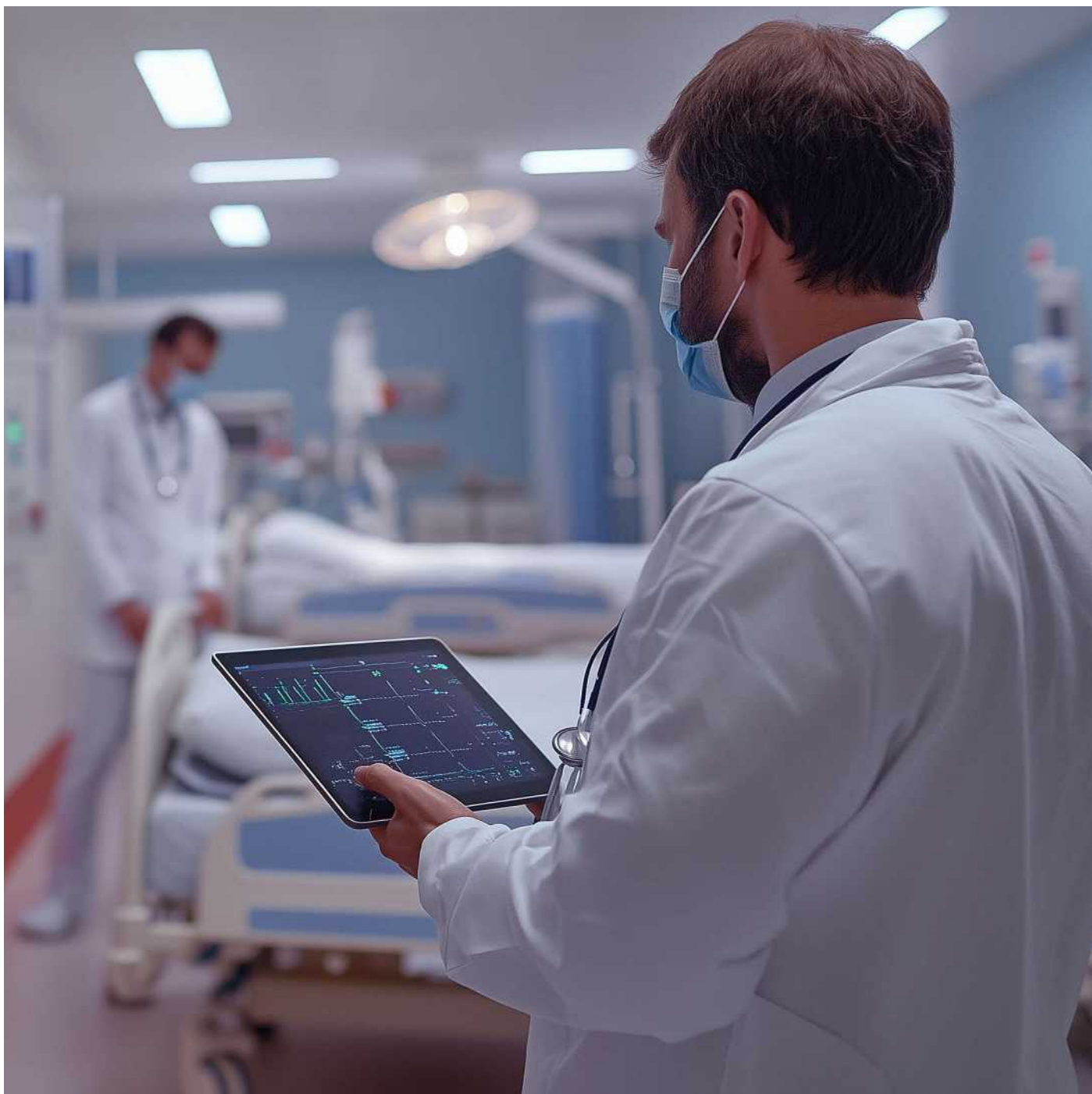




Establishing the Asia-Pacific Region as a Medtech AI Capability Hub

It is crucial to build a medtech talent ecosystem that
understands both technology and healthcare.

By Vikram Kapur, Fabio La Mola, Nick Therkelsen, Miki Yu, and Su Fen Ong

Authors and acknowledgments

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Foreword



Harjit Gill
APACMed, CEO

The opportunities in integrating AI into healthcare are transformative. Done right, the integration of AI in medical processes will be a game changer for better patient outcomes and a more efficient healthcare system.

AI-driven innovations such as embedded health monitoring sensors, precision medicine, and autonomous robotic surgeries will result in increased operational efficiency, reduced costs, and personalized patient experiences, driving the next generation of healthcare solutions to meet the mounting healthcare needs of the Asia-Pacific region.



Vikram Kapur
Bain & Company,
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One of the primary challenges facing us is the intense competition for skilled talent proficient in both AI and medical domains. APACMed and Bain & Company believe in proactively addressing the challenges related to integrating AI into medical technologies by establishing supportive policies, such as building a robust AI talent ecosystem across the Asia-Pacific region, especially in developing “bilingual talent.”

“Bilingual talent” has the necessary capacity and skills to traverse the medical and deep tech (AI/ML) ecosystems. APACMed and Bain & Company, with support from the Singapore Economic Development Board, undertook the present study to identify the AI talent needs within the medtech industry across Asia-Pacific, and we look forward to building on this partnership.

Collaboration and early action on capability building will enable Asia-Pacific countries to ride the waves of transformation in healthcare and reap the benefits of better care outcomes for patients in the region and beyond. We hope this report will provide impetus for more like-minded partners to join in the endeavor.

Executive summary

Artificial intelligence (AI) and machine learning (ML) are rapidly transforming the medtech industry. Traditionally, AI has been embedded in healthcare products and processes. Recent advancements, such as generative AI, have turned AI into a key component of customer expectations. In the Asia-Pacific region, medtech companies recognize the need to invest in AI to drive product innovation, improve access to care, enhance health outcomes, and boost operational efficiencies.

To explore the region's role in developing AI capabilities, APACMed and Bain & Company, with support from the Singapore Economic Development Board, conducted a study involving more than 20 industry leaders from across the healthcare and medtech ecosystem. This report highlights the growing impact of AI across the medtech value chain, identifies necessary skill sets, and highlights the role of trade associations and partnerships in driving AI medtech capabilities.

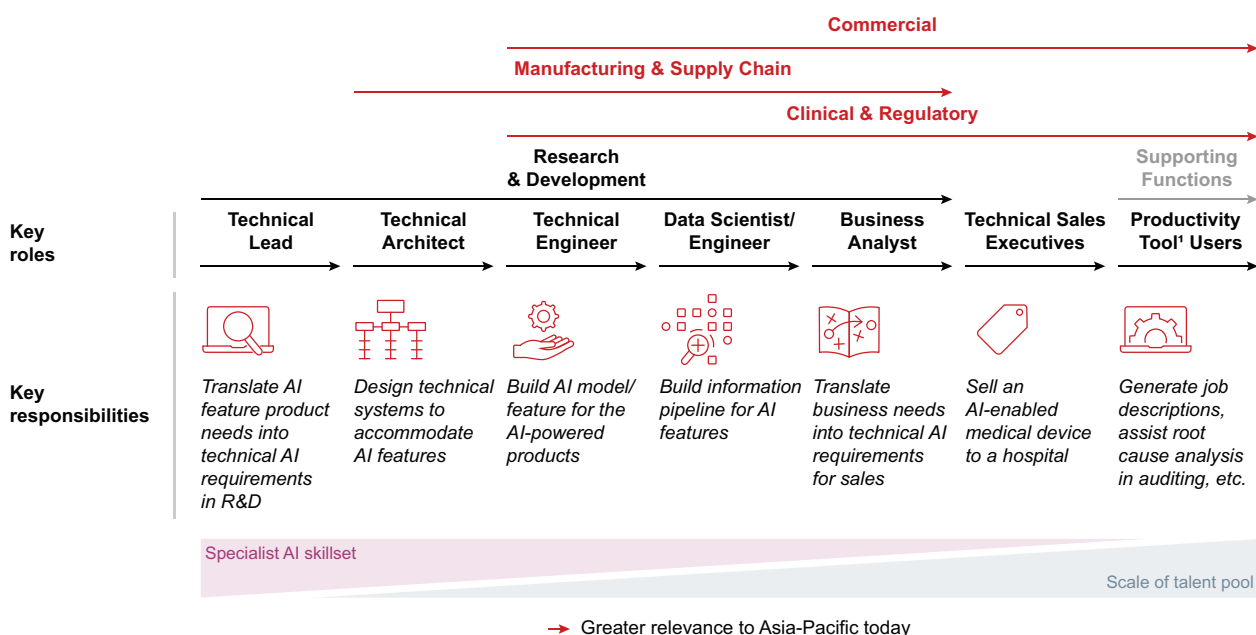
Key AI applications are already changing the industry by powering next-generation products, supporting caregivers, and improving processes in manufacturing, regulatory affairs, marketing, and post-sales support. While AI integration in research is still developing, the Asia-Pacific region has immense potential to tailor manufacturing and commercial AI applications to local needs. The Asia-Pacific region can be a pilot ground for testing and learning from new uses of AI. When successful, these pilots can be scaled to global markets.

However, focusing solely on commercial applications would be short-sighted. In medtech, the true AI opportunity lies in research and development (R&D) processes, such as region-specific data collection and the ability to build models that are free from biases found in many Western-developed AI solutions. As a development hub for AI in medtech, the Asia-Pacific region can ensure technologies are fit for purpose for its diverse populations and their unique healthcare needs. Using AI to advance diagnostics, early detection, and treatment can also address caregiver shortages in the region and improve patient outcomes.

Building medtech AI capabilities requires specialized skills and a “bilingual” talent pool: Companies need a comprehensive understanding of the healthcare ecosystem in addition to AI, ML, and software development. It cannot be one or the other, healthcare or technology. Companies must be fluent in both.

For manufacturing- and commercial-focused use cases, companies should prioritize developing an AI-enabled workforce. Companies need AI users to leverage tools to optimize routine tasks, as well as business analysts and technical sales teams to bridge the clinical and technical domains.

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Figure 1: Key AI roles and responsibilities across the medtech value chain

Notes: 1) Productivity tools enabled by generative AI present an easily accessible opportunity for medtech companies in manufacturing and R&D to explore the potential of AI

Sources: Industry participant interviews; Bain analysis

To support R&D, companies need to develop AI talent with advanced technical skills, such as technical leads, architects, engineers, and data scientists. These experts need a thorough understanding of the healthcare landscape to develop cutting-edge AI and data models that are compliant with evolving standards (see Figure 1).

Individual countries within the Asia-Pacific region have distinct AI strengths and capabilities. China and India stand out for their vast technical talent pools, while Japan and South Korea are notable for having a large pool of users for AI-enabled solutions. Singapore and Australia are recognized for their well-established healthcare data infrastructure and strong capabilities in AI development.

Singapore plays a crucial role in the region. It has a robust AI ecosystem, strong government support, a specialized and growing talent pool, and strategic global market connections. In the future, Singapore can harness its R&D strengths and closed-loop healthcare data infrastructure to customize products for local market needs. This would position Singapore as a regional accelerator and a sandbox for innovation, while supporting the development and testing of AI applications for specific regional demands.

Regional medtech associations, such as APACMed, are also well positioned to collaborate with industry members and government agencies to drive AI medtech capabilities in the Asia-Pacific region.

Opportunities for AI to affect the medtech industry

AI and ML technologies have long been integrated into medtech products and processes. However, the recent and rapid rise of generative AI brought this technology to the forefront, making AI and ML key end-market expectations.

With recent advances and renewed industry focus on the technology, AI is a catalyst for creating next-generation healthcare solutions that are more intelligent, personalized, and efficient than ever. Many companies are exploring using AI to enhance customer experiences and patient outcomes, improve productivity, and drive innovation and personalized medicine (see *Figure 2*).

AI and ML are transforming medtech in three significant ways:

1. AI strengthens value proposition

AI enhances medtech products by boosting their performance, elevating customer experiences, and improving patient outcomes. It powers advanced algorithms that improve diagnostic tools, enable faster and more accurate disease detection, and provide personal health insights and care plans.

Additionally, AI supports intelligent chatbots and allows medical devices to learn from vast datasets, making AI tools more intuitive and efficient for personalized health management and patient care.

A notable example of this use is GE Healthcare's acquisition of Caption Health in February 2023. GE Healthcare recognized AI's ability to make ultrasound scanning more accessible. This move aims to democratize diagnostic procedures and improve patient access to essential healthcare services.

2. AI enhances productivity

Across industries, AI is transforming productivity by automating routine tasks, such as data collection and regulatory filings. In the medtech industry, AI is increasingly handling specialized functions, such as analyzing biomedical literature. AI can streamline data collection and reduce the time and resources needed to draft regulatory submissions.

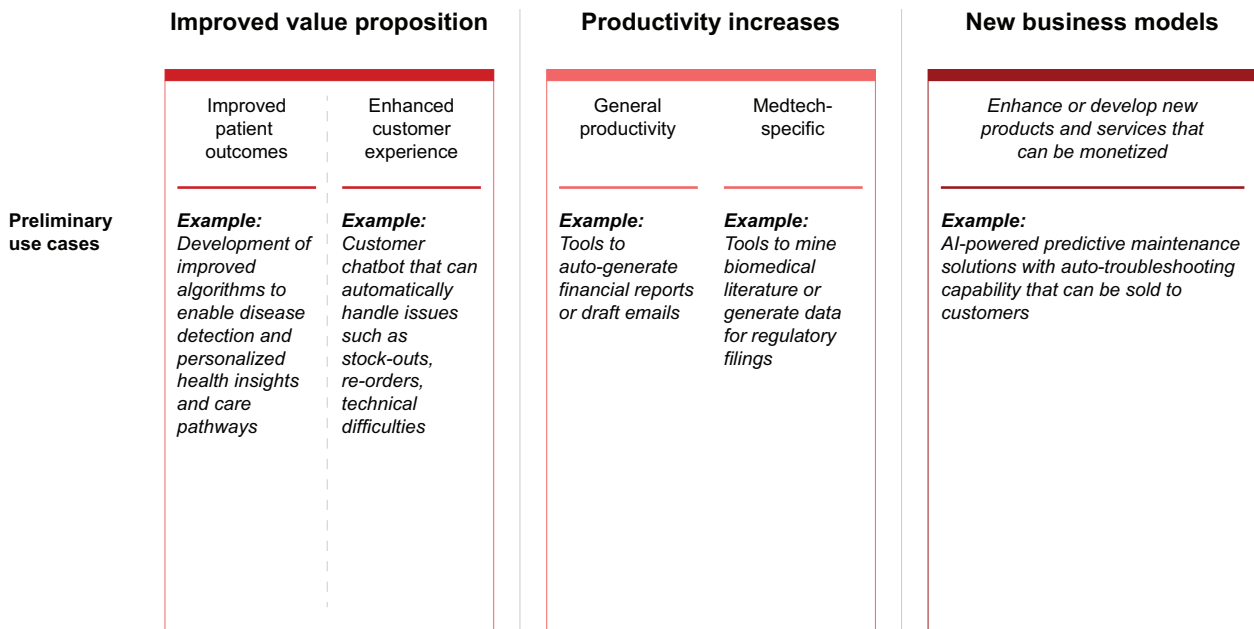
3. AI enables new business models

AI is paving the way for entirely new medtech business models. Companies are using AI to create medtech-as-a-service platforms, offering cloud- and subscription-based solutions for data management, analytics, remote monitoring, and more.

One notable example is Philips' AI Manager, which is an integrated, cloud-based AI solution that offers access to a marketplace of AI applications for diagnostic imaging to gain deeper clinical insights, ultimately leading to better health outcomes.

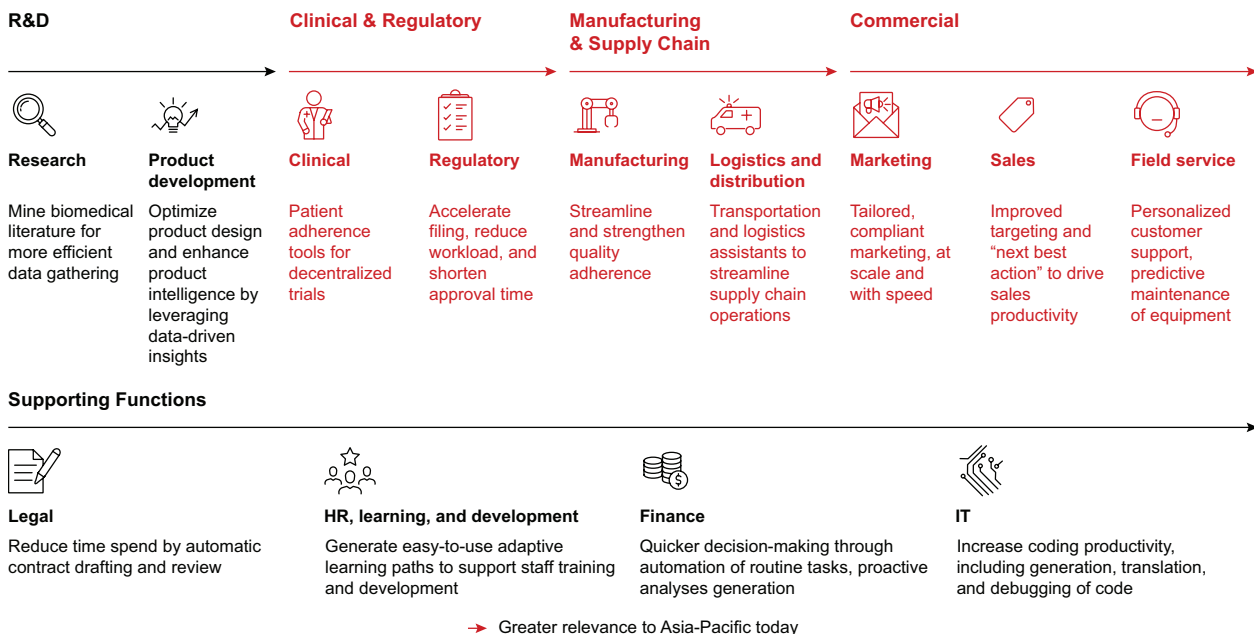
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Figure 2: AI and ML are transforming medtech in three key areas



Sources: Bain analysis

Figure 3: AI use cases across medtech value chain



Sources: Industry participant interviews; Bain analysis

Expanding AI uses across the medtech value chain

Medtech organizations are integrating AI across functions—from product development and regulatory filings to sales and post-sales support—driving automation, personalization, and productivity improvements. In the Asia-Pacific region, near-term AI implementations have focused on regulatory, manufacturing, and commercial applications (see *Figure 3*). For example:

Clinical: AI-enabled tools support decentralized trials by allowing remote participation. They can also improve patient compliance through personalized reminders and real-time health monitoring.

Regulatory: AI can expedite regulatory submissions by automating data analysis and technical document preparation, reducing time to market for new therapies by up to 50%

Manufacturing: Manufacturing processes benefit from AI-driven knowledge management systems, which use legacy data to streamline the documentation of standard operating procedures, best practices, and performance metrics. Additionally, AI-powered quality control tools can improve manufacturing by accurately detecting deviations from specifications and enabling predictive maintenance.

Supply chain: AI-powered transportation and warehousing assistants can track and modify orders in real time. AI-enabled supplier and contract management systems can help users assess delivery times to hospitals, product quality, and compliance. Likewise, AI-powered supply chain planning tools can synthesize internal and external data to improve demand forecasting and scenario planning.

Marketing: AI can drive scale and speed in marketing by generating dynamic, personalized, multilingual content.

Sales: AI has the potential to revolutionize clinician engagement with tools like Salesforce Customer 360 and Q&A bots that provide sales representatives with comprehensive information about clinicians and products. AI enables more personalized interactions with physicians through real-time script recommendations and dynamic sales strategies.

Field service: AI can improve post-sale operations and patient engagement with chatbots that handle customer inquiries. AI tools can also offer predictive maintenance and repair services that enhance both productivity and customer satisfaction.

Long term, AI's greatest potential in the Asia-Pacific region is its ability to tailor and advance medtech products and solutions to meet local market demands. By harnessing vast and diverse data sets from across the region, AI can drive locally meaningful innovations. For example, Singapore's healthcare data infrastructure, backed by a national electronic health record strategy, houses multi-ethnic population data within a closed-loop system. This makes it possible to develop personalized and precise medical solutions for specific populations and improves patients' access to healthcare.

Establishing the Asia-Pacific Region as a Medtech AI Capability Hub

AI-driven product innovation is gaining momentum in the Asia-Pacific region, with several notable players leading the way. One example is Singapore-based KroniKare, which developed a portable AI-powered scanner and an integrated dashboard for chronic wound care. This system enables fast, noninvasive evaluations that significantly improve the efficiency and accuracy of wound care management.

Another breakthrough came from Singapore's NDR Medical Technology, which developed an automated needle targeting (ANT) system. This AI-driven tool enhances biopsy and ablation procedures by automatically detecting lesions and recommending optimal needle paths. The ANT system contributes to better clinical outcomes and increased patient safety.

These innovations exemplify the significant opportunities for AI-powered medtech product development in the Asia-Pacific region. AI development in the Asia-Pacific region can also work to address cultural biases through a combination of localized data collection, ethical AI frameworks, inclusive design practices, and local regulatory oversight. Developers in the region can strive to create AI solutions that are more representative of and responsive to the region's diverse populations.

Building medtech AI capabilities, skills, and strategies in the Asia-Pacific region

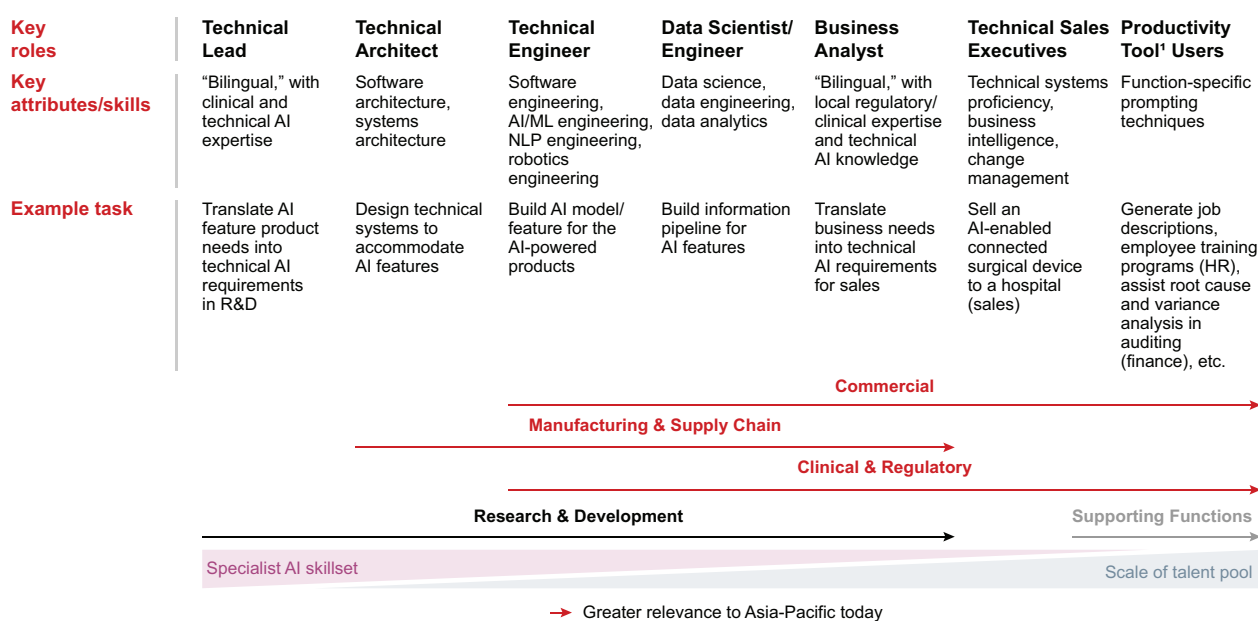
The skills required for AI development and adoption vary across the medtech value chain. As the industry moves from commercial applications to R&D, the need for AI expertise increases, with R&D teams requiring the deepest technical expertise.

As medtech companies shift from traditional equipment sales to new business models (e.g., medtech-as-a-service), the demand for expertise will also grow. Companies will need more talent in data analytics, cloud computing, and software development to support new AI-driven business models (see Figure 4).

Advanced AI knowledge is critical in clinical-facing R&D roles that drive innovation, while support functions (e.g., legal, finance, and HR) require broader rather than deeper AI proficiency. In support areas, AI-based tools are typically used to automate routine tasks, such as report generation or scheduling.

At the most sophisticated level, technical leads, architects, and engineers specializing in software, ML, and cloud infrastructure need to leverage advanced skills in AI, ML, full-stack software engineering, and data science to drive innovation and create AI-powered solutions. A technical architect in medtech may design systems that integrate AI algorithms with medical devices, ensuring seamless interactions between hardware and software. A technical engineer could develop algorithms for quality control that enable predictive maintenance and improve the reliability and lifespan of medical equipment.

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Figure 4: Key AI roles and skill sets across the medtech value chain

Notes: NLP = natural language processing; Upstream activities include R&D, product/productivity tool development; commercial/downstream activities include regulatory, manufacturing, supply chain, marketing, sales, field servicing; supporting functions include legal, HR, finance, IT; 1) Productivity tools enabled by generative AI present an easily accessible opportunity for medtech companies in manufacturing and R&D to explore the potential of AI

Sources: Industry participant interviews

While not technologists themselves, technical sales executives and business analysts play a crucial role in translating innovations into market strategies. A medtech technical sales executive could be responsible for educating healthcare professionals about the applications and benefits of AI-enabled devices to bridge the gap between complex technologies and users' needs. Business analysts may apply their understanding of AI to align business models with market demands.

While not new, data scientist roles are becoming increasingly important in medtech AI development. Data scientists analyze vast amounts of medical and operational data to create predictive models, improve diagnostics, and optimize healthcare delivery systems.

There's also a growing need for cross-functional talent that can blend technical expertise with business insights. This highlights the importance of collaboration between technical and commercial teams in an AI-driven medtech landscape. Fostering wider adoption is crucial to upskilling the current workforce on AI-based tools. As AI continues to advance, regular training and certification will be necessary to keep the workforce up to date on the latest developments, regulations, and ethical guidelines.

How to build medtech capabilities in the Asia-Pacific region

Talent alone cannot unlock the potential of AI. The Asia-Pacific region also needs several key enablers to advance its AI capabilities. It is critical to expand the region's talent pool, enhance data accessibility, strengthen computational resources, and build complementary AI ecosystems that are tailored to specific regional markets.

- **Expand the bilingual talent pool**

It is essential to build deep technical AI skills and a robust understanding of the healthcare ecosystem and its regulatory and clinical demands. Based on our research and analysis of LinkedIn profiles, less than 10% of medtech professionals in the Asia-Pacific region meet this criterion, and it's a significant bottleneck to advancing medtech AI capabilities. Countries such as Singapore are addressing this gap with initiatives like the AI Apprenticeship Programme. Global tech companies are also offering training programs to rapidly expand the local AI workforce.

- **Enhance healthcare data accessibility, computing resource availability, and funding**

The highly regulated nature of healthcare data is a significant challenge for medtech companies in the Asia-Pacific region, particularly when it comes to data collection. Data sets are complex and scattered across a diverse network of private and public healthcare providers and therapeutic areas. Policy and regulatory factors also create data access and aggregation challenges.

Data access must be an immediate priority, even more important than strengthening computational infrastructure, such as high-performance graphic performance units and scalable cloud platforms. Without data access, the Asia-Pacific region cannot fully leverage AI.

Singapore's Trusted Research and Real-World Data Utilization (TRUST) platform is a promising step to address this challenge. TRUST is a national data exchange platform that enables the sharing of anonymized health-related research and real-world data. Data in TRUST can be shared between private and public sector institutions for research, with appropriate safeguards in place.

Government incentives and funding are also important to spur local AI innovation. Several government programs already provide funding support to promote AI talent development. For example, South Korea's Super Gap Industry Support Program comprises an approximately \$2.5 billion low-interest loan program and fund to supplement the advancement of the domestic AI ecosystem.

- **Build complementary medtech AI ecosystems to leverage regional strengths**

Several countries and submarkets within the Asia-Pacific region are well positioned to support AI development. The region can leverage complementary strengths across the value chain to advance medtech development (see Figure 5).

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Figure 5: The Asia-Pacific region can leverage complementary strengths to become a medtech AI development hub**Asia-Pacific countries have varying focus and strengths across the medtech value chain****Asia-Pacific countries will play complementary roles for AI development across the medtech value chain****① Large technical talent pool**

China and India have access to a large technical talent pool and incentives for both local and global organizations to adopt and invest in its talent pool at scale

Access to larger pool of “builders”

i.e., employees with competitive technical skills to develop AI platforms and solutions

② Mature healthcare infrastructure

Singapore and Australia have a strong healthcare data infrastructure, advanced clinician network, and a well-developed patient care journey, making it an attractive R&D destination in Asia-Pacific for medtech companies

Access to larger pool of “pioneers”

i.e., employees with strong AI and data science technical expertise

③ Superior adoption of advanced medtech equipment

Japanese and South Korean populations have the greatest propensity to leverage the latest medtech advancements (e.g., AI-powered products); for example, robotic-assisted surgeries are publicly insured in Japan and South Korea

Access to larger pool of “users”

i.e., employees with superior AI literacy adept at leveraging AI for day-to-day tasks

Sources: Bain analysis

There are three emerging archetypes among AI talent pools in the Asia-Pacific region:

- **Builders:** India and China have large technical talent pools. According to LinkedIn profiles, nearly 90% of the region’s top AI talent (by volume) originates from these two nations. Medtech companies are capitalizing on this pool of “builders” by establishing tech hubs in these markets. Siemens Healthineers established a development center in India to develop AI solutions for disease detection, working closely with global teams and leveraging partnerships with Indian hospitals and academic institutions.
- **Pioneers:** Singapore and Australia have robust national electronic health record strategies, strong healthcare data infrastructures, advanced clinician networks, and well-developed patient care pathways, making them key destinations for AI-driven R&D activities. Singapore’s TRUST platform strengthens its role as a pioneer by facilitating the secure exchange of anonymized health data for research purposes.

Global medtech companies like GE Healthcare and Johnson & Johnson are leveraging Singapore’s strong research ecosystem. GE Healthcare is collaborating with the National Cancer Centre Singapore to improve cancer care with AI-driven research. Johnson & Johnson’s partnership with AI Singapore is part of a broader initiative to use AI and real-time insights to deliver hyper-personalized eye care.

- **Users:** Japan and South Korea are leaders in medtech equipment adoption and fertile grounds for AI integration. With a growing base of AI users, these markets are supportive environments for AI-enabled medtech adoption. Investments in advanced physician training centers, such as Medtronic's innovation centers in Japan and South Korea, underscore the countries' commitment to promoting the adoption of cutting-edge technologies.

Singapore could become a regional accelerator for AI in medtech

Singapore is well positioned to become a regional AI capability hub for medtech. It's supported by a robust ecosystem, strong data infrastructure, a growing pool of AI talent, and strategic connections with global markets. It also benefits from:

- **Leadership in medtech innovation:** Singapore is home to the top 30 medtech multinational corporations and has a local pool of over 400 medtech start-ups and small to midsize enterprises. Singapore also benefits from significant government investments in medtech R&D and AI. Further, programs like the Ignition AI Accelerator and Google's AI First strengthen support for AI start-ups in Singapore by offering technical expertise, business support, mentorship, and funding opportunities to help start-ups scale and innovate.
- **Robust AI development ecosystem:** Singapore has a strong healthcare data infrastructure and is supported by national platforms like TRUST and the BioMed Data Architecture and Repository. Access to high-quality data from these platforms will be crucial to developing AI-powered tools that are tailored to the local population. By enabling localized datasets, Singapore can create AI solutions to address regional healthcare challenges and ensure they are fit for purpose for the population.
- **Growing AI talent pool:** The local AI workforce is rapidly expanding, thanks to AI Singapore's apprenticeship program and global tech companies' training programs. The Singapore government is also attracting global tech talent through work schemes like the Overseas Networks & Expertise Pass and Tech.Pass.

Singapore can build on these strengths and establish a regional medtech AI sandbox to support pilot projects with practical use cases that can be scaled across the region. It can cater to global medtech companies with a strong presence in the Asia-Pacific region, as well as local medtech start-ups.

With closed-loop healthcare data and AI, Singapore can advance its position as an R&D and innovation leader in the region. It can leverage these strengths to turbocharge product development and customization for local market needs.

Establishing the Asia-Pacific Region as a Medtech AI Capability Hub

Several initiatives across the public and private sectors could accelerate AI talent development in Singapore. The country should consider strategies to:

- **Integrate medtech AI apprenticeship programs into clinical curricula** at institutes of higher learning, especially in programs and medtech fields that rely on data sets to drive product innovation.
- **Establish global exchange programs with leading medtech research institutes** (e.g., A*STAR) and national healthcare system providers to share best practices and develop talent. Doing so would accelerate AI innovation and adoption across Singapore's healthcare sector.
- **Introduce incentives for healthcare practitioners** to increase the adoption and deployment of AI-powered healthcare equipment. Singapore could collaborate with hospital clusters to define an AI adoption roadmap and establish incentives for achieving milestones.

With collective action, the Asia-Pacific region can lead in medtech AI capability development

The medtech industry has a unique window of opportunity to claim a leadership position in AI capability development. To take advantage of this moment, the industry needs to embrace:

- **Talent development.** The region's extensive network of manufacturers, suppliers, industry associations, government agencies, educational institutions, and other stakeholders need to work together to build AI talent.

Strategic discussions between industry players and academia should shape AI curricula to ensure medtech AI skills are built and scaled effectively across the region. The industry can also partner with economic development boards and institutes of higher learning to create internship and job placement pathways for AI roles.

- **Collaborative exploration.** Through partnerships, the industry can prioritize and pursue use cases in manufacturing and commercial applications and launch targeted pilot programs that everyone can learn and grow from. To reach meaningful scale, AI solutions must be tailored to local needs. Enhanced data accessibility and data sharing are necessary to make that possible.
- **Proactive dialogue.** Industry associations can help stakeholders stay informed of regulatory changes across the region and help drive best practices. Benchmarking best practices in AI in healthcare can accelerate the learning curve for Asia-Pacific-based medtech companies and propel the region into a global leadership position.

If medtech companies in the Asia-Pacific region fully embrace the power of AI, they can elevate patient care and position themselves at the forefront of global innovation and operational excellence.



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The Asia Pacific Medical Technology Association (APACMed) represents manufacturers and suppliers of medical equipment, devices, and in vitro diagnostics, industry associations, and other key stakeholders associated with the medical technology industry in the Asia Pacific region. APACMed's mission is to improve the standards of care for patients through innovative collaborations among stakeholders to jointly shape the future of healthcare in Asia-Pacific. For more information, visit www.apacmed.org



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