BCG

Executive Perspectives

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# The Future of Field Service with AI

## Field Service Ops

*March 2025*

## Introduction

We meet often with CEOs to discuss AI—a topic that is both captivating *and* rapidly changing. After working with over 1,000 clients in the past year, we are **sharing our most recent learnings in a new series designed to help CEOs navigate AI.** With AI at an inflection point, the focus in 2025 is on turning AI's potential into *real* profit.

In this edition, we discuss the future of maintenance and field service, and the role AI will play in turbocharging growth, productivity, and new business models. We address key questions on the minds of field service leaders:

- What will my team look like? Will I need a different team, or can I upskill?
- How will the economics of field services change? What's the ROI on AI tools?
- How will the customer experience evolve as a result?
- Which tools are best suited, how do I get started…and how do I get this right?

**This document is a guide for CEOs and field services leaders to cut through the hype around AI in field service and understand what creates value now and in the future.**

**In this BCG Executive Perspective, we articulate the vision and value of the future of Field Service with AI**

# Background | Field and Aftermarket Service

## Overview

The field and aftermarket service function consists of **installation, repair, maintenance, and replacement services** for high-value industrial equipment

Field and aftermarket services often **require technicians with highly specialized skills,** traditionally gained through experience

## A field service function has four parts of its value chain with various activities

| Value chain | Key activities within key steps |
|---|---|
| **Service Sales Funnel** | • **Sales representatives** help generate and convert leads to repair, maintain, replace and install high-value equipment, as well as help develop and negotiate contracts and pricing with potential and existing customers |
| **Service Ops Management** | • **Operations managers** oversee the operations of a field service business and are responsible for ensuring smooth operations by monitoring<br>• **Operations managers** are also responsible for maintaining financial health of field service units |
| **In-field Repair/Maint.** | • **Service technicians** perform diagnostics, repairs, maintenance, & installation services at customer facilities<br>• **Service technicians** are responsible for maintaining institutional tech. knowledge and training newer employees |
| **Customer Relations** | • **Customers** reach out to solicit services from FSPs (Field Service & aftermarket providers)<br>• **Sales representatives** engage with customers to ensure high quality of service is delivered |

## Field and aftermarket asset examples *(non-exhaustive)*

**Building Services**
**3M+** HVAC replaced in US annually

**Aerospace**
**5,800+** aircrafts in US commercial fleet

**Offroad Heavy Equipment**
**318K** construction units sold in NA in 2022

**Oil & Gas**
**19M** barrels per day in US refining capacity

**Greentech**
**70k+** wind turbines & **5k+** solar farms in US

**Tech & Telecom**
**5k+** data centers & **140k+** cell towers in US

**Healthcare Equipment**
**11k+** MRI systems in US

**Production Line Equipment**
**40k+** F&B processing plants in US

# Executive summary | The Future of Field Service with AI

## The time to act on AI in field service is now

**Field Services functions are facing global challenges** such as technician shortages (e.g., costing the trucking industry alone $2.4B annually) and unplanned asset downtime (e.g., costing industrial manufacturers as much as $50B annually), among other issues.

**However, Field Services as a function is rapidly approaching an inflection point,** with emerging tech trends and developments offering transformative solutions, including:

- **Connected equipment** becoming a new standard as machinery data and analytics unlock value in operations
- **GenAI technician co-pilots** unleashing productivity and creating knowledge bases across tech generations
- **AR/VR hardware with spatial computing** reshaping the ecosystems for service execution and communication

These tech trends are enabling a **step-change** from traditional field service to streamlined, expedited, and augmented offerings, increasing the value potential of the rapidly growing Field Service function

There is an opportunity to drive **15-20% revenue impact AND 5-10pp gross margin impact** through AI in Field Services

## AI will reshape field service teams

**Sales (Service Lead Gen):** 30-40% more leads from connected assets, AI-based monitoring and proactive targeting

**Operations (Productivity Gain):** Coupled with continuous operations improvements, AI drives 20-30% lift in productivity via smart dispatching/scheduling and in-field support tools (e.g. troubleshooting co-pilot, etc.)

**New revenue streams:** OEMs further develop offerings including premium service contracts, outcomes-as-a-service, etc.

**Maintaining Technician Workforce:** Institutional technical knowledge is maintained easily shared, accelerating the training of junior mechanics

## Executing successfully requires a transformational mindset

To successfully deploy AI in field services and drive outcomes at scale, organizations need to take a **portfolio and transformational mindset**, combine GenAI and predictive AI within the tech stack to enable AI team members, and rewire the op model with a 90% focus on people and process change

**Service leaders play a critical role** in driving this change, sharing best practices and breaking down siloes between teams, and making bold investments in tech and upskilling

**To get started**, define your objectives and North Star, prioritize use cases, and start with proof-of-concepts that demonstrate value, and scale up successive waves of capabilities while enabling the services team

# Field Service functions are fraught with pain points which can be resolved with AI

Illustrative

**Service sales funnel** | **Service ops mgmt.** | **In-field repair/maint.** | **Customer relationship**

## Sales Rep

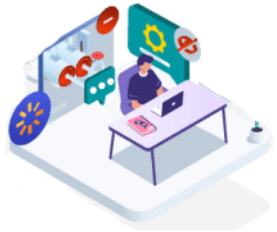
- Reactive selling limits growth opportunities by failing to anticipate customer needs
- Static pricing models and lack of customized services leaving value on the table

## Ops Manager

- Limited visibility into team productivity and effectiveness
- High turnover leads to loss of critical expertise
- Underutilization of IoT and connected data hampers operational efficiency

## Service Tech

- Delays from unavailable parts and inefficient routing waste valuable time
- Lengthy diagnostics and insufficient on-site support reduce technician effectiveness.



## Customer

- Reactive service leads to prolonged machine downtime and higher costs
- Limited transparency into service progress frustrates customers and extends repair timelines

## AI can shape companies' response to these dynamics…

- **Streamline maintenance teams** (e.g., Automated dispatch)
- **Empower technicians** (e.g., equipping with AI-powered diagnostic tools )
- **Combine digital with lean process improvement** (e.g., Predictive maintenance to prevent equipment failure)

## …while unlocking more growth with higher returns

- **Increase cross-sell and up-sell opportunities** (e.g., AI-generated proposals)
- **Reduce cost to serve** (e.g., Inventory mgmt. to minimize excess inventory)
- **Enhance customer retention** (e.g., via lower asset)
- **Optimize inventory management** (e.g., via demand forecasting)

# AI enabled solutions have reshaped the ecosystem for service sales & delivery

Illustrative – Solutions are non-exhaustive

## Service sales funnel

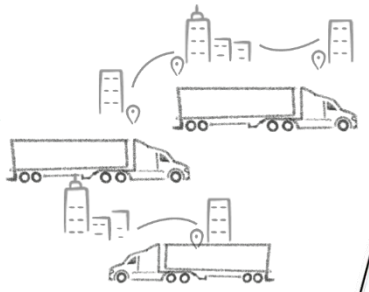
### Hub performance, lead generation & advanced pricing

Suite of advanced tools to generate additional leads through equipment monitoring, create bespoke pricing and monitor sales

## Customer experience and support

Self-service customer portal to track performance of equipment, view maintenance summary, WOs, and alerts

## Service Ops mgmt.



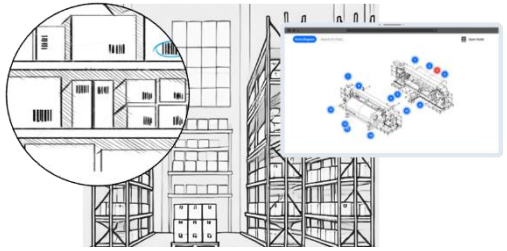
*Optimize schedules on-the-fly and manage complex logistical network*

### Real-time schedule rebalancing

Rebalance schedules in-real time based on routine maintenance and emergencies, worker skill, technician capacity and demand, signaled by predictive maintenance alerts

### Part inventory & management

Sense demand and stock parts automatically



## In-field repair & maintenance

### Field service tech tools

Provide technicians with real-time insights and interactive experiences to enhance trouble-shooting of assets

*Advanced tech tools drive work efficiency*


Automatic job summary dramatically reduces manual data entry

# Efficiency | Individuals who leverage AI improve efficiency and can repurpose saved time for higher complexity activities

| Persona | Key activities *(non-exhaustive)* | Current | Future | Future-state focus |
|---|---|---|---|---|
| **Operations Manager** | Scheduling technicians and matching with appropriate jobs |  |  | Time spent on non-revenue generating activity is repurposed, allowing managers to **increase focus on operational & financial health of business** |
| | Inventory management and procurement (incl. parts stocking) |  |  | |
| | Customer relationship and consultative activities |  |  | |
| | Monitoring operational & financial health |  |  | |
| **Technician** | "Wrench time" on repair, maintenance and replacement activities |  |  | Reduced time spent commuting, preparing for jobs, and other non-revenue generating activities; that time is repurposed to allow technicians to **increase 'wrench time", leading to more jobs completed and in turn, increased revenue** |
| | Commuting between job sites and HQ |  |  | |
| | Troubleshooting and identifying root cause of malfunctions |  |  | |
| | Looking up repair literature and identifying necessary parts |  |  | |
| | Recording field notes and documenting job performed |  |  | |
| | Customer relationship management and on-site sales |  |  | |
| | Training and assisting new technicians & apprentices |  |  | |
| **Back-office staff (incl. Sales Reps)** | Creating proposals for quotes |  |  | Sales representatives and back-office staff improve efficiency **reducing total amount of labor required** to perform same volume of tasks and in turn, **decreasing operational costs** while allowing sales reps to **provide a superior customer experience** |
| | Developing, pursuing and converting leads |  |  | |
| | Administrative activities (Invoicing, billing, etc.) |  |  | |
| | Customer relationship management |  |  | |
| | Warranty claims and registration |  |  | |
| **Customers** | Waiting for assets to be repaired (downtime) |  |  | Superior **customer experience results** |

 Time spent performing activity  Low complexity  Moderate complexity  High complexity  Increase in time spent  Decrease in time spent

# The Future of Field Service

## Evolving Field Service into an industry where…

| | | |
|---|---|---|
| Intelligent lead gen | **AI-powered services sales leads and execution** | … AI proactively identifies new service opportunities, leveraging machine data, CRM, and public records to surface **high-value leads for repairs and service contracts** |
| | **AI-based parts and service demand planning and pricing** | … **parts inventory, service capacity, and pricing are optimized** based on historical demand, install-base analysis, elasticity estimation, time-series prediction, & customer willingness-to-pay attributes |
| Increased productivity | **Full network visibility & cont. service ops improvement** | … the full-service network is **compared in real-time across KPIs**: PM on-time rate, issue resolution rate, tech. performance, order-to-cash, etc., enabling **best-practice sharing and continuous improvement** |
| | **The next generation of field service technicians** | … service technicians are turbocharged with GenAI copilots and AR/VR tech for **faster and higher-quality execution**; technologies ensure retention of institutional knowledge, despite high turnover |
| | **Revolutionized and streamlined scheduling and dispatch** | … AI generates **optimal service schedules** based on tech. skillsets, routing considerations, customer needs, and part availability, maximizing productivity of the workforce and minimizing wasted time |
| New revenue streams | **Value-added revenue streams** | … in addition to selling equipment, companies can provide **solutions, services, and even outcomes** (e.g., uptime) all enabled and de-risked through AI technologies |
| | **Best-in-class customer support and transparency** | … AI enables **increased customer service productivity, personalization, first-time resolution rates, customer & employee satisfaction**, as well as **reduced training effort/cost** |

Reshaping and evolving Field Service creates opportunity to
**introduce new business models** and create **additional revenue streams**

# Technician benefits | Nearly double the profits per technician by increasing efficiency and effectiveness with AI

## Revenue and profitability unlocked parallel to improved efficiency in future state

### Commercial growth

**15%+**
Revenue growth

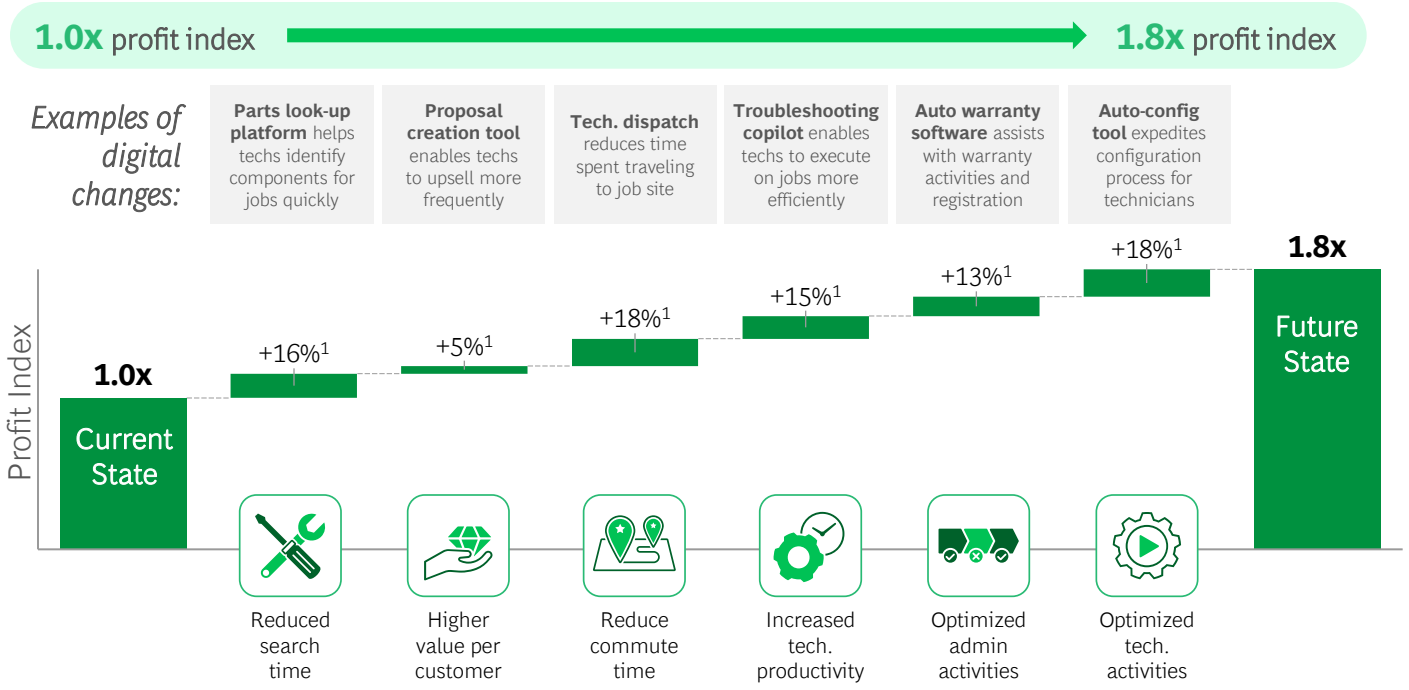
**5pp+**
Service gross margin uplift

### Elevated service

**20pp+**
On-time maintenance completion uplift

**15%+**
Avg. Job duration decrease

***Illustrative Example:*** *HVAC Field and aftermarket service technician Joe doubled his profit index through leveraging the various digital tools implemented at his field and aftermarket service company*




## Improving tech efficiency has short and long-term impacts

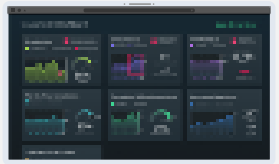
**In the short-term,** tech efficiency enables companies to meet demand, given labor shortage & to close the gap between junior & senior resources in terms of work quality & completion times

**In the long-term,** tech efficiency will potentially reduce labor force required in field service function; service techs will then focus on highest value activities

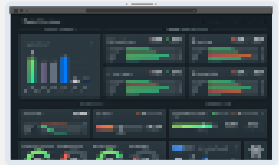
1. Percentages derived from 2024 HVAC Dealer and Technician Survey; Source: BCG analysis

# Value | We are moving toward the future state and unlocking value through cutting-edge AI solutions across the field service lifecycle

## Hub performance



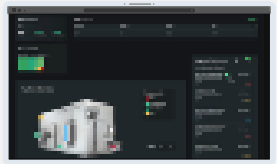
**Daily Management Boards (DMB)**
Operational insights for real-time management
**+14%** no. of work orders per hour



**Sales Performance & Dashboard**
Analytics for sales performance tracking **+16%** revenue growth

**AI/Advanced Pricing**
Dynamic Pricing Strategies based on AI algorithm **+8%** contribution margin with no impact on share

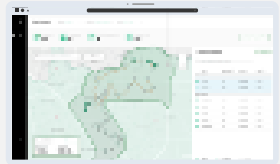
## Asset reliability & performance



**Predictive Maintenance & Asset Health**
Advanced insights for asset health and longevity **+20%** maintenance cost for customers

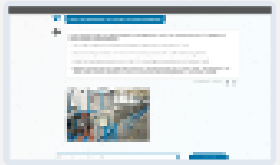
**Part Inventory & Management**
Demand forecasting & inventory optimization
**-4%** inventory carrying cost

## Scheduling



**Scheduling & Dispatch**
Labor visibility, scheduling & optimization, tech GPS productivity
**-24%** mileage cost

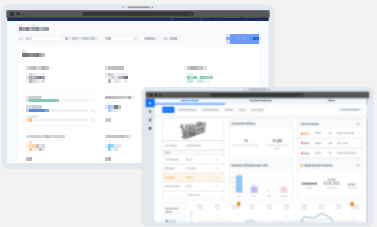
## Tech productivity



**Gen AI Technician Copilots**
Realtime AI expert troubleshooting assistance
**+5-10%** daily tech productivity

**Remote Support & Collaboration**
Tech remote guidance, AR/XR tool, digitized parts and manuals

## Customer experience & support

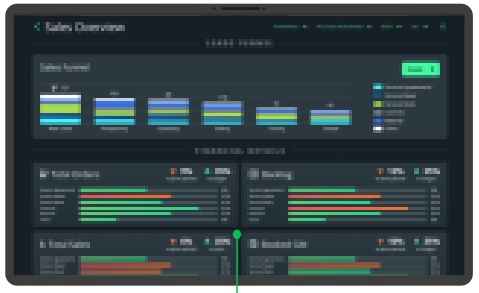


**Self-Service Customer Portal**
Maintenance summary, asset health tracking and Proactive alerts **+20%** measured customer satisfaction

Note: Screens from existing BCG capabilities

# Example use case | Daily Branch Board sets rhythm; AI drives continuous improvement, aligning leadership & team performance through metrics

Integrated dashboard displays key business KPIs



Comprehensive KPI view drives sales performance across regions/markets

Advanced analytics & machine learning enhance field techs' productivity

Note: Screens from existing BCG capabilities

## High impact at manufacturing and distribution company

| | |
|---|---|
| **+16%** | Revenue growth through more proactive leads tracking and movement through the funnel |
| **+7pp** | Services gross margin through continuous improvement cost reduction |
| **+20pp** | Increase in PM on-time completion thru technician tracking and enablement |

## Four key elements for effective solution

| | | |
|---|---|---|
| 1 | **Real-time visibility** | Unified view of metrics enables effective management of the business |
| 2 | **Cascading metrics** | Cascade aligns leadership and field team performance |
| 3 | **Operating rhythm** | Daily or weekly rhythm enables continuous improvement |
| 4 | **Tie to action** | Improved decision-making through clear, actionable recommendations |

# How to get it right | Our perspective on winning with AI in Field Service

## Right-sizing to driving outcomes

Deploy task-based AI, reshape field service teams with AI, and invent new business models with AI

- **Lead with a bold vision** for the future of field service management; right-size solutions for identified problems and pain points
- **Restructure your field service teams** by integrating AI-powered tools to augment technicians and streamline maintenance workflows
- **Redesign the customer service journey** by breaking down functional silos between service, operations, and customer support for a unified experience

## Unlocking data and tech

Be purposeful in how technology is leveraged as part of an ecosystem, to be successful

- **Pair GenAI with other tech** for maximum impact, **integrate existing systems** without replacing them and **do not wait for perfection to get started**
- **Accelerate scalable solutions** by developing the target state architecture of an ecosystem either by integrating existing capabilities or by building, buying and partnering with other entities

## Rewiring the op model

Transforming people and operating models for competitive advantage in field service

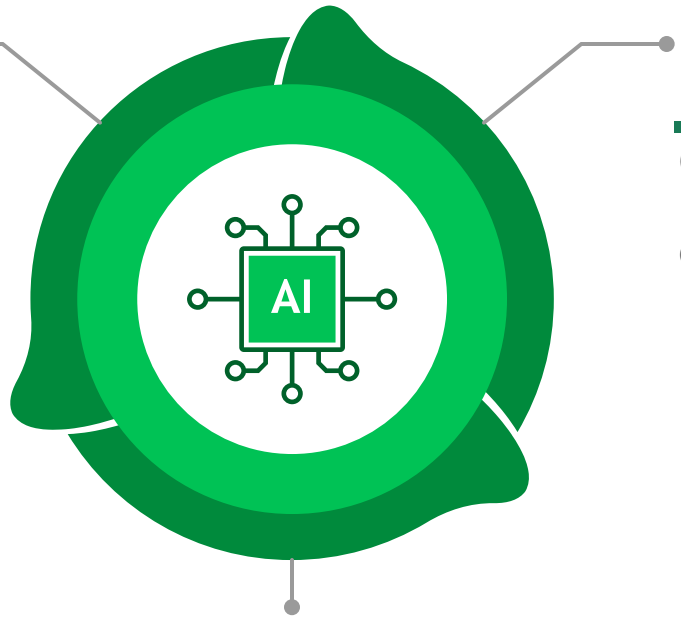
- **Shape future technician roles and operating model** by defining new skills and adapting workflows for AI-driven field service management
- **Build an AI-driven field service operation,** emphasizing experiments and scaling through build-operate-transfer approaches to ensure rapid learning

# Unlocking data and tech | Key technology success factors for integrating AI into Field Service

## Pair GenAI with other tech for maximum impact

Even with the onset of GenAI, Predictive AI and digital applications have a critical role in the ecosystem:

- **GenAI** synthesizes large datasets and generates content, e.g., text creation
- **Predictive AI** focuses on decision making, e.g., predictive maintenance
- **Digital** drives end-user adoption/utilization of AI functionality




## Don't wait for perfection to get started

Getting started with AI development **does not require perfection**; in fact, waiting for ideal conditions delays progress and value creation:

- **AI development is iterative**, early adoption enables continuous learning/improvement
- Even with data and system gaps, **AI can provide insights driving immediate value**
- Waiting for perfect conditions creates the risk of **falling behind competitors**

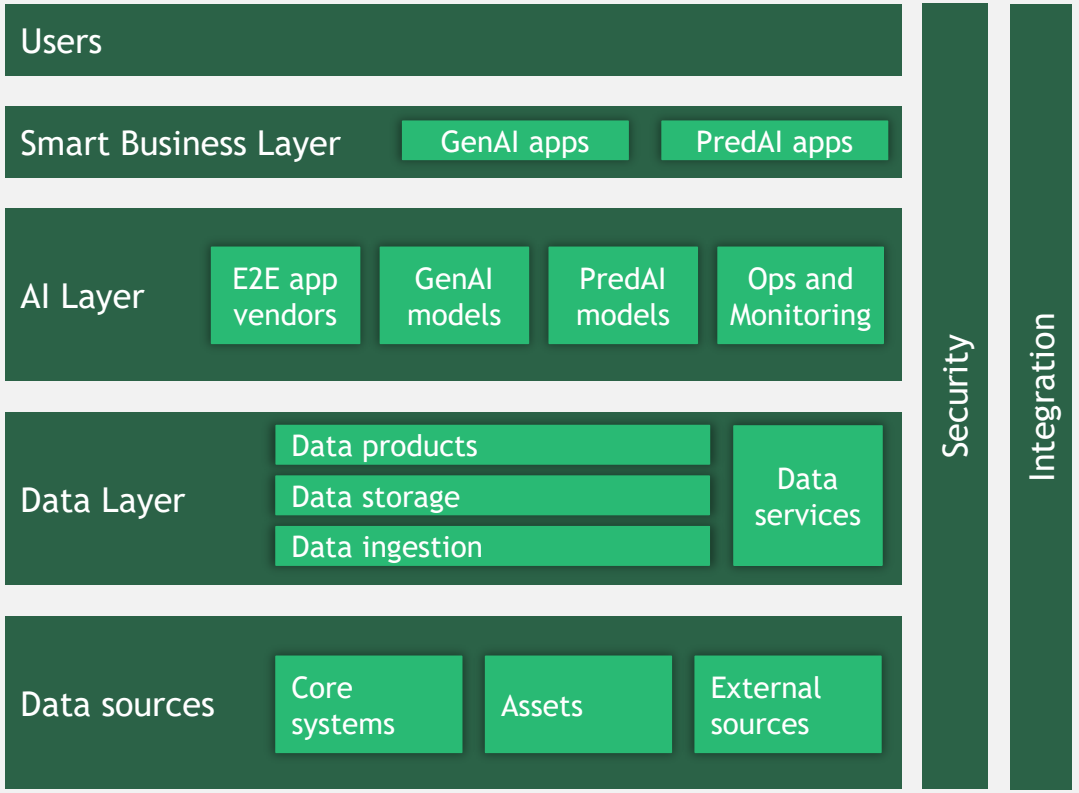
## Integrate with existing systems without changing or replacing them

**Seamless integration of AI** with existing systems is key:

- **AI should be designed to work with systems like ERP, CRM, or databases,** ensuring minimal disruption
- Such an approach accelerates adoption & realization of value **without significant infrastructure changes**

# Unlocking data and tech | Target-state ecosystem can be achieved by integrating capabilities or building, partnering & buying new capabilities

## Target state ecosystem




## Key criteria for building, buying, and partnering new capabilities

### "BUILD" capabilities internally when …

- Problem is relatively complex and/or unique
- Solution customization is a top priority
- Company has strong existing in-house AI development capabilities
- Development timeline is not a concern

### "BUY" capabilities externally when …

- Problem is well defined and common
- Customization is not a concern
- Completion timeline is top priority

*Example vendors: ServiceNow, ServiceTitan, ServiceMax, etc.*

### "PARTNER" to develop capabilities when …

- Problem is relatively complex and/or unique
- Customization is relatively important
- Company lacks full internal AI expertise to develop solutions
- Completion timeline is important

**Examples of capabilities** that have been bought, internally built and co-developed with a partner

**Build automated field notes** capability internally given med. complexity, long lead times & available capacity

**Buy paperless work order solution** given simplicity and need for low customization

**Co-develop a demand forecasting solution** given need for customization and time sensitivity

# Rewiring op model | AI transformation is change management—rewiring people & processes while developing tech, data, and AI

**Typical digital transformation:**

**10%** | AI

**20%** | Data and technology

**70%** | Business process change management

## Compared with typical data-driven transformation, success of Field Service AI relies even more on change management across services organization

**70%**

### Focus on service ops change management

- Leadership activation: drive enthusiasm and clear vision
- Service team engagement: co-create and iterate with field teams
- Executional excellence: redefine processes and roles
- Culture and effectiveness: adapt service strategies and KPIs
- Training and enablement: upskill teams and build capabilities

**30%**

### Focus on AI, data and technology

- Deploy best technology to the frontline
- Utilize field service specific ML models, predictive AI, and GenAI
- Integrate field and service systems and automate E2E

# Rewiring the op model | Five pillars of Field Service change management to ensure sustainable impact from AI transformations

## Leadership activation

- Empower **leaders as AI adoption champions**
- Equip field service leaders with **clear AI messaging & tools**
- **Foster engagement and excitement** among leaders and frontline teams

## Service team engagement

- **Co-develop AI tools with technicians** for seamless integration
- **Use real-time feedback** to make iterative improvements
- **Build trust in AI-driven changes** by transparently sharing progress and improvements in service outcomes

## Executional excellence

- **Align field service organization and roles** with AI service models
- **Establish clear ownership** for AI development & implementation
- **Optimize workflows** to maximize AI efficiency
- Ensure **ethical and transparent AI deployment**

## Culture and effectiveness

- Deploy **modern collaboration and communication tools**
- **Use gamification** to drive peer recognition and competition
- **Refine KPIs to reflect productivity gains**
- **Introduce incentives** to accelerate AI adoption
- **Apply user-level monitoring** to track AI utilization

## Enablement and training

- **Implement rapid training** for field service teams
- **Develop AI champions** to act as multipliers
- **Activate AI leaders and champions** in service teams via train-the-trainer initiatives

# How to get started | Unlocking value within Field Service AI requires three main steps

## Execute rapid diagnostic

- **Rapidly identify pain-points** within the core service business
- **Prioritize relevant Field Service AI modules** across relevance and Return on Investment (ROI) and **draft a roadmap for design, business case development and feasibility testing**
- **Design pilots/PoCs** for relevant Field Service AI modules & **identify implementation challenges**

## Conduct proof of concept exercise

- Re-imagine the future with **product strategy, vision and scope**; leverage these inputs to finalize a business case to drive initiatives
- **Prove and test feasibility** of solutions via digital/AI proofs of concept and transformation pilots
- **Complete roadmap for the build phase** (which includes resourcing and governance)

## Build, pilot and iterate

- **Iteratively build digital AI/solutions and deploy in-market to test and learn**, while maximizing the near-term value captured
- **Enable core capabilities** such as user testing, technology enablers, and agile methodology

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