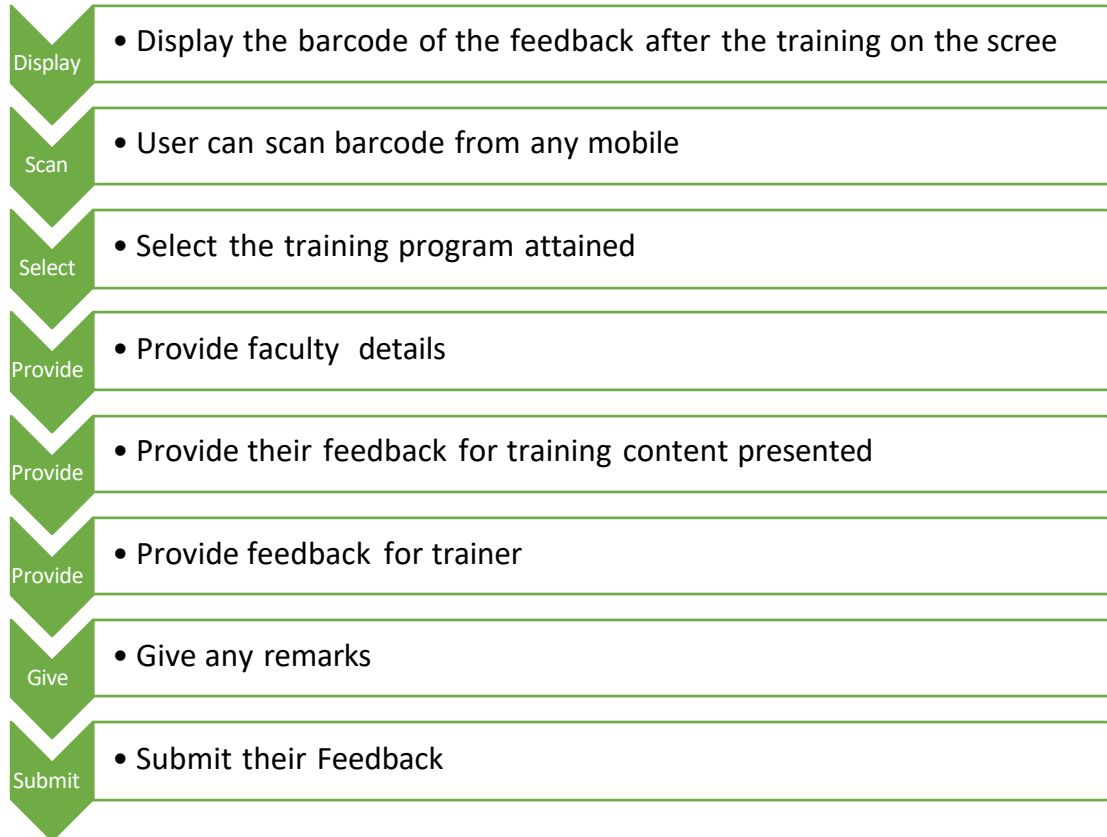


Online Assessment of Safety Induction/Training Training(Pre-Post)

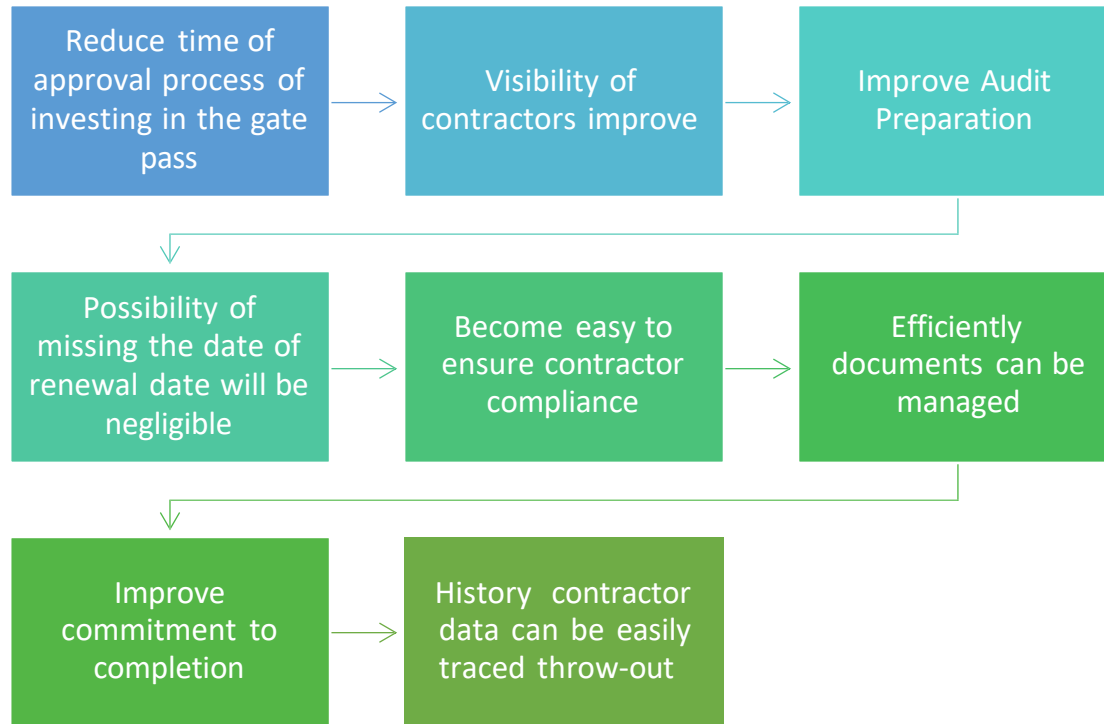


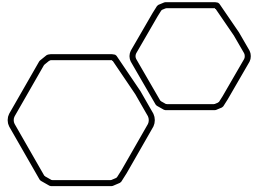
- Representatives from contract partner will scan the barcode or link from any android mobile
- Contract employee will fill personal details such as Name of contract employee, designation, gate pass number if available, department
- Candidate will answer questions of assessment
- Submit the questionnaire
- After submission result will be announced

Online Training Feedback

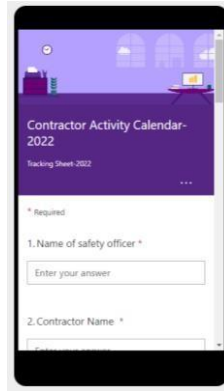


Contractor management systems





Contractor Safety Officers Activity Calendar



- Safety Officers from contract partner will scan the barcode or link from any android mobile
- Safety officers will conduct inspection at site and will fill details in google forms
- Submit the inspection records
- After submission inspection records will be discussed in safety officers meeting

Pradeep Singh

Use of technology to Reduce the hazards

Smart Electrical Gloves:

Workers working over electrical system without gloves?

Notification / Identification:

- After Incident
- Physical presence of supervision



Classification: **Public**

If Panel is opened the event will go to the control room via BTS alarm port(s). If person visited the site as Non-PTW, and event is detected:

- System will try to look for the safety Gloves
- If Gloves are detected, system will try to identify the person
- System will look for the mobile number through the app
- System will expect the 'site visit report'
- If 'panel open' event is generated and none of above devices are detected, the "Unsafe" even will be generated by the system

Telecom Infrastructure Automation



Transformer

Types of alarms:

- ✓ EB available
- ✓ Phase available
- ✓ Low voltage



Diesel Generator

Types of alarms:

- ✓ DG auto start & STOP
- ✓ DG fail to start
- ✓ Low fuel
- ✓ DG battery issue

Shelter Room



Power Plant



SMPS



FCU



Type of Alarms:

- Room Temperature
- Auto AC on or off with compressor
- AC fail to start
- Battery Bank cut off to drain (Health Issue)
- FCU start & STOP
- Auto fire suspension



Air Conditioner

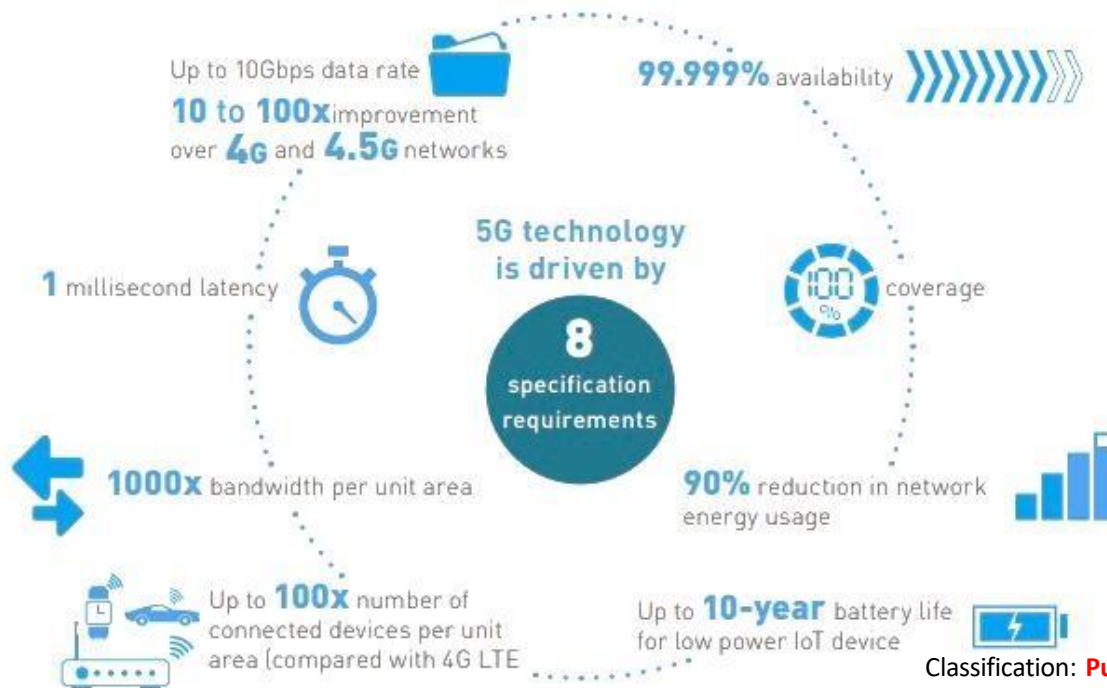


Active Load

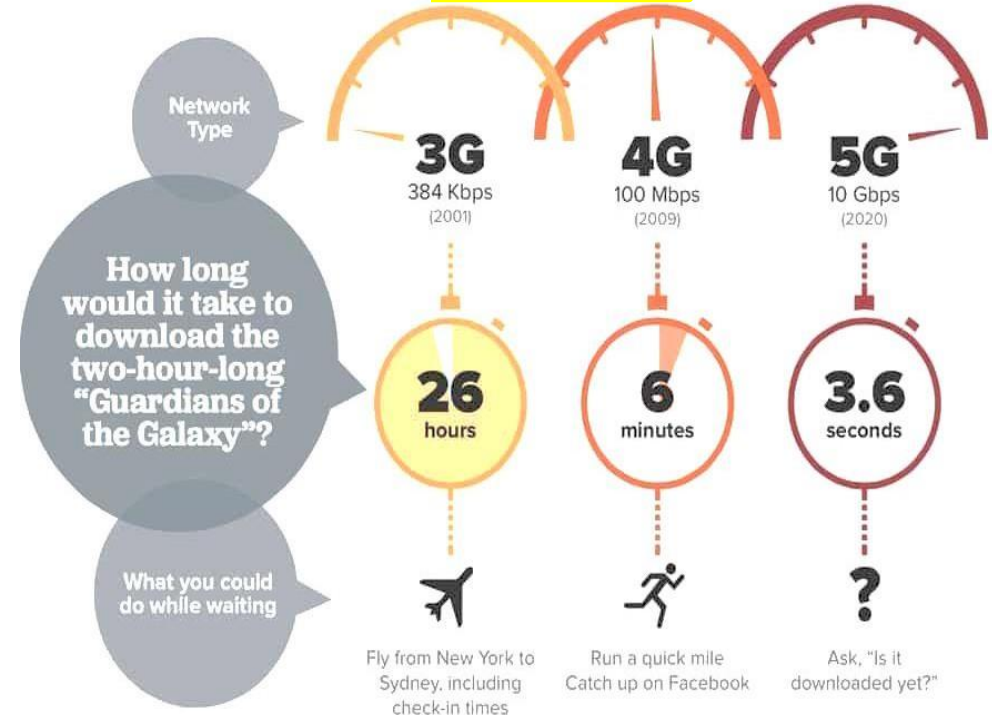


5G

5G is the 5th generation mobile network. It is a new global wireless standard after 1G, 2G, 3G, and 4G networks. 5G enables a new kind of network that is designed to connect virtually everyone and everything together including machines, objects, and devices.



Classification: Public



Download a full 8k movie

500% faster than 4G LTE

5G Support for Safety:

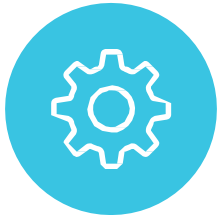


Reimagining Safety Training through Gamification

Benefits that gamification



Inherent desire and motivation to beat one another



Increasing the accessibility



Helps optimize critical information retention



Gamification Increases Employee Engagement



Providing instant feedback



Offers Immediate Signs of Achievement and Progress

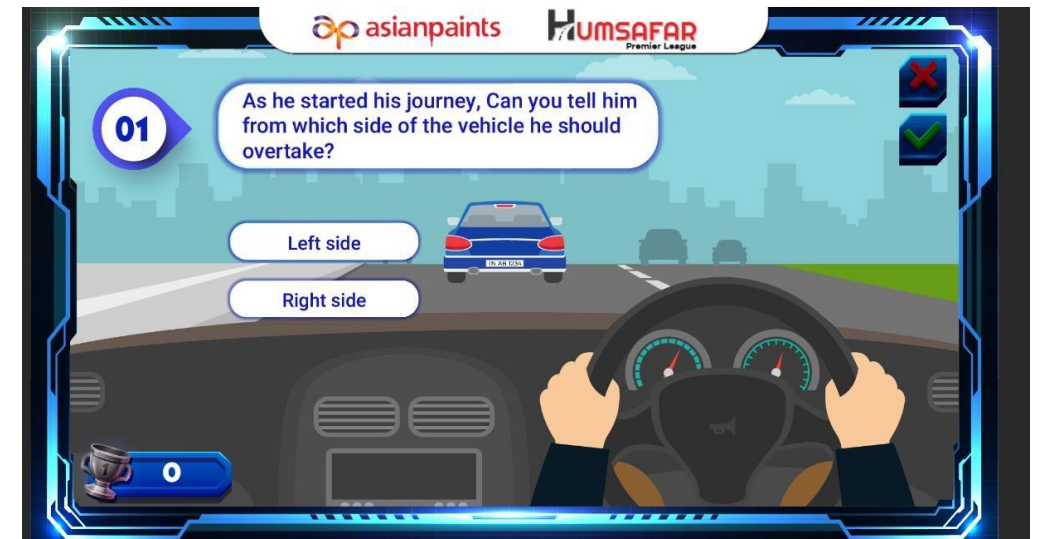


Four level of Gamification



Gamified quiz approach

- Maza game
- Complete challenges by answering question
- Move ahead and gain bonuses



Safety Program Converted into Board game

- Safety program made engaging through games-based approach
- Character selection and roleplay
- Challenges
- Difficulty determined by spin the wheel interaction
- Earn points or face penalties

At APL

- Chemical Safety program
- Manual material handling





Think how you would have handled such a situation from Varun's perspective.

