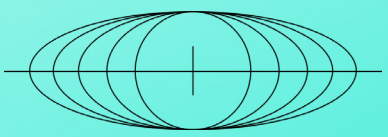
deepomatic

FIELD FORCE EMPOWERMENT

LEVERAGING COMPUTER VISION TO HELP FIELD WORKERS ACHIEVE FIRST TIME RIGHT OPERATIONS



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INTRODUCTION

THE LANDSCAPE OF TODAY'S WORKFORCE IS CHANGING, IN ALL SECTORS OF ACTIVITY, BUT ESPECIALLY AMONG COMPANIES WHO SERVICE, OPERATE AND MAINTAIN THE INFRASTRUCTURES OF TODAY AND TOMORROW: FIELD OPERATIONS COMPANIES.

WHAT IS A FIELD OPERATIONS WORKER ?

A field operations worker is a mobile agent who travels to a site to service home-based equipment, or work on heavy equipment, power distribution or telecommunication networks.

Field operations enterprises face unique challenges in evolving their model to meet the needs and expectations of the modern customer. These companies are challenged by an aging workforce and difficulties recruiting in certain industries, which lead to a shortage of employees and knowledge on the field, as well as growing generational divides. Operational activities such as defect diagnosis or installing complex systems require professional expertise and experience that are not always met by the workforce because of the high turnover rate of these businesses.
To avoid chronic skill shortages, companies operating on the field must work with a new generation of workers. Computer vision brings a solution that will help them empower this workforce.

Indeed, computer vision improves the work of field workers by creating digital assistants to audit infrastructures, installations, spare parts or any other operational tasks.

Technology becomes the neutral party which controls that each job is carried out in full compliance with quality standards.

WHAT DO WE MEAN BY "EMPOWERING THE FIELD WORKFORCE"?

In the world of field operations, efficiency is about combining speed and quality. Empowering the field workforce is about providing them tools to make workers more autonomous and help them do their job right and reduce the amount of errors that compromise the quality of our society's infrastructures.

FIELD OPERATIONS: A PRIME MARKET FOR AI

A MARKET OF OPPORTUNITIES

The global Field service management market is expected to reach **USD 25.26 Billion** by 2030

80%

Of technical experts across the industry believe that AI enhances workforce skills and increases work efficiency. But 52% of service companies still do things manually.

40%

Of field service work is performed by contractors, making it hard for companies to follow what is done on the field.

over 50%

Of field technicians feel overwhelmed by paperwork, highlighting the need for digital solutions to streamline processes and lighten their workload.

WHICH INDUSTRIES CAN BENEFIT FROM COMPUTER VISION?

ANY COMPANY THAT BUILDS, INSTALLS, REPAIRS OR MAINTAINS EQUIPMENT OR INFRASTRUCTURE CAN BENEFIT FROM FIELD FORCE EMPOWERMENT APPLICATIONS.

TELECOMMUNICATIONS

Companies that deploy, install, repair, and maintain telecom equipment and networks.

ELECTRICITY DISTRIBUTION

Companies in charge of transporting electricity networks to consumers and meter readings for suppliers.

GAS DISTRIBUTION

Companies that install, repair, and maintain gas distribution networks and ensure the delivery to the end consumer.

WATER MANAGEMENT

Companies in charge of installing and maintaining water networks, from drinking water distribution to the management of sewerage networks and rainwater.

CONTROLS & INSTRUMENTATION

Companies that install, repair, and maintain control and instrumentation devices - such as process and flow control devices, accurate or technical measuring and signal processing tools, and inspection and monitoring equipment.

RENEWABLE ENERGIES

Companies in charge of installing and maintaining solar panels.

eMOBILITY

Companies in charge of installing and maintaining Electrical Vehicles charging stations.

MICRO-MOBILITY

Companies that provide a new form of transportation by offering electric scooters, bicycles, or other small vehicles that can be rented for short distances within a city.

FIELD OPERATIONS COMPANIES' TOP CHALLENGES

MEETING INFRASTRUCTURE ROLL-OUT DEADLINES

Today's society demands modern infrastructures to be deployed very fast, and consumers tend to choose the companies that are the first ones to provide them with their expected products or services. This forces them to throw themselves into restless races.

MONITORING THE WORK DONE ON THE FIELD

Field service industries rely on subcontractors to deliver their infrastructures and maintain them, but with sometimes several layers between the contracting company and the one executing on the field, it is hard to keep track of what is carried out on the field.

WORKFORCE TRAINING

Field operations companies are struggling with a high turnover rate, an aging workforce and the difficulty to employ young recruits.

MEETING CUSTOMER EXPECTATIONS

Customers are growing savvier and more selective about the products and services they pay for. They expect their service should not be disrupted and should be immediately restored.

LOW EMPLOYEE PRODUCTIVITY

This challenge is also due to the high turnover rate of the industry and a lack of manager visibility. Managers cannot monitor the work of their field employees and therefore can neither gauge how productive they are nor know how to correct errors.

HIGH COSTS

The high rate of repeat visits wastes time and resources and increases customer dissatisfaction. The rising cost of operations, low productivity (by not maintaining schedules), missing inventory, inaccurate data and human error are also costly for field service companies.

AI AND THE FUTURE OF WORK

RETHINKING KNOW-HOW, TECHNOLOGY, AND THE WORKFORCE

As AI systems grow in sophistication, almost every job is being reinvented. Traditional manual jobs are changing considerably because new technology capabilities drive great efficiencies. The automation of processes and real-time feedback on operations leverage profits for companies who are increasingly investing in AI.

GET BETTER AT YOUR JOB WITH AI

Artificial intelligence doesn't necessarily replace jobs - in fact, it is often used to support employees to do efficient work. AI has applications in providing real-time updates, greater visibility, reduced errors, interconnected devices, information sharing, automated workflows, and worker safety.
Besides, Deloitte research, based on studies from Oxford University and the O*Net job database, shows that while tasks are being automated, the "essentially human" parts of work are becoming more important. Empathy, communication, persuasion, personal service, problem-solving, and strategic decision-making are more valuable than ever.

ADVANCES IN AI PROMISE TO REVOLUTIONIZE THE SECTOR OF FIELD SERVICE MANAGEMENT

AI is already helping field service companies to do their job more efficiently.

The global Field Force automation market size is expected to reach **USD 3165.68 million** by 2027, according to MarketWatch, with a CAGR of 24.28% by 2028.

As Field Service industries can greatly benefit from AI, many tech companies have jumped on the bandwagon and are offering AI solutions for field service companies.
They tend to offer either chatbots - automated customer service agents that use AI to automatically perform tasks such as moderating customer requests or providing first-level support; or Augmented Reality solutions - virtual expert advice from support engineers to field technicians through headsets or "smart glasses," scanning QR codes...

Equipping field workers with digital solutions can also, down the line, keep them motivated. They remove some cumbersome or lengthy manual processes, such as reporting, and provide key information to help do their job correctly. It decreases the frustration that many workers often feel when they consider not being properly equipped or trained.

Computer vision, a rapidly growing branch of AI, can be very effective in solving most of the problems faced by field operations companies. Read on to find out more about this technology.

COMPUTER VISION FOR FIELD FORCE EMPOWERMENT

FIELD FORCE EMPOWERMENT

WHAT IS COMPUTER VISION?

Computer vision is the processing and analysis of digital images and videos to understand their meaning and context automatically. Computer vision features a wide spectrum of capabilities, including object detection, facial recognition, motion detection, and optical character recognition. A wide variety of objects and applications are currently using these technologies, such as self-driving cars, smart camera systems, and smart checkout systems.

WHY NOW?

The increase in computer computing power in recent years has unlocked the possibilities of computer vision.

In order to train an algorithm to recognize an action or to follow a person on a video, a very large amount of computing power is required. Advances in the field in recent years have made it possible to accelerate the experimentation and implementation of computer vision technologies.

$41.11 billion

The value that the global computer vision market size is expected to reach by 2030*

*Source: https://www.alliedmarketresearch.com/computer-vision-market-A12701

HOW IS THE FIELD WORKFORCE EMPOWERED BY COMPUTER VISION?

An augmented workforce is a blend of human employees and technology working on tasks together. Computer programs access data, learn for themselves, and help workers do their work quicker, more efficiently and error-free. Computer Vision systems can help companies streamline processes and create more efficient workforces, notably through applications that provide quality control feedback in real-time, based on the analysis of one or several pictures.

WHAT FOR?

The field service profession is a difficult one. Procedures are complex and require attention.

COMPUTER VISION TECHNOLOGY TO REDUCE ERROR

An example of complexity: optic fiber roll-out and installation.
To connect a customer's apartment to the optic fiber networks, there are a series of tasks that fiber service engineers must complete first. They must create a fiber network buried underground or lay it on electricity poles and install the pieces of equipment that make up the infrastructures. Then, connect a building to the network and finally install fiber in the subscriber's home. Each step of the process is complex since it is performed on various types of assets and is composed of different tasks. Field employees sometimes have a list of over 40 tasks to perform for one operation, and they must carry them out quickly. Those field works are therefore prone to mistakes and oversights.

COMPUTER VISION TO INCREASE SAFETY

An example of operation requiring safety attention: a gas meter installation.
When a technician installs a smart gas meter, they must make sure that the joint above the meter is correctly applied to avoid any gas leak since this could endanger the safety of the customer. By applying soap to the joint, they can monitor the appearance of one or several bubbles, which represent the signal of a leak. A photo analyzed by computer vision helps document this safety procedure and can also help detect bubbles that the technician would have missed.

In both cases, computer vision validates each step of the worker's tasks. It ensures that complex procedures have been conducted successfully and that every safety guideline has been followed carefully.

COMPUTER VISION: A UNIQUE SOLUTION TO THE EMPOWER FIELD WORKFORCE

Computer vision enables field service engineers to get instant feedback on the quality of the photos they take to document their on-site job and on the conformity of their work:

DATA CONFORMITY

It first checks that each photo contains the expected element and that this latter is fully visible. Then, the computer vision system verifies that the photo is not blurred, not too bright or dark.
It can also detect duplicates to ensure the reliability of the documentation.

JOB CONFORMITY

Whether it be during a construction, installation, repair, or maintenance job, from a simple picture, computer vision:

- Supports field workers with parts and defects identification and provides information such as an installation guide or a report of past operations.
- Automates the meter reading or reference reading of a part by scanning a sequence of numbers and letters by simply taking a photo.
- Detects the presence of defects or wear on a part and alerts the service engineer to take appropriate action.
- Verifies that installations are done according to specifications and reminds the technician of the procedures to follow.

HOW DOES IT WORK ?

01

THE FIELD EMPLOYEE TAKES A PICTURE WITH THEIR SMARTPHONE OR TABLET FOLLOWING GUIDELINES.

02

THE PICTURE IS PROCESSED BY NEURAL NETWORKS TRAINED TO DETECT AND RECOGNIZE ONE OR MORE SPECIFIC CONCEPTS IN THE IMAGE.

03

THE SYSTEM SENDS BACK INFORMATION REGARDING THE SERVICE SUCH AS :

- An oversight : “missing cable on plug 3”.
- An anomaly : “attachment number 2 is not the right color”.
- A number reading : “the meter number is 073850667”.
- A procedural fault : “the cap is not correctly closed”.
- A part number : “it is the electrical panel x version 2.3”.

The worker can then correct the anomalies and retake photos.

04

WHEN THERE ARE NO MORE ANOMALIES IN THE PHOTO, THE OPERATION IS VALIDATED AS COMPLIANT.

WHY USE THIS SOLUTION?

NO SPECIAL EQUIPMENT REQUIRED

Field service engineers do not need to wear any specific equipment, or wear special gear, to use this type of solution. All they need is a mobile terminal containing a computer vision application.

SCALABLE SOLUTION

The solution can verify high volumes of operations daily, and can scale as your business grows by integrating new photo requirements, new checkpoints, and new use cases.

EASY-TO-USE MOBILE APP

They take pictures of their work, and the application provides them with real-time feedback on how to execute operations properly. If it is badly executed, the AI automatically points it out and guides the technicians to success. This way, during each step of the way, they know if their installations are up to standard.

AI EXPERT “EYE”

Computer vision technology does not require remote technical experts to overlook procedures and indicate to field workers what to do. It can “see” mistakes and indicate how to solve them automatically. This contributes to making field employees more autonomous.

BENEFITS FOR YOUR WORKERS, YOUR COMPANY, AND USERS

By providing a computer vision solution to their field workers, companies will gain in productivity as their site operators will be able to handle more cases with greater precision while satisfying users at the same time. Technicians will save time and gain expertise with a fast-growing First Time Fix rate.

TOWARDS A 100% FIRST-TIME RIGHT RATE

According to research conducted by The Service Council, the average first-time-fix rate for an organization is around 77%, meaning that field technicians must do at least one follow-up visit for about 23% of all service calls. These repeat visits affect cost, asset availability, and response time.

Computer vision can help you get close to a

100%

first-time fix rate.

Check out the numerous ways in which computer vision can benefit your workers, company, and users:

	FIELD WORKERS	COMPANY	BACK OFFICE TEAMS
PRODUCTIVITY	• Avoid repeat visits • Reduce time onsite diagnosis	• Improve time to resolution & resolution rate • Improve first-time right rate • Maximize infrastructure asset uptime	• Focus on operations requiring attention • Reduced time between initial customer request and execution
QUALITY	• Production of more qualitative field reporting • Improve professional skills	• Compliance with service level • Improve enterprise image	• Better customer service both in terms of delivery and quality
VISIBILITY	• Identify issues in real-time	• Capture data about assets in the field • Enable strategic, data-driven decisions	• Access to unprecedented data to investigate in case of issue

Adding these various benefits together can unlock the possibility of generating tremendous profit in the long term:

SHORT TERM	MEDIUM TERM	LONG TERM
Decrease the number of repeat visit	Increase time to revenue thanks to a rapidly deployed infrastructure	Improve sustainability of infrastructures and reduce maintenance & repair costs
Reduce quality control costs	Improve customer satisfaction	Increase in market share (revenue)

BUSINESS CASE MOVISTAR COLOMBIA (A TELEFÓNICA SUBSIDIARY)

MOVISTAR & DEEPOMATIC: MAINTAINING A HIGH QUALITY OF SERVICE IN FIBER INSTALLATION OPERATIONS

HIGHLIGHTS

INDUSTRY : Telecommunications
MARKET : Colombia

TURNOVER in 2021 : US$1.5 billion
NUMBER OF EMPLOYEES : 4,500 employees
NUMBER OF TECHNICIANS : 1,500

Key result #1	Key result #2	Key result #3
21% decrease in the revisit rate	Operation conformity rate 3x higher	98% photo reports completeness

CONTEXT

Operators and governments across Latin America are committed to improve services of fiber optic networks, and Colombia is no exception. The pandemic has also acted as a catalyst for the roll-out of the technology, which is considered as a driver of economic growth that fosters productivity and entrepreneurship, and which gives the population access to many types of services.

Movistar Colombia, one of the largest internet service providers in Colombia, and an affiliate of Telefónica group, is today determined to bring broadband connectivity to Colombians. There are today almost 4 millions of homes passed with fiber thanks to Movistar, with more than 710,000 homes connected. The objective is to reach 5.9 millions of homed passed by the end of 2024.
The satisfaction of subscribers is at the heart of the operator's interests, and the company is putting a strong emphasis on the quality of its fiber operations to guarantee a high level of service.

> "The project with Deepomatic reveals Movistar Colombia's ambition to implement digital solutions by design in our field processes in order to roll-out fiber optic efficiently. We have rapidly seen the great impact of Deepomatic technology on our quality indicators and we expect to extend its use to other fiber optic applications".
>
> Roberto Puche | CTO | Movistar Colombia (Telefónica)

CHALLENGE

When technicians were going to the subscriber's home to connect them to fiber optic, they were not required to take pictures of the operation. Therefore, Movistar was relying on in-person audits that were carried out later on, in order to monitor the work performed by its own agents or its subcontractors on selected operations. Naturally, this could not reflect the reality of what was happening throughout all of its fiber connection operations.It became key to Movistar to put in place a process to apply high quality standards across all its operations and to monitor their implementation automatically.

SOLUTION

In order to increase its operational efficiency, Movistar partnered with Deepomatic at the end of 2021 to automate some of its field processes, by putting an AI-powered solution directly in the hands of fiber technicians, who simply have to take photos of the equipment they work on to connect subscribers (like the aerial distribution termination point, the face plate, the wifi repeater, etc.). Deepomatic solution analyses them in real-time and provides live feedback to the technician to validate their tasks and inform them in case of anomalies. This allows them to correct the detected defect instantly, before leaving the site.
Each operation and associated data is then centralized and accessible for review, and the solution provides indicators on the conformity of operations and the completeness of photo reports provided by the technicians. This enables Operations and Quality teams to monitor the quality of the work performed by Movistar agents and its subcontractors.

BENEFITS

Thanks to Deepomatic, the rate of photo reports completeness rose from 60% at the beginning of the project to 98% at the end of June 2022.Technicians have improved the quality of their work as the operation conformity rate is 3 times higher than at the beginning of the project.And finally, the revisit rate dropped by 21% and therefore Movistar has improved its operational cost efficiency.

> "By being the first operator in LATAM to leverage Visual Automation in its fiber operations, Movistar proves that it is a frontrunner in the region in the digitization of field processes and Deepomatic is glad to be its partner of choice for such an initiative. Thanks to our solution, the roll-out of fiber optic in Colombia embeds quality by design and we believe that this is the key to an outstanding end-customer experience".
>
> Augustin Marty | CTO | Deepomatic

ACT WITH DEEPOMATIC

ABOUT DEEPOMATIC

Deepomatic is a pioneer in the field of First Time Right Automation. Our AI-based computer vision platform is designed for companies operating critical infrastructures who strive to apply their quality standard at scale and increase their operations' First Time Right rate .

By analyzing photos taken by field workers and providing them instant feedback on the conformity of their job, our platform automates quality control. It guarantees the conformity of the data documenting daily field jobs. Thanks to Deepomatic, companies can also follow the state of the infrastructure over time to make informed decisions to operate and maintain it.

Deepomatic serves leading international clients in sectors such as telecommunications, energy, hospitality and mobility. Nearly 20,000 field workers employed by Bouygues Telecom, Swisscom, CityFibre, Telefonica, Circet, and Unit-T use Deepomatic's solution every day, highly improving their productivity and efficiency on site. Our platform analyzes close to 1 million operations every month.

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GET IT RIGHT FIRST TIME, EVERY TIME!