



Get ready for **RSNA 2019:** What everyone in **MedTech** talks about

With RSNA 2019 around the corner, it is time to peak into the recent developments in healthcare and the medical technology industry in particular. Pressed by increasing investor expectations and struggling to commercialize AI solutions, these are some of the main strategic directions that MedTech executives have taken to drive business growth.

Expansion to Entire Clinical Area

In 2019, medical technology companies continued to leverage mergers and acquisitions or various types of partnerships for growth. Business executives were as busy with strategic deals this year as the previous two ([M&A deals for a total of \\$10.5 billion](#) in 2018 up from 2017 when there were 51 deals adding up to [\\$6.5 billion](#)¹).

A number of MedTech M&A deals from the 2019 indicate that companies are seeking an additional competitive advantage by expanding their capabilities in strategic areas. Pressed by the ever-increasing investor expectations, many are [entering adjacent fields in order to cover an entire clinical area](#). Some examples in this direction are adding interventional oncology to traditional oncology propositions, or enhancing interventional oncology portfolios with new applications.

¹ 5 Trends in MedTech M&A – Deal Volume Up 31.3% in 2018. *Becker's Spine Review*. April 2019. [Link](#)

Some of the recent deals aimed at strengthening and expanding in a particular clinical area:

- Varian Medical Systems² acquired two product lines in interventional oncology from Boston Scientific² adding drug-loadable microsphere and bland embolic bead products to their current portfolio. Varian's move aims to expand from interventional oncology towards multidisciplinary **integrated cancer care** solutions
- Johnson & Johnson acquired Auris Health³ seeking to expand their **digital surgery portfolio** across multiple surgical specialties adding lung cancer targeting
- Smith and Nephew's deal with Osiris Therapeutics⁴. Smith & Nephew strengthens its advanced wound management offering adding regenerative medicine solutions (skin, bone graft and cartilage) to its current portfolio.

Bringing AI/ML Innovations to Market

While a lot of industries are betting on AI to solve long-standing issues in their fields, in healthcare data science technologies literally have the potential to save and change lives. That's why MedTech vendors have doubled their efforts to take their AI developments from the phases of research and prototyping to viable commercial products.

Multiple partnerships and incubator programs have been set up between large original equipment manufacturers (OEMs) like Philips, Siemens Healthineers, GE Healthcare and smaller innovative startup companies or health IT vendors.

Why are multibillion leaders seeking out **startup partnerships**?

The large multinational original equipment manufacturers (OEMs) understand that the market requires them to transform into **complete solutions** and **services providers**. One of the pathways for transformation is through **AI** and **machine learning capabilities** – an area where **small tech companies excel**. At the same time, for the smaller startups such partnerships with medical device giants are opening up new distribution channels for their AI software solutions.

OEMs and startups have utilized various forms of cooperation and **business models have been mixed**, from research and development collaboration, through distribution agreements, to partial ownership of startups by larger MedTech companies.

² Varian to Expand Interventional Oncology Portfolio with Purchase of Embolic Bead Asset. *Cision: PR Newswire*. July 2019. [Link](#)

³ Johnson & Johnson Announces Completion of Acquisition of Auris Health, Inc. *JNJ.com*. April 2019. [Link](#)

⁴ Smith & Nephew Buys Skin Substitute Maker for \$660M. *MedTech Dive*. April 2019. [Link](#)

Apart from developing its own AI tools and applications, MedTech giant Philips Healthcare is integrating externally developed AI innovations into its scanners. For instance, Philips will be offering MaxQ AI's Accipio ICH and stroke software together with its CT systems to hospitals and radiology departments throughout the US and EU⁵. Philips is also supporting various AI innovations via its [HealthWorks](#) AI startup program.

Another leader in MedTech, GE Healthcare has become a [partial owner](#)⁶ of cardiac MR startup Arterys via GE's venture capital subsidiary GE Ventures. Their collaboration has resulted in offering GE's [ViosWorks](#) powered by Arterys' FDA-cleared MRI software that measures and displays blood flow through the heart.

The result of another successful partnership is Quantib's Brain AI solution which integrates with [GE's READY View](#). It offers a reading workflow for users of GE's Advantage Windows workstation enabling them to perform [longitudinal volumetric analysis and white matter hyperintensity \(WMH\) segmentation](#)⁷. Quantib sells its Quantib™ Brain software in the US, Europe and Canada [through GE Healthcare](#)⁸. Currently, the startup has reported [more than 70 customers](#)⁹ across Italy, Switzerland and the Netherlands.

Another success story, radiology AI startup Icometrix has [partnered with Siemens Healthineers](#)¹⁰ to provide radiologists with access to its FDA-cleared and CE-marked brain MRI AI technology via the OEM's digital marketplace. Currently, their solution is already being used by [more than 100 hospitals](#)¹¹ and imaging center networks worldwide.

There are many other examples of MedTech companies that have successfully brought AI innovations to market as of today, either independently or via partnerships. Although some industry experts are speculative of how far this trend can go pointing out the rising gap between [incoming investments and actual revenues](#)¹², certainly, the trend is there. Succeeding in AI commercialization can help pave the road to success, given the current state of healthcare and the increasing demand for digitalization and automation.

⁵ MaxQ AI's Intracranial Hemorrhage Software to Be Integrated on Philips CT Systems. ITN Online. Oct 2019. [Link](#)

⁶ Flesh Memory: This Company Uploaded The Heart Into The Cloud. *GE Healthcare*. Dec 2016. [Link](#)

⁷ Quantib website. [Link](#)

⁸ Ibid.

⁹ The AI Startup University: A Company Snapshot. *GemSeek*. [Link](#)

¹⁰ Icometrix Partners with Siemens Healthineers to Help Patients with Brain Disorders with Artificial Intelligence. *Icometrix*. Feb 2019 [Link](#)

¹¹ Belgium's Icometrix Raises \$18 Million to Boost Development of Its Brain Imaging AI Solutions. *Tech EU*. May 2019. [Link](#)

¹² Medical Imaging AI: the Bubble Will Break in 2-3 years. *European Society of Radiology*. Feb 2019. [Link](#)

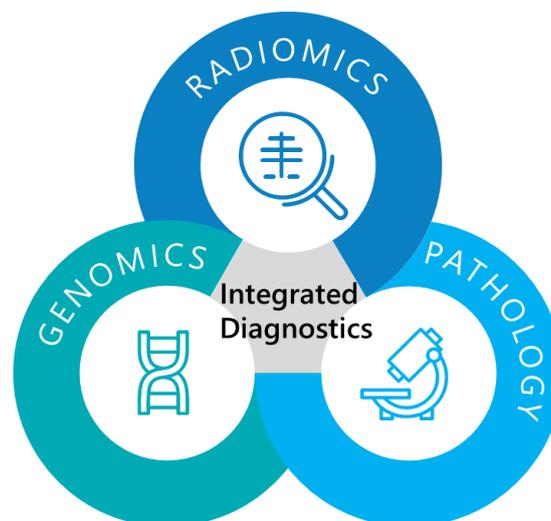
Stepping into Integrated Diagnostics by Merging Radiomics, Genomics & Pathology

Combining radiology, pathology and genomics into an innovative [integrated diagnostics](#)¹³ approach is another trend whose current state and future potential [will be discussed](#) at the RSNA 2019¹⁴.

This is a budding field with the potential to **bridge the gap** between diagnostic disciplines and improve patient outcomes. Already data science technologies exist which can enhance significantly a diagnostic system that integrates data from imaging, genomics, laboratory medicine and pathology. The integration of **smart data** will **advance** Precision Medicine

A practical example of how such a model can contribute to achieving better outcomes involves radiologists and pathologists. Both types of experts use scoring systems on tumor reports. An integrated system can automatically compare the two scores and can help clinical teams quickly reach a joint conclusion with increased level of decision support accuracy. Some [centers](#) are already trying to implement this concept but such a shift can be challenging¹⁵.

Siemens Healthineers is also using this approach in its recently-announced clinical decision support solutions [AI-Pathway Companion](#). Going beyond radiology, it adds a second layer of analysis and automation for achieving better decision support along the clinical pathway thanks to integrating multidisciplinary expertise. Among other functionalities, it relies on AI to correlate individual patient radiology and pathology reports from existing IT networks in order to [provide a more objective](#) decision support to the clinical teams, thus advancing diagnostics and treatment.



¹³ Integrated Diagnostics Bridge the Gap Between Radiology, Pathology and Genomics. *RSNA*. Nov 2018. [Link](#)

¹⁴ RSNA/AAPM Symposium Addresses Integrated Diagnostics at RSNA 2019. *RSNA*. Aug 2019. [Link](#)

¹⁵ Integrated Diagnostics Bridge the Gap Between Radiology, Pathology and Genomics. *RSNA*. Nov 2018. [Link](#)

Imaging Genomics

The industry has seen increasing [research](#) efforts in the field of radiogenomics, also referred to as [imaging genomics](#)¹⁶. This is one of the fastest evolving branches of radiomics. Imaging genomics combines image processing techniques and genomics data to derive clinical trends and serve as a decision support tool that merges knowledge from several disciplines. Currently, radiogenomics research spans [applications](#) in diagnosis, prognosis and response prediction¹⁷ for brain, lung, breast, ovaries, liver, kidneys, colorectal, and prostate diseases and conditions.

Some research efforts have passed initial stages and have reached milestones including clinical proof of concept. [SOPHiA Genetics](#) is [among the first companies](#) to have successfully merged data from radiomics and genomics¹⁸. Adding radiomics to its original genomic analytics capabilities, SOPHiA Genetics aims to offer enhanced decision support to oncologists, cardiologists and neurologists. Leveraging statistical inference, pattern recognition and machine learning, it seeks to make best use of genomics and radiomics data in cases of cancer in the lungs, kidney, and brain.

¹⁶ Bodalal, Z., Trebeschi, S., Nguyen-Kim, T.D.L. et al. Radiogenomics: Bringing Imaging and Genomics. *Radiology* (2019) Vol. 44. [Link](#)

¹⁷ Ibid.

¹⁸ SOPHiA GENETICS Combines Radiomics with Genomics to Fight Cancer. *Verdict Medical Devices*. Jan 2018. [Link](#)

The way forward

When formulating future strategies for success, MedTech companies should consider taking into account these trends aiming to:



Expand proposition to cover the entire “-ology” continuum in order to provide complete solutions



Succeed in AI commercialization



Have a clear strategy with respect to integrated diagnostics and genomics application, e.g. run pilots with leading institutions globally

With the RSNA 2019 approaching, we are about to see how these trends develop further, particularly bringing AI innovations to market as well as merging diagnostic tools from various disciplines into a complete integrated diagnostics model.

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