BCG

Executive Perspectives

Future of Medtech with E2E AI Transformation

Medtech

October 2025

Introduction

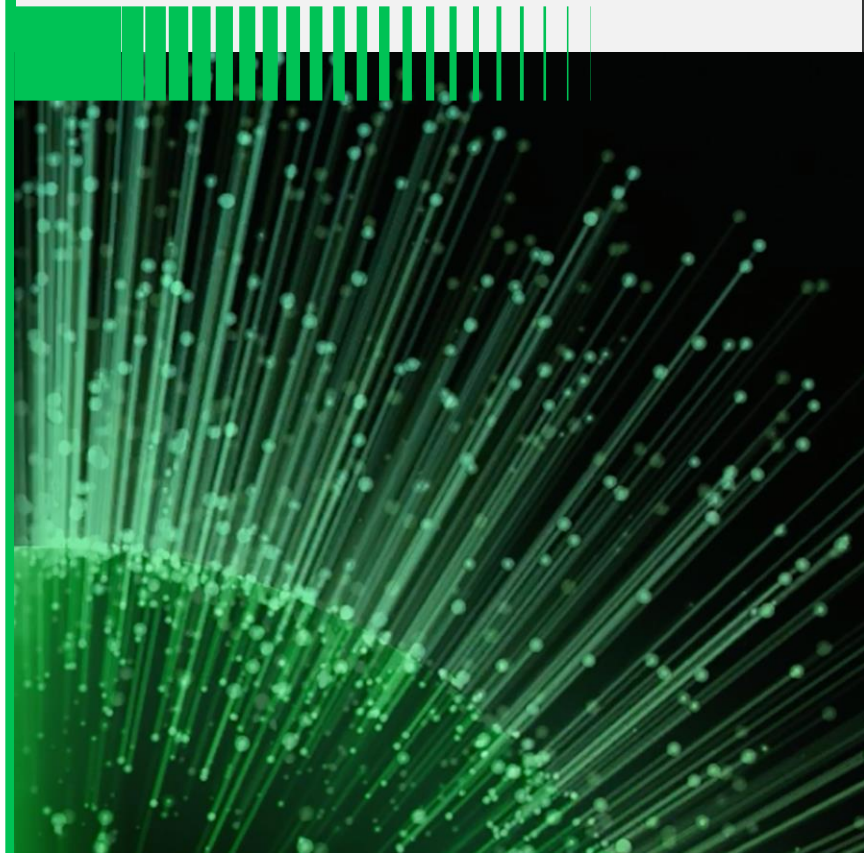
We meet often with CEOs to discuss AI---a topic that is both captivating *and* rapidly changing. After working with over 2,000 clients in the past two-plus years, we are sharing our most recent insights in a new series designed to help CEOs navigate AI. With most sectors going through major shifts, the focus now is on how to leverage AI to **fully transform organizations and create new sources of competitive advantage**.

In this edition, we discuss the **future of medtech and the role AI will play in transforming the E2E value chain**—turbocharging growth and enabling the type of innovation and service that is fundamental to improving patient outcomes and HCP experience. We address key questions on the minds of medtech executives:

- How can AI become a key source of competitive advantage and transform the value chain in ways that translate to better clinical outcomes for patients?
- What does an AI-first enterprise look like?
- What are AI leaders within medtech and other sectors doing differently, and how are they using AI solutions to reshape and reinvent functions?
- How do I get started…and how do I get this right?

This document is a guide for medtech executives seeking to cut through the hype around AI and understand what creates value—both now and in the future.

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



Executive Summary | The future of medtech with E2E AI transformation

WHY
now is the right time to act

- AI is **enhancing patient outcomes** today and can **transform the entire medtech value chain** to further improve outcomes
- **Unprecedented value is associated with the AI transformation opportunity**: potential to unlock 5%-10%+ revenue growth and drive up to a 50% increase in productivity across the value chain
- **Value is no longer conceptual**: medtechs and leaders in adjacent industries (e.g., biopharma, regulated manufacturing players) are driving value today from reshaping and reinventing core and support functions
- **Medtechs are acting with urgency to capture these benefits**: AI investment is expected to increase by 60% over the next three years, with an increasing number of medtechs going "all in" on AI

WHAT
organizations are doing to create AI-driven value

- To unlock the full potential of AI, **focus on reshaping and reinventing core functions/E2E processes around the technology** (AI leaders are focusing 80% of their AI investment in reshape/reinvent efforts):
  - **R&D and regulatory**: AI-driven product design and development, predictive clinical trial design and rapid execution, automated drafting of clinical, regulatory, and technical documents
  - **Operations**: real-time predictive supply/demand forecasting and scenario planning, dynamic distribution network adjustments, manufacturing digital twins, AI-assisted or self-optimizing production systems and robotics
  - **Commercial**: hyperpersonalized marketing materials, AI-assisted and agentic omnichannel sales and service
  - **Support functions (e.g., finance, HR, IT, cyber)**: automation of E2E processes, predictive insights, and forecasting

HOW
to start the journey to transform into an AI-first org

- Successful AI-first transformation is predicated on several factors/actions:
  - **Set a bold AI ambition from the top**, investing in AI and empowering leaders accordingly
  - Define a **business-led AI agenda prioritizing functions to reshape and reinvent** across processes and workflows
  - **Build enterprise foundations early** (e.g., governance and value tracking, talent management/upskilling, tech foundations, data readiness)
  - **Follow the 70/20/10 rule throughout the journey**, dedicating 70% of effort to people and processes, 20% to technology and data, and 10% to AI algorithms (e.g., model training)

Sources: BCG Build for the Future Survey (n = 1000+ C-suite respondents across industries); BCG analysis.

Five essential takeaways for medtech leaders

AI is enhancing patient outcomes and experiences today and can **transform the medtech value chain to deliver those outcomes more efficiently and effectively**—increasing productivity, reducing costs, and unlocking new revenue growth

The AI opportunity is no longer conceptual; there are proven AI applications across the value chain that are unlocking value today, and medtechs are investing accordingly

"Depth over breadth" is critical; maximize the AI opportunity by **reshaping and reinventing a prioritized set of core functions,** with a focused set of "golden" use cases anchored in measurable financial levers (vs. experimenting with many basic AI use cases)

Focus 70% of transformation effort on people; rewire the organization and operating model and processes, mobilize AI talent and upskill, and emphasize driving adoption at scale

Treat data as core infrastructure; enforce ownership and governance for compliant scaling.
Be deliberate on technology: buy based on speed and availability, build for true differentiation

Source: BCG project experience.

AI is already enhancing patient outcomes and experiences

Over 1,200 AI-enabled devices and software solutions are FDA approved and transforming care and outcomes for patients

	AI-enabled solutions
 **Earlier detection and intervention** AI-enhanced detection and screening enabling earlier and more accurate diagnosis/intervention	• **GI Genius** colonoscopy companion identifies polyps in real time; **50% reduction in missed polyps with a 14% increase in adenoma detection rate** • **Precision Cardiac Amyloid** uses AI algorithms for earlier **detection of cardiac amyloidosis**, a life-threatening disease that is often misdiagnosed or underdiagnosed
 **Precision treatment** Improving outcomes with AI-enabled patient insights to tailor treatment by patient	• **Myo Plus** is a prosthetic control system that learns user muscle patterns for **more natural prosthetic limb function** • **brAIn Shoulder Solution** **enables "beyond bone-only planning" with patient-specific 3-D tissue visualization in minutes** to support surgical planning and improved outcomes
 **Predictive monitoring and management** AI-powered monitoring improving ability to proactively identify, manage, and adjust care	• **Omnipod 5** adjusts insulin dosing every 5 minutes based on glucose trends, **driving +2.2 hours/day of time in range (TIR)[1] and improved HbA1c outcomes[2]** • **Zio** wearable cardiac monitor detects **13 different types of arrhythmias** and transmits insights to clinicians, with **arrhythmia detection on par with expert cardiologists**

Software in a medical device (SiMD) Software as a medical device (SaMD)

1. Time in range (TIR) is a measure of the percentage of time a person with diabetes spends with their blood glucose levels within a predetermined range.
2. Measurement of average blood sugar levels.

Note: GI Genius by Medtronic; Precision Cardiac Amyloid by InVision; Myo Plus by Ottobock; brAIn Shoulder Solution by Avatar Medical in collaboration with FX Shoulder Solutions; Ominpod5 by Omnipod; Zio by iRhythm.

FDA AI-Enabled Medical Devices List; BCG analysis.

AI can, and is, transforming the entire medtech value chain to further enable patient outcomes

Select examples of proven AI applications and value across medtech and regulated manufacturing industries[1]

R&D — OPERATIONS — COMMERCIAL

Product development

Reduced time from design scoping to design freeze by 10%-70% with AI-driven product ideation and prototyping

Improved software development productivity by 30%-50%+ via AI coding copilots

Clinical trials

Accelerated clinical trial times by 15% with AI-optimized design, predictive patient enrollment forecasting

AI-enabled drafting **reduced writing time for clinical and regulatory documents by 50%-90%**

Supply chain/manuf.

Improved forecasting accuracy by 15pp and reduced backorders by 60% with predictive-planning AI

Reduced manufacturing costs by 15% and improved cycle times by 20%-30% with production-line digital twins and AI-driven robotics

Go-to-market

Reduced writing time for product labels by 60% via AI drafting; ability to rapidly generate documents customized for end-market regulatory context

3x increase in marketing material output with hyperpersonalized AI-driven content generation

Sales and service

Drove 20%-50% sales rep efficiency and 5%-10% revenue growth with AI sales copilot and recommended next-best actions

"Always available" AI service channel for HCPs **drove a 45% reduction in ticket resolution time**

AI enables medtech to deliver **more innovative products faster to HCPs and patients, with improved service and experience**—and to do so more efficiently and effectively, **increasing productivity, reducing costs, and unlocking new revenue growth**

1. Including biopharma and industrial goods.
Sources: BCG project experience and analysis.

Tomorrow's AI in medtech will look like today's most advanced innovators, but broader, smarter, and scaled across the industry

	Current state	Vision in five years…	The future beyond…
R&D	 **AI adoption is in its infancy,** with early adopters **focused on automation of manual activities** (e.g. technical document drafting); tech stacks emerging to support AI-driven product design	 **AI embedded across R&D process:** AI-driven product ideation and design and coding copilots increasingly adopted; trial design and execution optimized with AI	 **Patient-insights-driven AI product design at scale,** with digital twins to de-risk development; agents automate regulatory and engineering workflows
Ops	 **Preliminary pilots and early automation** in manufacturing and supply chain, including analytics for production optimization, scenario simulation/demand planning	 **Digital-twin-based simulation/agentic AI usage matures,** enabling rapid optimization of manufacturing and supply chain activities	 Self-learning, adaptive agentic/robotic-powered supply chains **optimize themselves across sites, demand and quality signals**
Commercial	 **Growing testing of AI copilots and assistants for sales and service,** omnichannel orchestration support, GenAI content generation, and resource/finance analytics	 AI agents scale **omni-channel orchestration enterprise-wide**, driving consistent, data-led HCP/patient outreach	 **Hyperpersonalized engagement** and **autonomous, agentic webs to tailor every touchpoint** across channels/ stakeholders

Source: BCG analysis.

AI will drive massive value in medtech, unlocking significant productivity gains and revenue growth opportunities

	Up to 50% productivity increase			**5%–10%+** rev. growth
R&D and Regulatory	**Device design time** **10%-70% reduction** via AI-driven product design and product digital twins for rapid prototyping	**Software dev. time** **30%-50% increase in productivity** via automated code generation/coding copilots	**Trial time and costs** **10%-15% reduction** via AI-optimized trial design/ predictive patient enrollment, and automated doc. generation	**Market share increase** **Up to 5%-10%** via AI/customer-insight driven product ideation, rapid prototyping, and AI-optimized trial design and execution to expand pipeline, accelerate GTM
Operations	**Procurement savings** **Up to 15% savings** via AI-identified savings opportunities and supplier-negotiation strategies	**Manufacturing productivity** **30%+ increase** via manuf. digital twins, AI optimized or agentic set point optimization, and intelligent robotics	**Working capital** **15%-30% inventory reduction** via AI-optimized network design and multi-echelon inventory	**Revenue upside** **4%-6% increase in demand addressed** via AI-driven demand planning and dynamic supply-chain scenario planning
Commercial	**Marketing ROI** **20-30%+ increase** via hyperpersonalized collateral, automation of activities pre-/post-campaign launch	**Sales force productivity** **20%-30% reduction in nonselling activities** via augmented or agentic mgmt. of admin. tasks and automated HCP insights	**Customer service costs** **20% decrease in costs, with increased HCP coverage** with omnichannel "always on" AI customer service	**Sales growth** **5%-10% increase** Increase HCP coverage, share of wallet, and retention via AI-augmented or agentic sales (dynamic targeting, next-best actions, and cross-sell/upsell offers)

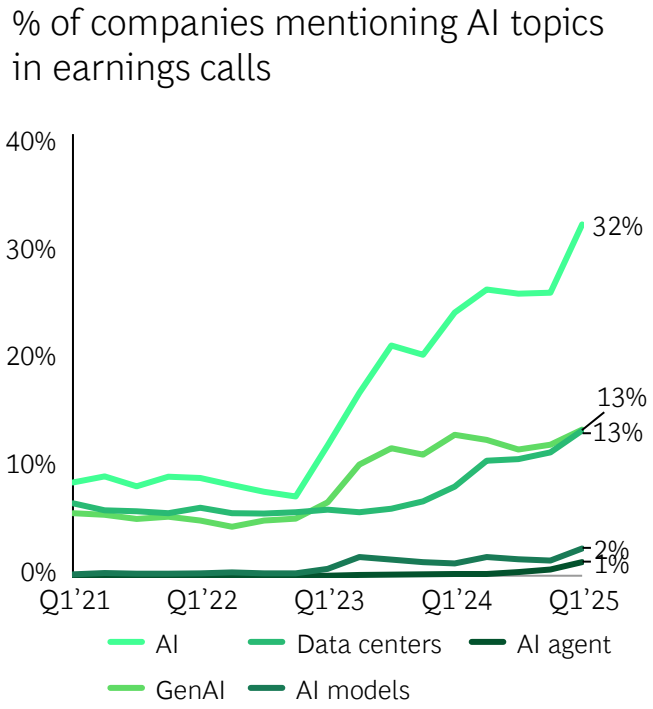
> AI can be a **10x multiplier** for market cap and operational efficiency; companies that get it right will scale faster, enter markets faster, and look more like tech firms than traditional medtechs."
>
> – Quote from a medtech industry innovator and founder of multiple medtech and AI companies

Source: BCG project experience and analysis.

CEOs need to act urgently to take advantage of the AI opportunity

Global sample

CEOs increasingly mention AI on earnings calls



Companies are investing in AI as a strategic priority…

60% **increase** in GenAI **investments projected** in the next three years

33% **of companies** are planning to **spend $25M+ on** AI in 2025

75% of executives **rank AI as a top-three strategic priority**

…and medtechs are increasingly going "all-in" on AI

> We're now entering the age of intelligence…for the first time you can embed reasoning and action into digital tools; this changes everything…in one customer service team, 10% of interactions are now handled by agentic AI."
>
> — CIO, Philips[1]

> We've learned that 10% of AI use cases drive 80% of the value. The future belongs to companies that figure out which 10% matter most and scale them."
>
> — CIO, Johnson & Johnson[2]

> Generative AI is projected to grow faster in health care than any other industry, with a compound annual growth rate of 85% through 2027."
>
> — *BCG, "Medtech's Generative AI Opportunity"*

1. Peter High, "Inside Philips' AI Strategy to Deliver Better Care at Scale," Forbes, July 29, 2025.
2. Isabelle Bousquette, "Johnson & Johnson Pivots Its AI Strategy," April 18, 2025.

Sources: IoT Analytics GMBH 2024/BCG marketing analysis based on earnings calls from ~4,500 global companies; BCG Build for the Future 2024 global study (merged with DAI); n=1000; BCG analysis.

AI-first organizations build their core processes around AI, reshaping and reinventing workflows and business models to transform functions

Traditional organizations

Core processes built around people, with limited automation

DEPLOY AI-point solutions only—experiment with many solutions

DEPLOY | Support adoption of GenAI tools and foster productivity

Examples

- Smart scheduling, meeting summaries, and knowledge-management platforms
- Automated generation of internal reports
- Invoice processing and contract reconciliation for finance and ops

AI-first organizations

Core processes/outcomes delivered by AI; people shape strategic vision, orchestrate and close gaps (e.g., supervise/review AI-driven outputs, decisions, and recommendations)

Focus 80% of investment on **RESHAPE AND INVENT** (typically after having already piloted, and scaled select proven "deploy" applications)

RESHAPE | Redesign E2E workflows and processes to reimagine functions

Examples

- Optimized trial design and predictive patient-enrollment forecasting with regulatory-submission preparation through AI-powered content structuring
- Manufacturing digital twins and set-point optimization assistants to improve production
- AI augmented sales team support/HCP engagement

INVENT | Build new business models, value propositions, and revenue streams

Examples

- GenAI-enabled product design and rapid prototyping with product digital twins
- Agent-powered ecosystems that run key workflows autonomously across functions, with humans in oversight roles
- AI-native service models, where products trigger automated post-sale actions

Source: BCG analysis.

AI can reshape and reinvent functions across the medtech value chain

Core functions

R&D and Regulatory

Product design and development
Expand product pipeline and accelerate time from design to manufacture via AI-driven product ideation and rapid prototyping through product digital twins, automated software code generation

Clinical operations
Identify most viable trial sites and execute trials faster with AI-optimized trial design based on historic trial data, predictive forecasting of optimal sites and patient enrollment, and AI-based project management and dynamic workforce planning

Regulatory[1]
Accelerate and proactively navigate complex regulatory processes, with continuous regulation monitoring, automated regulatory doc drafting, and AI-augmented MLR[2] review

Operations

Quality[1]
Streamline quality management and preempt quality issues with predictive/automated deviation and complaint analysis, and harmonized document generation

Procurement
Equip buyers with AI-identified savings opportunities and negotiation strategies; automate operational/transactional tasks to focus on strategic procurement activities

Supply chain
Smarter and more responsive planning and fulfillment; AI updates forecasts, optimizes inventory, and balances demand, supply, and financial tradeoffs for more responsive ops (better service levels with lower inventory)

Manufacturing
Processes continuously optimized via AI (e.g. equipment, performance parameters) with intelligent robotics automating manual tasks, to drive productivity, reliability, and cost efficiency

Commercial

Marketing
Rapidly accelerate brand/go-to-market strategy with AI-driven insights and segmentation, and launch hyperpersonalized content for HCPs at scale to improve awareness, conversion

Sales
Empower sales force with AI-driven HCP target lists, next best sales actions, summarized interactions, and real-time feedback to improve HCP coverage and SOW[3], reduce time spent on nonselling activities

Service
"Always on" omnichannel (e.g., voice, chat) HCP and patent service, with copilots for service reps/call center personnel, chatbots/agents fielding requests to drive rapid, high-quality service

Support functions

HR
Increase E2E productivity and improve employee engagement via dynamic workforce planning, automation of recruiting/hiring activities, personalized L&D[4] journeys, and predictive employee sentiment analysis

Finance
Automate manual activities and improve insights with continuously updated forecasting and AI-driven scenario analysis, dashboards with AI-insights, predictive closing/ reconciliation

Tech and IT
Increase speed of software development via AI-powered code generation and review, accelerating time-to-market and quality of SiMD/SaMD as well as internal apps

1.Quality and Regulatory span value chain/product lifecycle. 2. MLR = medical, legal, and regulatory. 3. SOW = share of wallet. 4. L&D = learning and development.
Source: BCG project experience and analysis.
Note: non-exhaustive overview of established (or in-development) AI applications by function

R&D | AI can transform product design and drive productivity across the E2E R&D cycle to expand product pipelines and accelerate GTM

WHY IT MATTERS: Evolving FDA and EU MDR regulations, increased trial requirements, and complex interdependent development processes (particularly for integrated solutions) are driving increased R&D spending, and can increase time to market (slowing patient access)

1. **PRODUCT IDEATION AND FEASIBILITY:** Transformative acceleration in patient-centric product ideation and prototype vetting via GenAI dev. engines and product digital twins that leverage CAD/engineering, customer, and clinical data (and more)

2. **PRODUCT DESIGN, DEVELOPMENT, AND VALIDATION:**
   Rapid testing of manufacturing feasibility via product digital twins
   Accelerated software development via GenAI code generation/copilots

3. **CLINICAL TRIAL DESIGN:** Reduce protocol complexity and risk of delays via AI-optimized trial design based on external and internal clinical data

4. **CLINICAL TRIAL OPERATIONS**: Predictive targeting of most viable trial sites/regions and forecasting of patient enrollment, with accelerated patient recruitment

5. **CONTENT GENERATION**: Streamlined drafting of clinical, regulatory, and technical/engineering documents, e.g., design history files (DHF), via GenAI-enabled drafting and MLR review

6. DATA/KNOWLEDGE MANAGEMENT: Track full digital history across R&D process, with AI-driven drafting of TPPs[1], project plans and dossiers, and maintenance of idea logs/internal research for streamlined extraction or analysis of data via GenAI

7. PROJECT MANAGEMENT: Dynamic project management and staffing including predictive resource planning/management and risk flagging and automated KPI tracking and reporting

Long term opportunity to potentially **reduce total R&D cycle time by 50% and increase market share by 10%** with AI-based E2E R&D transformation

1. TPP = target product profile.
Sources: Evaluate Medtech; FDA approval databases; BCG project experience and analysis.

R&D Case Studies | Organizations are reshaping their R&D process today

Current horizon: biopharma company case studies

Clinical trial design and operations

Accelerated trial times with predictive site selection and patient forecasting

- Leveraged internal historical data, site characteristics, external competing trials data…
- …building prediction models to identify better alternative candidate sites and forecast activation and enrollment

10% Faster activation of sites

20%-25% Faster patient enrollment speed

15% Overall acceleration of trial

Content generation

Streamlined drafting of clinical study reports

- Built GenAI engine for medical and regulatory authoring and integrated into document management system and external publication databases for E2E traceability and rapid editing
- First application in clinical study reports

80%-90% Accuracy and completeness of GenAI-written first drafts

60%-70% Time saved for medical and regulatory writers

>90% Satisfaction when medical, regulatory and writers use GenAI tool

Next horizon: applications being piloted

Product design

AI-design engine for rapid ideation and concept vetting

- Rapidly generate concepts and optimized design variants based on priority attributes/ prompts
- Balance tradeoffs (e.g., stability vs. weight vs. cost) through embedded simulation
- Minimize costly physical prototyping by identifying infeasible concepts early in the cycle

10%-70% Potential reduction in time from design scoping to design freeze

Rayner: Designed unique optical spiral with AI engine

Source: BCG project experience and analysis.

Regulatory and Quality | GenAI tools can drive dramatic gains in efficiency, accuracy, and outcomes

WHY IT MATTERS: Challenging and time consuming to manage interdependencies between the regulatory/quality documents required to receive product approval; critical to have proactive QA/QC to avoid recalls, maintain and increase brand equity with HCP and patients

Smarter quality-related decision making via risk prioritization and predictive insights	**DEVIATION MANAGEMENT/ANALYSIS:** AI analyzes, prioritizes, and classifies deviations, determining trends and causes, and recommends corrective actions
	Complaint handling: Automates complaints intake and analysis, linking deviations, manufacturing data, maintenance logs, etc. to generate actions and reports
Faster quality and regulatory document drafting and review cycles	**QUALITY AND TECHNICAL DOCUMENT DRAFTING:** Rapidly generates initial drafts of quality documents (e.g. SOPs, product specs) pulling data from existing templates, product test results, manufacturing logs, etc.
	Product manual/label drafting: Automates initial drafts of product manuals or labels, simplifying content and translations.
	Further harmonize QMS[1] : Analyzes quality documents to align approaches and flag contradictions; automates mapping and traceability of E2E quality and regulatory documents to ensure changes are flowed through all relevant docs
Proactive and accelerated regulatory monitoring and review	Regulatory intelligence and response: Real-time AI-driven monitoring of regulatory changes
	Optimized medical, legal, and regulatory (MLR) reviews: Generates MLR reports, with AI-powered review to highlights risks/compliance concerns and make recommendations

Subset of AI use cases shown; other use cases include visual inspection (e.g. AI-powered flagging of quality issues in visual inspections), automated Q&A (interpretation of test data to ensure compliance and identify Improvement areas), maintenance instructions, and routing

1. QMS = quality management system. 2. Analogous to design history files, device master records, clinical evidence, etc.
Source: BCG project experience and analysis.

Case studies

DEVIATION ANALYSIS

Impact created for health care companies using GenAI deviation management:

20-40% Reduction in deviation closure lead time

Also led to significant reduction in repeat deviations

COMMON TECHNICAL DOCUMENT DRAFTING (QOS)[2]

A top 20 pharma company automated quality overall summary preparation:

80% Accuracy of the first draft

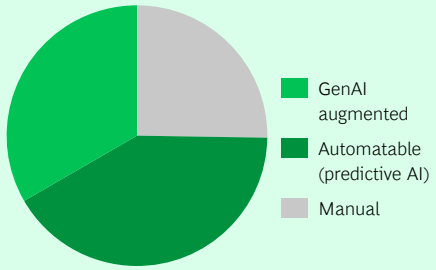
50% Faster writing speed (reduction of 4-6 weeks)

95% User satisfaction

Procurement | AI and GenAI can automate up to 75% of procurement tasks, freeing up buyers to focus on high value strategic procurement

WHY IT MATTERS: High volume of administrative tasks reduces time dedicated to driving savings via strategic procurement; procurement savings drive disproportionate impact to profit (e.g., 8% in procurement savings typically produce the same profit improvement as an increase of 30% in sales)

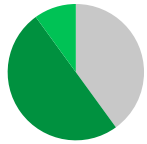
Procurement function



Up to 75%
automation of operational and transactional procurement tasks, so **buyers can focus on highest value add activities**

Future procurement teams will be leaner (**30% less head count**), with core team of strategic buyers supported by AI agents for execution

Procurement value chain (source-to-contract and procure-to-pay)

	Intake	Category strategy	RFX[1] execution	Contract management	Supplier engagement	PR to PO[2] process	Invoice management	Payment processing	Spending analytics
									
Sample GenAI uses	Utilize chatbot for live requests and redirection	Understand category nuances	Draft RFX[1]	Review and compare contracts	Develop custom communications, identify savings opportunities	Draft requisitions	Structure and validate invoice data	Analyze transactions	Scan contracts/ spending data to identify savings opportunities
Sample automation uses	Automate intake/ request workflow	Manage process and prioritization	Oversee RFX[1] workflow	Classify and develop contracts database (CLM[2])	Draft consistent messages to suppliers	Deploy catalogs and track ordering process	Generate and check supplier invoices	Validate and release payments	Analyze basic spending cube

Detail: GenAI solutions

Supplier assistant and savings radar

Enhance supplier negotiations via rapid opportunity identification, AI-optimized supplier strategies, and automated letter creation

- **~90%** reduction in manual spending data analysis
- **~15%** savings potential in supplier negotiations
- **~85%** time savings when writing supplier letters

AI spending analytics

Achieve spending transparency via automated collection, cleansing, classification, and categorization of spending/ invoice data with **actionable insights** (e.g., price arbitrage opportunities, payment terms savings, etc.)

3%-11%
savings potential

1. RFX = request for information, proposal, quotation, or tender. 2. CLM: contract life cycle management.
Source: BCG project experience and analysis

Supply Chain | AI can supercharge supply chain function, shifting from reactive to proactive, real-time, data-driven supply chain management

WHY IT MATTERS: medtechs face both upstream (e.g. geographic supply chain risk, limited global suppliers for specialized components) and downstream challenges (complex, changing demand signals), which often compound upon and exacerbate each other—increasing costs and impacting product availability/fulfillment

Challenge/aspiration…	…how AI can help
Agility: Desire to be more responsive and get ahead of bottlenecks	Provide E2E view of supply chain for PROACTIVE planning • Control tower to drive **real-time visibility of E2E SC and logistics performance** with predictive issue detection • **AI-powered demand planning** and forecasting
Resiliency: Can't afford to have another shock disrupt our supply chain	Map, identify, and RAPIDLY PREEMPT OR MITIGATE weak points in SC: • **Simulate and then optimize network and flows** to proactively identify or solve potential capacity issues • **Preempt risks with AI monitoring and evaluation of supplier, market, and related risks** with recommended contingency plans (e.g., backup suppliers)
Cost efficiency: Costs are ever-increasing, but don't want to, or can't, pass them onto HCPs	DYNAMIC NETWORK ADJUSTMENTS to drive savings: • **Run rapid scenario analysis** via SC digital twin with AI-driven recommended actions (e.g. profitability optimization) • Reduce costs via **automation of warehouse functionalities and streamlined transportation operations** (e.g., intelligent route planning)

GenAI and agents can enhance traditional AI machine learning applications noted above by generating insights from unstructured master data (e.g. BOM), further automating processes, and driving further adoption via intuitive application interfaces

Source: BCG project experience and analysis.

Case studies

A medtech company embedded AI forecasting capabilities across E2E planning process and optimized multi-echelon inventory (e.g., to balance inventory for every SKU and stocking location):

$125M+	Inventory reduction in <12 months
60%	Reduction in backorders
15pp+	Improvement in forecasting accuracy

A leading manufacturer incorporated traditional AI and agentic AI to reimagine sales and operation planning process, enabling planners to run complex simulation scenarios and analyze root causes with intuitive GenAI interface

>2pp	EBITDA increase year 2+
3x	Process cycle time reduction

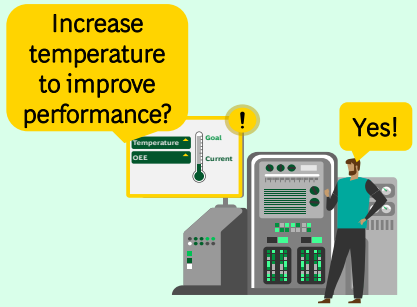
Manufacturing | Factory of the future will leverage virtual and physical AI to become increasingly autonomous and unlock significant productivity gains

WHY IT MATTERS: As manufacturing environment becomes more challenging (increased cost competitiveness and labor shortages) and product portfolios become more complex, automated, self-controlling production can be a key source of competitive advantage

VIRTUAL AI

Assistant or recommendation systems
(current AI horizon)

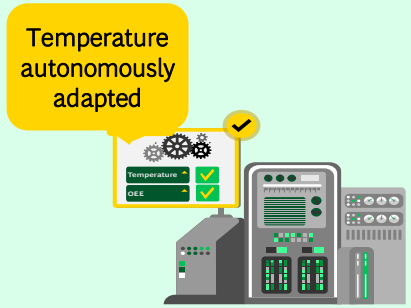
AI assistant acts as thought partner or provides recommendations to engineers on optimal decisions



- **Operator chatbot**
- **Machine setpoint advisor**
- **Maintenance technician recommendation engine**

Autonomous systems
(next AI horizon)

AI autonomously monitors performance and implements decisions

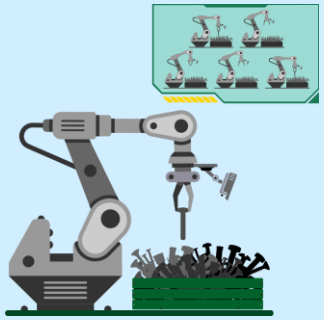


- **Self-controlling machine setpoint** agents
- Automated guided vehicle (AGV) **fleet steering agent**
- **Meta-agent for factory control** (e.g., self-optimizes production across team of AI agents)

PHYSICAL AI

Training/context-based robotics
(current/next AI horizon)

Robots learn complex tasks through training



- Self-adapting robotic systems for direct manufacturing (e.g., versatile assembly with parts variation, packaging of customer orders)
- Autonomous mobile robots for indirect manufacturing (e.g. raw material unloading, shelving, bin picking)

Example use cases

Manufacturing digital twin (virtual model of production assets and processes to simulate scenarios, predict outcomes, and optimize throughput, energy use, etc.)

Source: BCG project experience and analysis.

Case Studies

An industrial goods company **transformed factory operations with virtual and physical AI,** based on four key elements :

- Predictive analytics for down-time risk and machine self-control
- Simulations for predictive quality control
- End-to-end material flow automation via robotics
- Robotic automation for complex part handling and assembly

21% Labor productivity impact achieved

€190M Total yearly saving impact

A consumer electronics company **incorporated manufacturing/production line digital twin for rapid simulation testing and AI-enabled robotics** to automate time-intensive, high-precision tasks (e.g., screw tightening and cable insertion)

20-30% improvement in cycle time

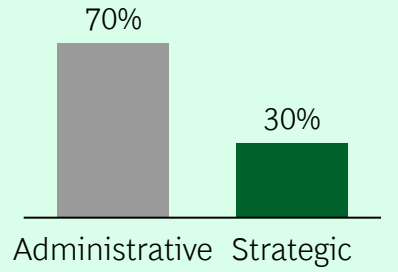
15% reduction in operational costs

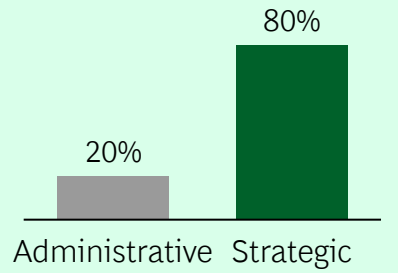
Marketing | GenAI can reshape marketing workflows and unlock time for more strategic marketing tasks

WHY IT MATTERS: Marketing orgs must evolve to meet HCP and patient demand for personalized, omnichannel engagement, but are often challenged by legacy structures (e.g., marketing teams operating in silo from clinical, regulatory, product teams) and disjointed processes (e.g., a lack of streamlined collaboration with MLR and analytics teams)

	Ideate campaign concept	Develop content	Review content	Launch campaign	Measure impact
Old Process	**Collaborate** across insights, media, agency, analytics, etc. on concept and brief in… **20 days**	**Develop and approve initial creative concepts** before final production run in… **15 days**	Standard CRC[1] or PRC[1] process with **medical, legal, and regulatory (MLR) review** … **30 days**	Setup, traffic, **approve, and launch** a new campaign launch in… **15 days**	Typical **post-campaign report** ready for consumption in… **60 days** (after campaign completion)
New Process With Gen AI	**Build an entire campaign concept** and brief informed by HCP and patient insights in… **< 1 day**	Generate hundreds of creative concepts from brief and **hyperpersonalize** in… **< 1 day**	Ensure compliance throughout content generation and **augment review process with GenAI** in … **< 3 days**	**Automate manual process steps** to reduce launch time to… **10 days**	**Automated post-campaign** report ready for consumption in… **15 days** (after campaign completion)

Estimated time allocation





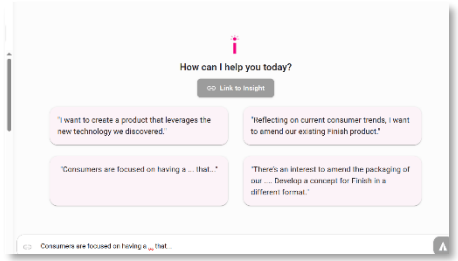
Applies to both direct-to-patient and HCP marketing

1. CRC = copy review committee; PRC = promotional review committee
Source: BCG marketing org. and op. benchmarks.

Marketing Case Study | A health/nutrition CPG drove 25%-40% overall time savings across key workflows with on-par or better-quality outputs

Context: Launched personalized marketing with AI-based concepting engine, content origination, localization, and optimized campaigns with health/nutrition CPG company

Insights to innovation concept

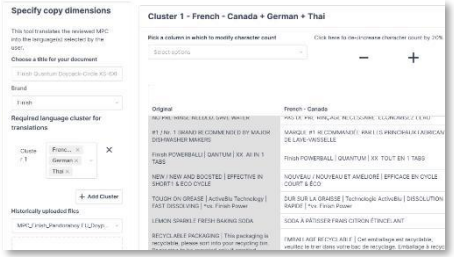


- Generate insights effortlessly through an intuitive and interactive chat
- Validate ideas against cross-functional guardrails and brand strategy fit

Content origination to localization

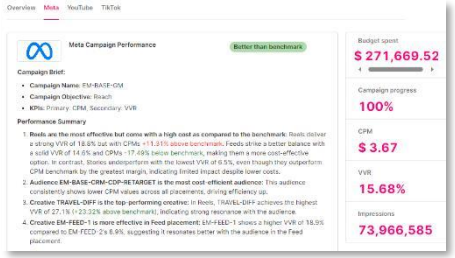
- Accelerate brief creation, concepting, and scripting–cc through hundreds of ideas
- Produce more ad variants and rapidly optimize creatives

Artwork master to maintenance



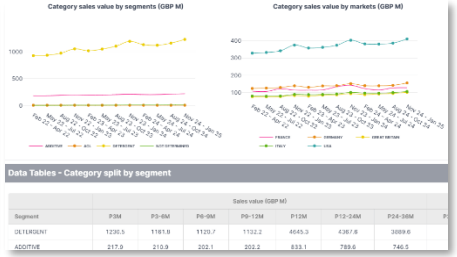
- Instant legal, regulatory, brand feedback
- Cost savings on external translation agencies

Media plan to optimize



- Automated data retrieval and analysis of campaign performance data
- Recommends data-driven budget shift
- Generate a post-campaign analysis or wrap report in ~2 days, not a week

Brand launch to monthly report



- Produce downloadable reports in a consistent format across teams, markets, and brands
- Produce quantified insights in seconds
- Generate initial brand performance report in ~2 minutes

	Insights to innovation concept	Content origination to localization	Artwork master to maintenance	Media plan to optimize	Brand launch to monthly report
Quality	**Improved** 1st time BASES past vs. current	**On par** vs. current assets[1]	**On par** vs. current assets	**On par or better** vs. human-only output	**Up to 2x** vs. BAU
Efficiency	**~60%** time reduction in concept development	**~25%-40%** reduction in nonworking media time	**~70%** time saved on cross-functional alignment and localization	**~80%-90%** effort reduction in manual campaign analysis	**~60%-90%** internal time reduction

1. Based on the results of link testing vs BAU ads—two out of three GenAI ads achieved sufficient score for in-market testing with only one week of optimization needed
Source: BCG project experience and analysis.

Sales | Shift from intuition-led to AI-powered, real-time, and autonomous selling can turbocharge scalable revenue growth

Why it matters: Increased competition, changing HCP expectations, longer sales cycles (with more sellers involved), and more complex channels are challenging traditional selling methods

Current horizon — Future horizon

Traditional selling

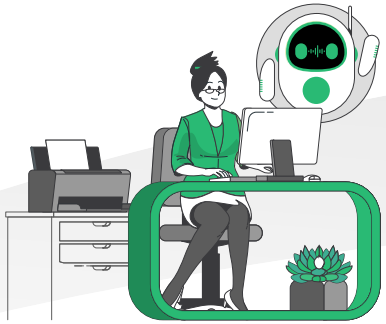
Seller-driven, intuitive, and heuristics-led

Subjective sales motion reliant on seller initiative and target lists

- Underutilized sales/customer data or challenges to analyze and action
- Administrative tasks can inhibit focus on selling activities

Augmented selling

AI-powered insights for sellers

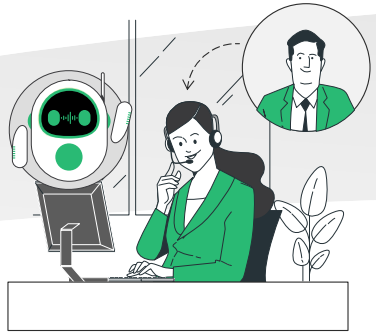


Sellers armed with next best actions, collateral, and talk tracks

- **360°customer view:** one-stop shop for HCP characteristics, tailored by rep and region
- **Comprehensive product information** with AI-driven pitch ideas to support sales efforts
- **AI-driven next best actions,** e.g., personalized cross-sell and upsell recommendations, nudges surfacing missed opportunities

Assisted selling

Real-time seller assist and coaching

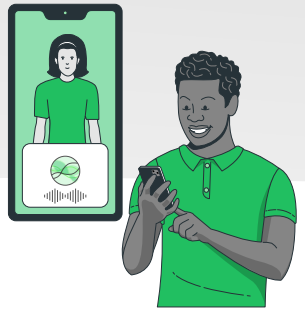


Real-time support and nudges for sellers during HCP conversations

- Real-time AI-driven **pitch ideas**
- **Live response recommendations** to HCP questions
- **Immediate feedback/coaching** on sales conversations
- Nudges to **surface missed sales opportunities**

Autonomous selling

Virtual agents



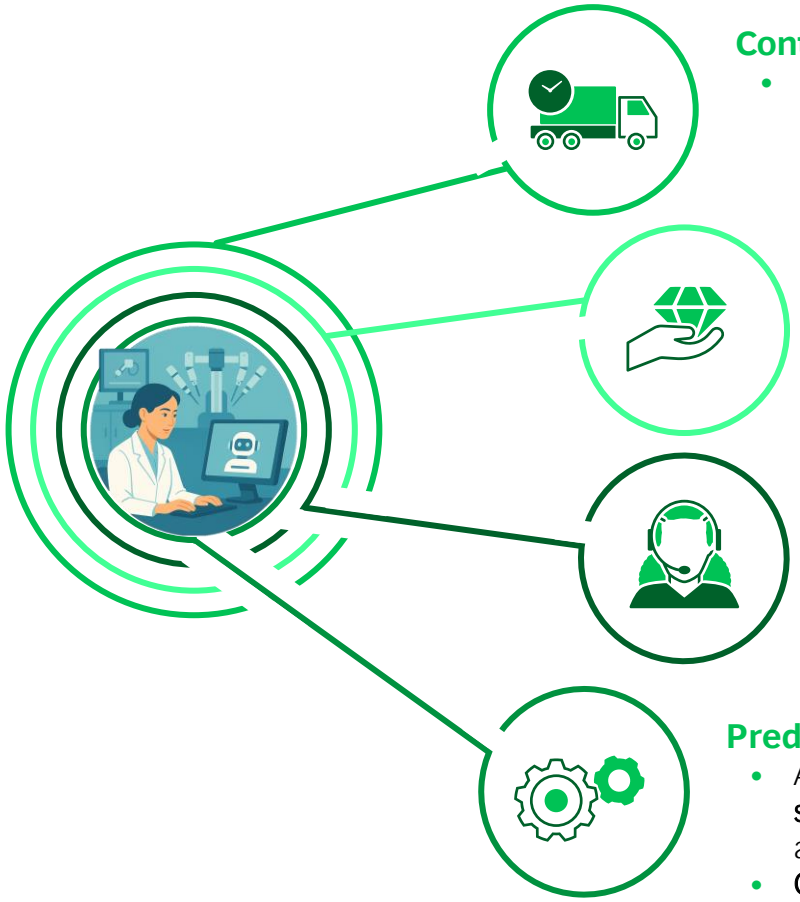
Auto prospect, nurture demand, 24x7 engagement, involve people as needed

- **Inbound sales agent**: Qualifies inbound calls and initiates buying process
- **Base management agent:** Engages HCPs for upsell/cross-sell
- **Sales trainer/coach**: listens in on calls and makes recommendations on how to respond to HCPs

Source: BCG project experience and analysis.

Service | AI can enhance, accelerate service across spectrum of HCP needs

Why it matters: Customer service continues to be key driver of retention and reputation, and will continue to be challenged as product portfolios grow in complexity and HCP expectations/service needs increase



Continuous visibility into product availability and delivery status

- Provide real-time order tracking, automated delivery updates, and inventory visibility by pulling data from ERP/logistics systems **into a single conversational interface**

Proactive education and usage optimization

- **AI assistants educate HCPs on device features**, provide contextual "how to" support
- **Proactively identify and suggest use of underutilized capabilities**, ensuring clinicians extract full value from device or software

"Always on" omnichannel (chat, voice) product support

- **AI assistants or agents handle routine queries** via voice or text
- Automatically escalate complex issues to call center or specific service reps, with **AI copilots to increase speed and quality of response**

Predictive monitoring and field-service support

- AI models analyze telemetry and usage data of equipment to **predict service needs before failures occur**, triggering proactive maintenance and minimizing costly downtime
- **Copilots support field-service technicians** (e.g. suggest likely fixes based on past similar cases, generate repair instruction)

Customer service is critical to HCP experience and commercial success

1/3 of HCPs (unprompted) said they expect the medtech industry to provide better support/service

91% of HCPs consider access to information on demand critical

88% of physicians value customized content and interactions

Sources: Sermo HCP Sentiment Survey: How to apply medical device industry trends and insights to better meet physician needs (n =200 hospital physicians); BCG analysis.

Sales and Service | Autonomous agent platform (GENie) can drive revenue uplift and personalize the service experience for end customers

- **Battle-tested autonomous agent:** customized for company data
- **Omnichannel:** supports **voice, chat**
- **6+ use cases:** cross-sell and upsell, lead generation, customer support, etc.
- **Seamless integration** with existing tools, e.g., SAP, SF
- **Multilingual:** supports **50+ languages**
- **Perpetual license:** IP ownership transferred to client tech team

GENie in Action

GENie powered by Deep GenAI

Meet Genevieve!

Your AI Customer Service Assistant

Call at XXX-XXX-XXXX

Example prompts

- "I'm unable to access the latest device performance report – can you pull that for me?"
- "Can you help me update the software on our imaging workstation?"
- "I'd like to arrange a training call for our technicians – what times are available this week?"
- "We received the shipment, but two kits are missing. Can you check the delivery status?"
- "Can you send over the product specifications and compliance certificates for the new model?"
- "Can you check if our service contract covers on-site maintenance?"

Impact and credentials

- Leveraged in **10M+ customer interactions** in 2024
- Received the **AWS 2024 Gamechanger Award**

x20	Speed to deploy GenAI use cases	10%	Uplift in sales
30%	Uplift in avg. revenue per user (ARPU)	60-70%	Reduced cost in servicing

Sources: GENie pilot results; BCG project experience and analysis.

Sales and Service Case Studies | Proven impact from deploying AI capabilities across sales and service functions

Full field deployment of digital and agentic AI tools

Global biopharma and medtech player

Connected sales reps and integrated support functions act as one

- Codeveloped next best action tools for sales reps, with rep champions
- Expanded deployment across marketing, field reimbursement, and clinical
- Initiated in US and scaled to include Canada, including commercial teams

+20-50% rep efficiency gain

+5%-10% incremental revenue

Redesigning go-to-market and customer channels with AI

Global medtech player

Launched hybrid sales models with always-on HCP support

- Enabled AI-assisted sales with next best actions and talk tracks
- Redesigned GTM model across segments and product types
- Launched always-available AI customer channel for 24/7 HCP support

3x sales uplift from AI recommendations

2.3x click-through-rate (CTR) lift

45% ticket resolution time reduction

Transforming field service with predictive AI planning

Medtech player

Enabled proactive follow-ups at the moments that matter most

- Built predictive maintenance and AI-powered demand planning
- Digitized parts identification, ordering, and tracking
- Streamlined coordination between technicians, planners, and warehouses

+16% revenue growth

+7pp service gross margin

+20pp on-time completion

Source: BCG project experience and analysis.

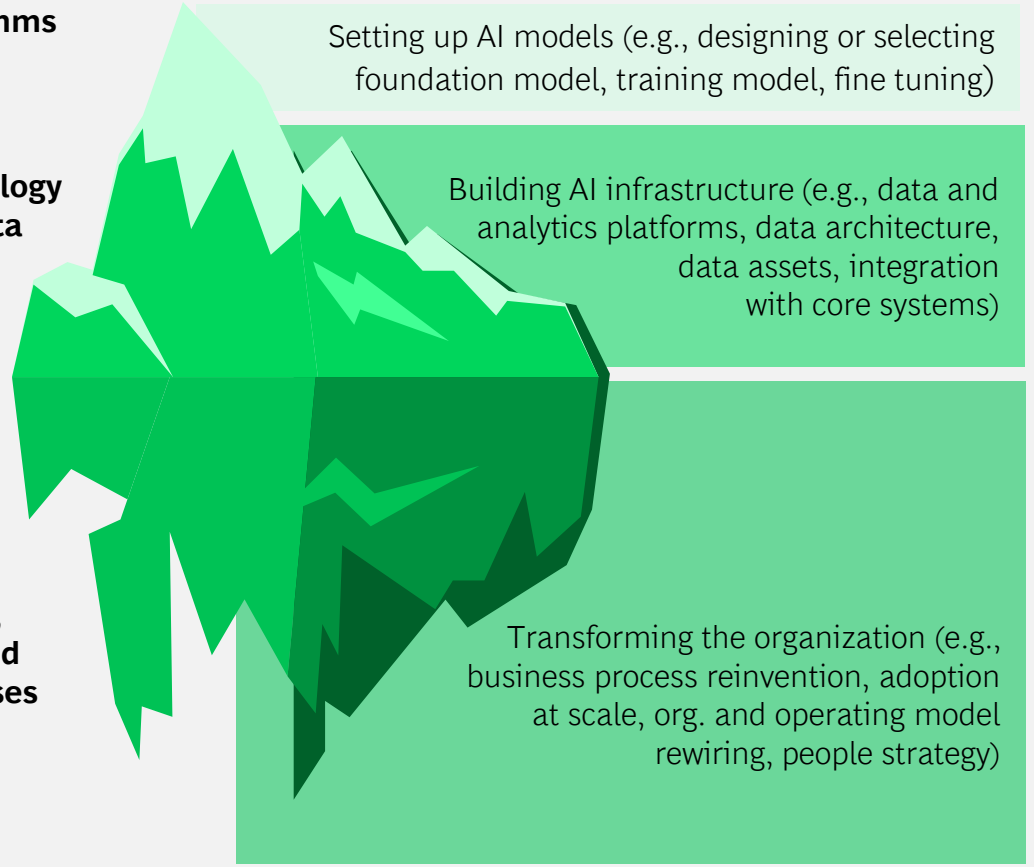
Key success factors for E2E AI transformation

1. **Set a bold ambition from the top (C-suite),** powered by 2x investment in AI capabilities, 2x people in AI
2. **Build a business-led AI agenda;** focus AI on solving real operational and financial pain points, owned by business leaders
3. **Focus investment in reshaping and reinventing functions;** AI Leaders focus 80% of investments on reshaping 1-3 core functions (as a starting point)
4. **Do less, reap more;** within function(s) start by prioritizing select high-value, scalable use cases with 2x-3x potential ROI impact (versus hundreds of use cases)
5. **Embrace the 10-20-70:** Leading companies see AI as a holistic transformation that hinges on people—rewiring their org. and operating model/processes, upskilling their people, and driving adoption at scale

Source: BCG analysis.

10-20-70 model

% of focus/effort to drive and ensure transformation success



Additional detail on following page

10/20/70 | Six enterprise enablers are foundational to the transformation journey

People, org., and processes
70%

Governance and steering

Steer investments, value realization, and responsible use with enterprise-level governance

- Embed AI strategy in **enterprise decision making**, not siloed in tech or scattered use cases, with clear AI-driven KPIs
- Drive innovation while managing risk; define **governance rules and guardrails to ensure responsible, compliant AI use**

Resourcing

Link funding to P&L impact, allocate top talent to highest priority themes

- Allocate **funding and resources to priority AI initiatives, with accountable ownership and financial commitment**
- **Reinvest efficiency gains** into new AI initiatives

Talent and capabilities

Develop clear people and capability advantage

- **Attract talent and define future skill requirements** to upskill/build data, digital, and AI fluency
- Reorganize E2E business processes **from human led to AI native, and fill new roles accordingly**

Structures and roles

Set up lean structures with AI-led execution and human oversight

- **Break down silos across business, data, and tech functions**, with shared accountability, clear role of center
- Change roles and responsibilities: **AI makes recommendations and executes, people provide oversight**

Target culture and purpose

Foster AI-first culture; ethical and agile mindset, shared commitment to AI become business-as-usual

- Prioritize **change management and communication** to drive adoption and sustain momentum
- Embed **"test and learn" mindset, build trust in AI capabilities, and normalize human–AI collaboration**

Algorithms, Tech, and data
10,20%

Algorithms, tech, and data

Migrate to modernized tech and data platforms to enable secure and rapidly scalable AI applications

- Define/**evolve comprehensive data model** to ensure data is well organized, documented, and continuously refreshed
- **Centralize data** (e.g. on Snowflake, Databricks) and deploy on scalable cloud infrastructure (e.g., AWS) to create single source of truth to enable cross-organization access
- **Empower business with data skills** (e.g. querying) and access; they own and steward data, tech teams enrich
- Evaluate whether to **buy (for speed) or build (for differentiation) AI applications**, and **develop effective partnership strategies**

Source: BCG analysis.

How to get started on the AI-First transformation journey

Set the ambition, prioritize opportunities

First 1-3 months

- Set **bold strategic commitment** from the top, defining objectives and value ambition for AI transformation
- **Prioritize select functions** (conduct maturity assessment across functions, identify opportunities to reshape/reinvent or "golden use cases", size opportunities)
- Assess **gaps to target state** across key enablers (e.g., required talent/upskilling, target tech architecture, data readiness)
- Establish **value-driven governance and structured change-management** plan

Launch pilots across functions

Next 3-6 months

- **Pilot, iterate, and prove out value** for AI applications across prioritized functions (e.g., one site, one region)
- **Empower and upskill functional/business leadership** and identify AI adoption champions
- Address **foundational gaps/enablers and fully define people, ops, data/tech roadmap** to transform functions

E2E function transformation

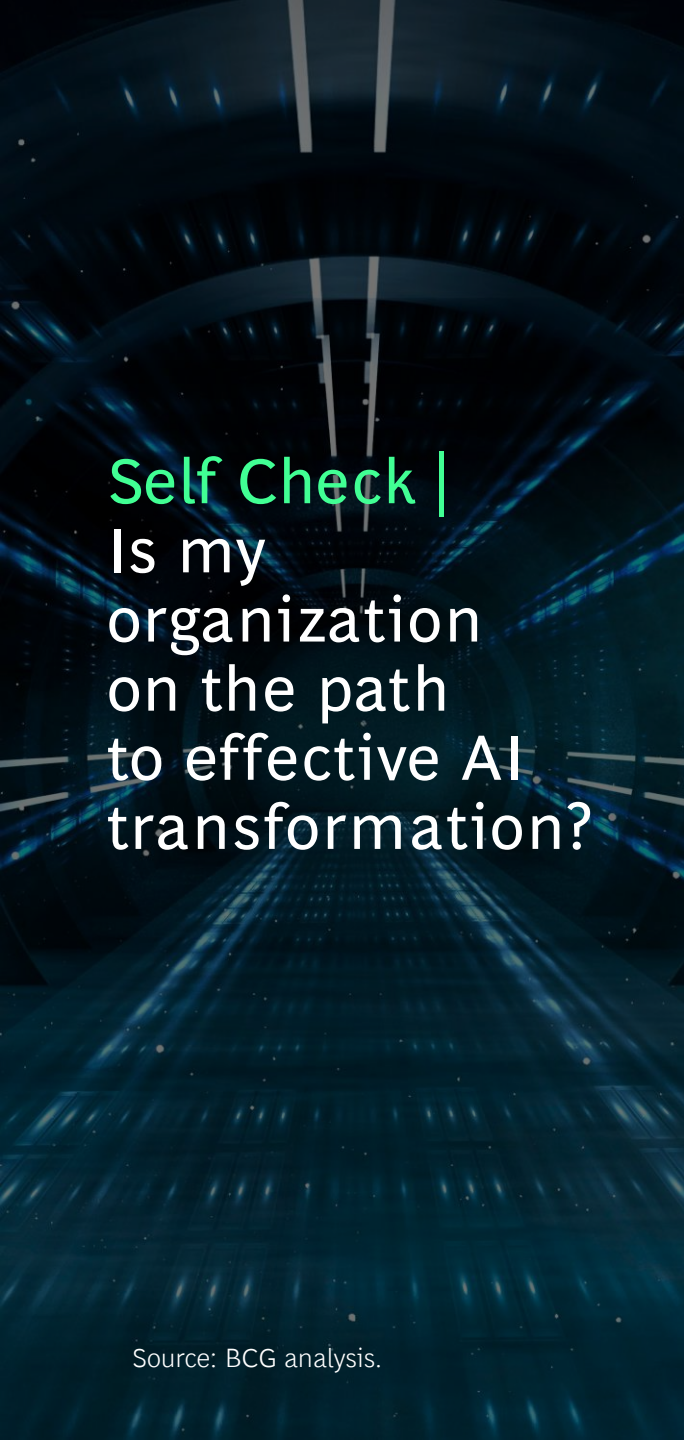
Next 9 -12 months

- **Scale proven AI applications** across functions E2E
- Drive systematic **AI-first behavior change and adoption**
- **Measure and manage the E2E transformation** with KPI tracking, ongoing governance
- **Continue to evolve and scale tech and data foundations;** conduct large-scale upskilling

Codify learnings, **launch next wave of functions for transformation**

Underpin the transformation journey with increasing investments in **enterprise enablers** (tech, data, people)

Source: BCG analysis.



Self Check | Is my organization on the path to effective AI transformation?

Source: BCG analysis.

Leadership and strategy (set the direction)	❑ **AI is a strategic priority communicated to the organization** ❑ I have a **named AI sponsor** (C-level or board level) ❑ AI progress is a **standing agenda item** in leadership meetings
Solutions and business value (determine priorities)	❑ We have **identified functions or E2E processes where AI can create tangible value** ❑ We have **prioritized use cases identified for each function,** with target outcomes ❑ **Business sponsor** with P&L accountability has been identified for each function/use case ❑ We measure **both business ROI and HCP/patient outcomes (where applicable) from AI cases**
Funding and investment (back it with resources)	❑ Our leadership has a **standard way to request AI funding** that **communicates ROI** ❑ I have an approved **budget for AI-ready data, talent, and implementation** ❑ There is a defined **three-year AI investment envelope** (% of revenue)
Data and technology (build the foundation)	❑ **Named data owners/stewards** exist in business units or functions ❑ We have an **active program** cleaning, governing, and integrating data ❑ Our critical data is **AI ready** (structured, accessible, compliant, and enriched with AI-driven structuring/labeling as needed)
People and processes (drive adoption)	❑ Our leadership team is undergoing **AI fluency training** ❑ We have **cross-functional AI teams** (business + tech + center) ❑ There is a **change-management plan** to address trust, compliance, and regulation ❑ We have an **AI talent plan,** including the ability to attract, retain, and motivate talent
Governance and responsible AI (scale with trust)	❑ Wins and lessons learned from existing pilots **communicated visibly** across organization ❑ We have an **AI governance council** (ethics, compliance, regulatory). ❑ We operate under a **responsible AI framework** (safety, explainability, bias) ❑ I receive a **quarterly AI impact report** tied to business and HCP/patient outcomes

Near-term checks:
What can you start tomorrow?

BCG Experts | Key contacts for medtech AI transformations

Medtech AI Transformation Leads

Stefan Leve
Boston

Ganga Kannan
New York

Vikram Aggarwal
New York

Medtech Functional Experts

AI and Digital

Gunnar Trommer
BCG X
Manhattan Beach

R&D

Beate Steen
Los Angeles

Quality/Regulatory

Kevin Dsouza
New Jersey

Ops

Marcus Ehrhardt
Munich

Procurement

Dan Belz
Chicago

Procurement

Paari Rajendran
Bay Area – San Francisco

Marketing

Alex Baxter
New York

Sales and Service

Erik Adams
San Diego


BCG