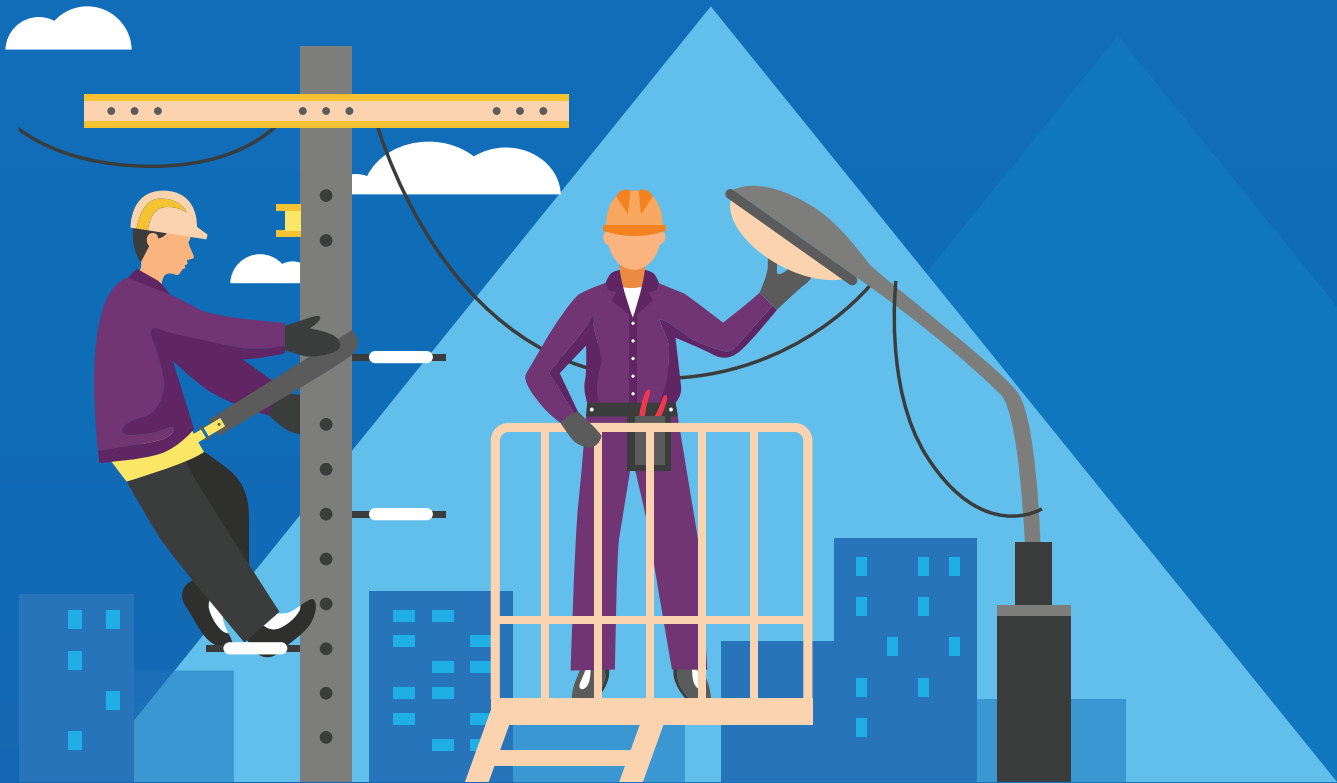


Field Service Optimization





Business challenges

Field services are integral to the utility industry (electric, gas, or water) around the world. It helps the utility to ensure business continuity through **improved customer satisfaction, reliability of services, and health and safety of its employees and its assets**. The field workers are critical resources, mainly responsible for infrastructure construction, maintenance, restoration, and customer services. At the same time the Field Service Optimization (FSO) is mostly paper-based, with least amount of automation. It requires a strong and able back office managers to manage the work plan for its service representatives. With ageing assets, we are marred by last-minute order placement, order cancellation, or changes in work assigned are frequent. These factors negatively impact employee health and safety, and productivity. High-risk maintenance work, extreme weather, and remote location work assignments are not rare in field services. Hence, efficient communication and safety precautions are essential. Often, service agents directly interact with customers and hence they are the representatives of utility industry service providers.



Lower ‘first-time-right’ fix rates, service quality, and longer repair times are increasing asset downtimes and maintenance costs.

The need to deliver more with less has put pressure on operational and capital expenditure budgets. Utilities are forced to increase the life of the expensive infrastructure by shifting focus from reactive to predictive maintenance.

The challenge of capturing the knowledge base of skilled workforce before they retire/leave is one of the key priorities for smooth uninterrupted operations.

Field technicians also expect that business processes and systems are optimized and use latest sets of technology. The use of mobile device technology and real-time updates with back-end system is common requirement.

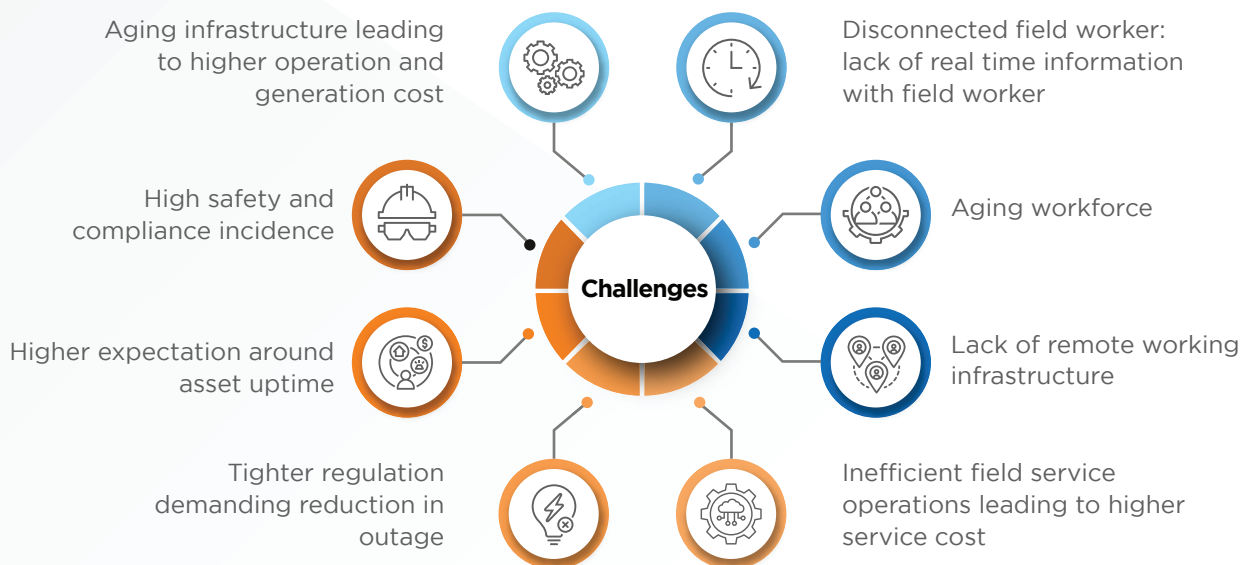
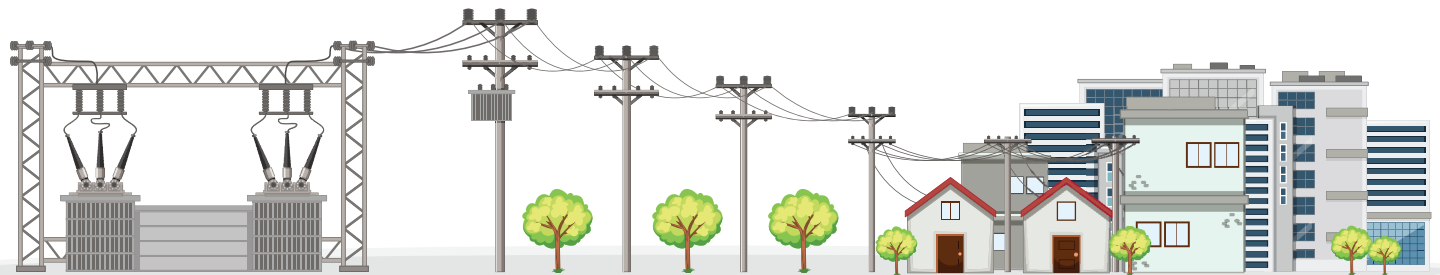


Figure 1: Aging utility infrastructure



HCL solution

HCL intelligent modular FSO Solution provides end-to-end Field service optimization, automating, and optimizing operations throughout the lifecycle:



The FSO solution provides the full value chain for work management (spatially enabled) covering

- Failure identification
- Assessment
- Allocation and planning
- Execution
- Inspection
- Subsequent preventive maintenance



Intelligent scheduling and optimization powered by **AI/ML**



Comprehensive grouping, classification, and asset failure analysis taxonomy based on best engineering practices



Mobile application solution provided to end users will replace all paper-based capturing



Best practice user experience mobile application provides users with guided input screens – both offline and online



Incorporation of costing of labor, travel, material, services etc. on asset level



Connected technician - AR/VR assisted training and guided operations for technicians

- Remote monitor and guided operations
- Digitation of knowledge repository
- Real-time sensor visualization

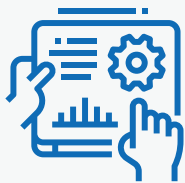


Manages your field service performance and monitor KPI's such as first-time fix rate, overtime hours, injury rate, average miles traveled per technician, MTTR/MTTB, uptime metrics etc



Autonomous inspections - Leverage drone captured aerial imagery (LIDAR, radar (SAR), satellite (optical and infrared) to automate utility asset management operations for reducing costs while increasing asset intelligence and reliability.

Key solution tenets



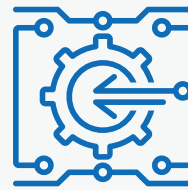
Work management

- Work planning and creation
- Schedule and dispatch
- Intelligent scheduling optimization
- Tie labor and repair costs to work orders
- Work completion



Digital operations

- Mobile field enablement
- Live technician tracking
- Engaged customer
AR/VR assist remote operations
- Smart helmets



Analyze and integrate

- Predictive maintenance
- KPI monitoring
- ERP integration
- Utilization tracker



Knowledge management

- Knowledge documents on standard processes
- Repository for technician to look for any information



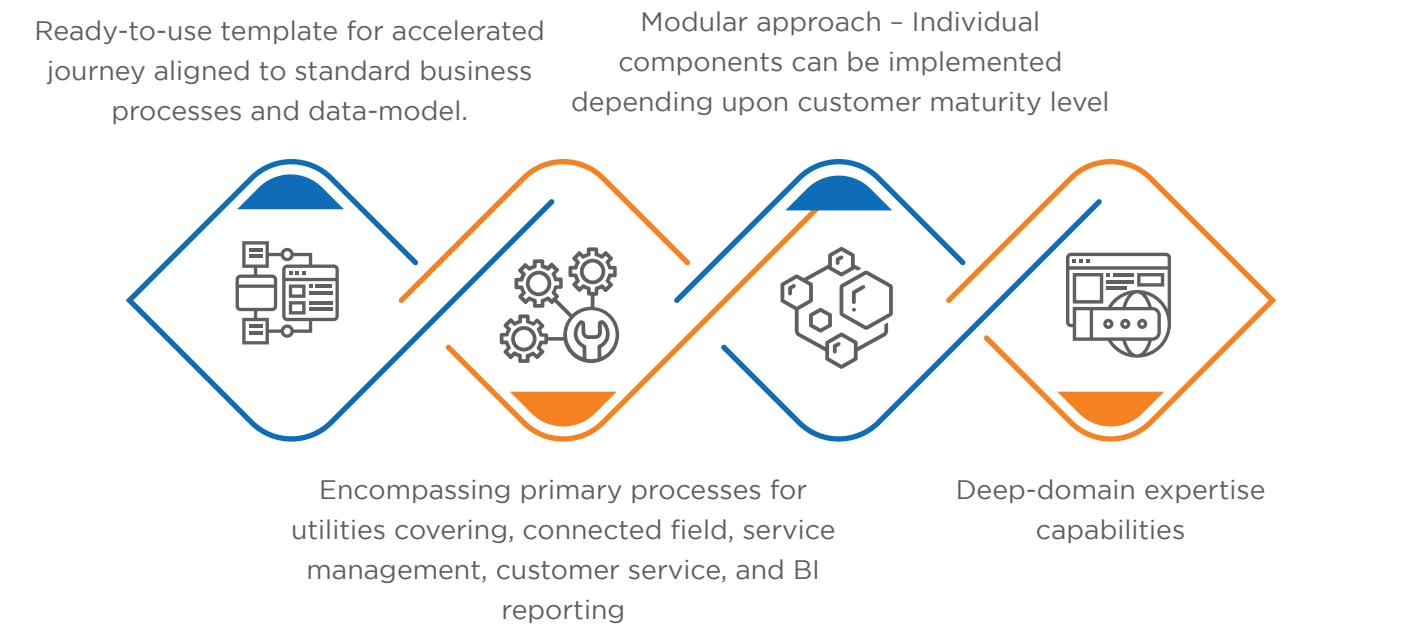
Autonomous inspection

- Leverage drone capture images
- Automate anomaly detection and anticipate breakdown
- Vegetation management

Figure 2: Key solution tenets



HCL differentiators



Solution benefits

- Preventative maintenance**

Increased useful life of assets within infrastructure set
- Compliance**

Meeting compliance requirements of internal and external audits
- Data**

Improved data quality over time
- Strategic decision making**

Visibility of all work orders operationally, spatially and financially, and supporting future planning initiatives with accurate historic data and trend analysis
- Operational excellence**

Ability to deliver more with less

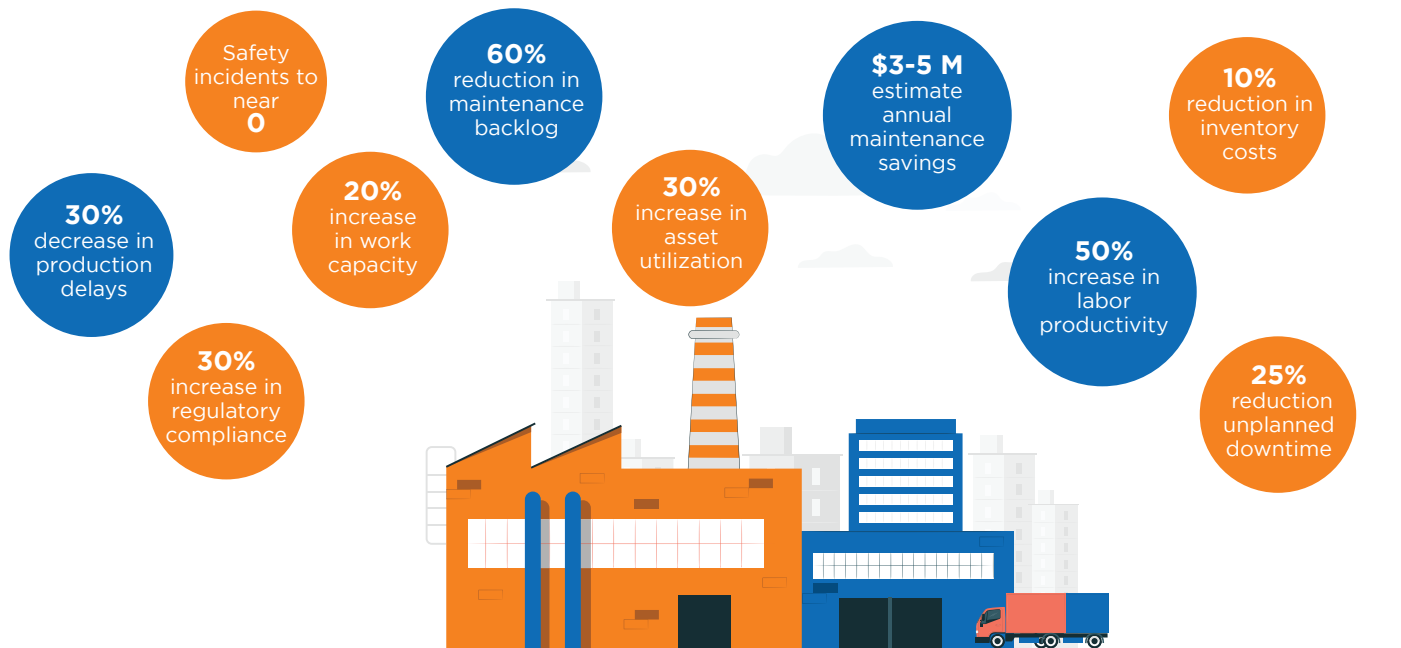


Figure 3: Key solution benefits

Future of connected workforce

Building a cohesive technology strategy can help the utilities to transform their field service operations. The future of field service belongs to emerging technologies such as AI, IoT, AR/VR, drone, and many more.

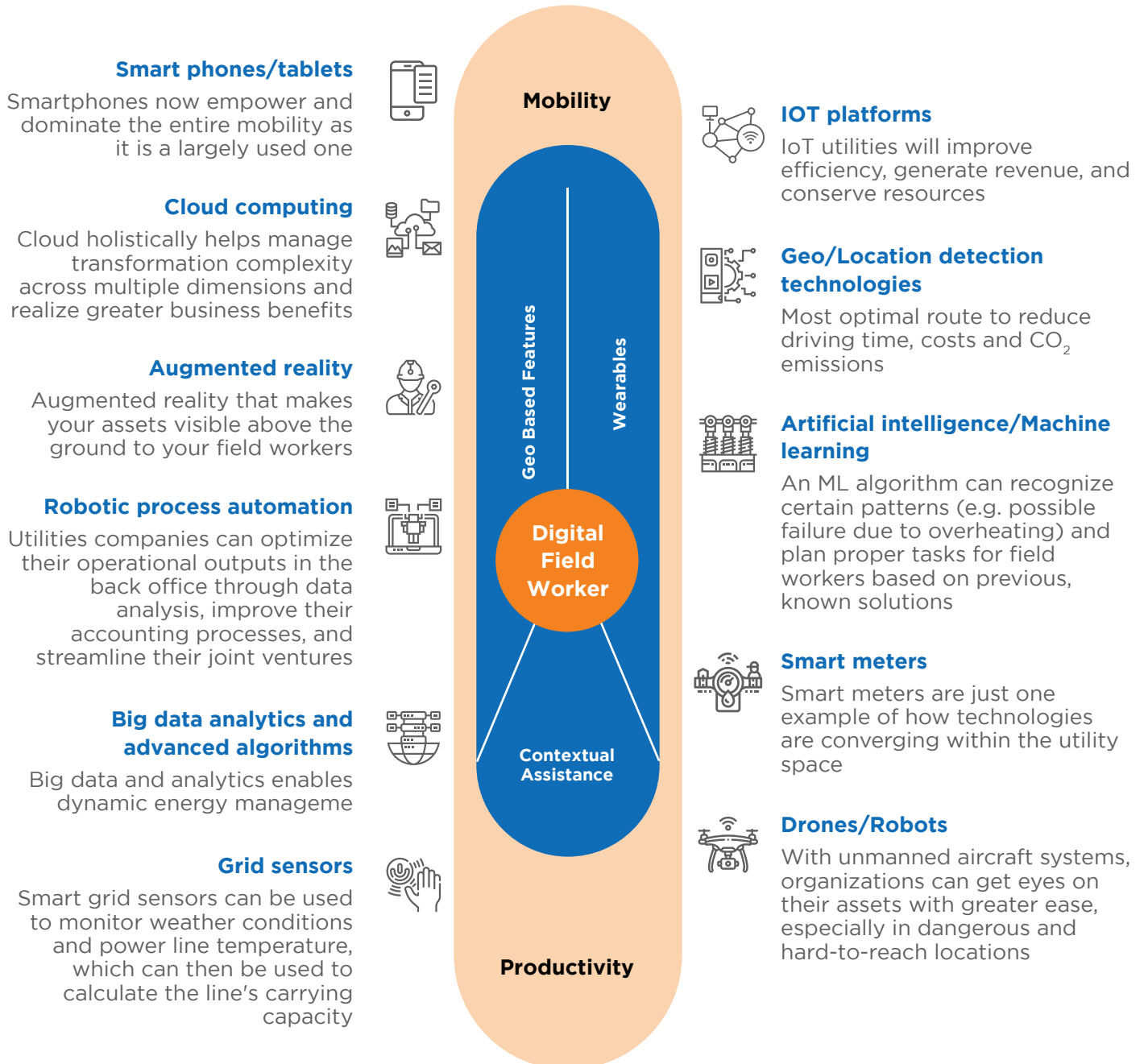


Figure 4: Future of connected workforce



Success stories



End to end Field service optimization



Challenges



Improve operational efficiency and customer service by mobile enabling its workforce



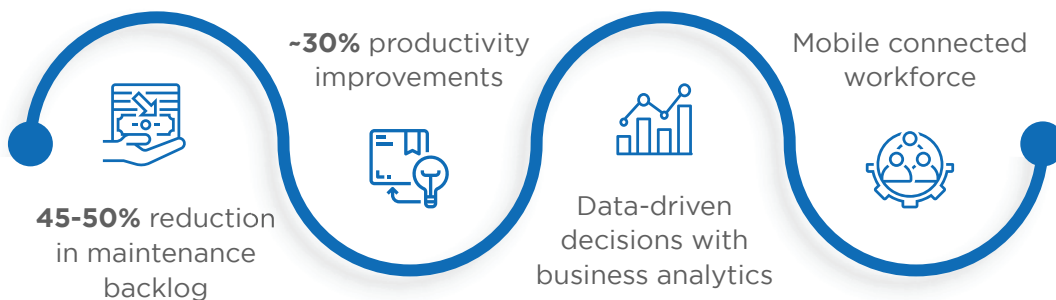
Enable its remote workforce to minimize service disruptions



Single view for work manager to improve productivity



Value delivered





Smart wearables



Challenges



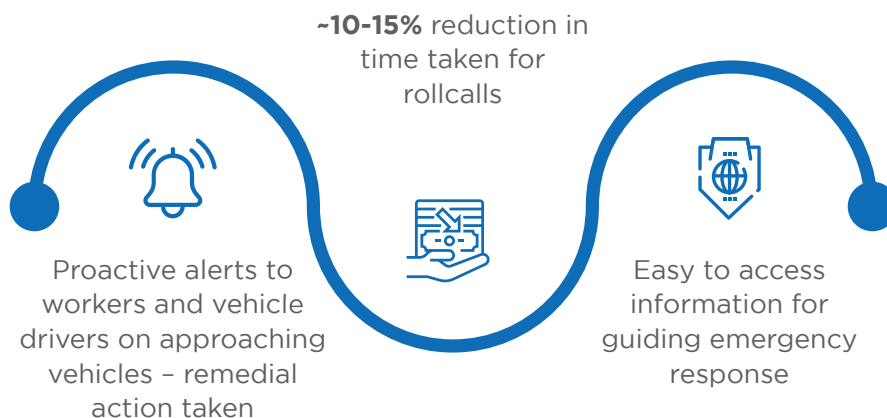
Reducing significant safety incidents and cost impact from collisions with heavy vehicles



Geo-fencing – ensuring people with right access are in appropriate work zones



Value delivered





AR based inspection



Challenges



Maintenance of a wind turbine



Optimizing the service technician response time



Avoiding multiple field visits



Limited availability of expert technicians



Value delivered



25% reduction in downtime of field asset

~30% improvement in first time fix rate





VR based training



Challenges



Optimizing the service technician response time



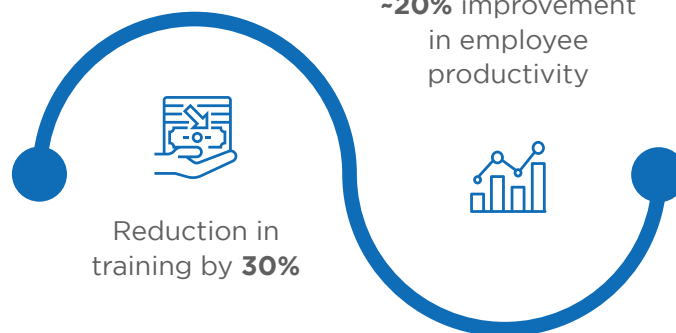
Avoiding multiple field visits



Limited availability of expert technicians



Value delivered





Remote site monitoring



Challenges



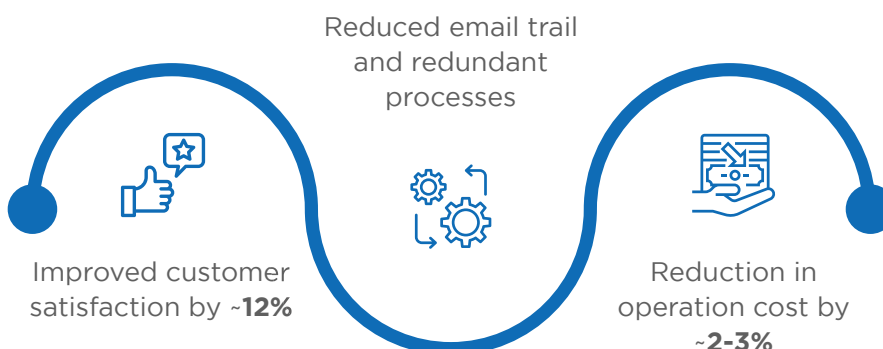
Empower engineering teams to remotely monitor and control electric equipment and machinery through mobile devices



Rapid development of application – given platform & device specifications



Value delivered





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