

# AI solutions for the future of healthcare

SPOT ON | ARTIFICIAL INTELLIGENCE | MARCH 2022

## INTERVIEW

John Matthews interviewed Moshe Becker to discuss the challenges that RADLogics has overcome, the impact of COVID-19 on the healthcare sector, and the benefits of strategic partnerships.

**Where did the idea for RADLogics come from? What is the 'Story behind the Story' of RADLogics?**

It was almost like a natural extension for me. I had started two other companies before RADLogics and was involved in another two companies that were all around the same theme, which was industries where decisions — either financial or operational — were being made based on lots of data that had to be analyzed by human experts, and I was looking for another problem at scale that involved lots of data.

This is my mental DNA. Rather than invent a solution and find a problem, I wanted to find a big data problem where the use of human experts to analyze lots of data was not sustainable. So, in 2007, I made a decision to delve into the ocean of healthcare and RADLogics was born. I was looking for a big data problem in a sector that was experiencing exponentially increasing loads of data. then look for a solution. That way, the likelihood of a solution being adopted or reaching an inflection point would be higher.

Soon enough, I narrowed down the list to pathology, in which more raw data is actually generated than medical imaging for diagnostics. The problem was that the data was very poorly structured and not easily retrievable for processing at scale. Then I learned that in diagnostic medical imaging a sort of a miracle had happened — virtually the entire world agreed on a data standard called DICOM (Digital Imaging and Communications in Medicine). The other thing I wanted to see initially was the scalability of the problem. Sometimes you have a data standard that can help you scale your solution, but you want to also make sure that the problem is scalable.

## Participants:



**MOSHE BECKER**

Founder and CEO  
RADLogics

RADLogics is a healthcare software company that develops AI-powered solutions which support image analysis, to improve radiologists' accuracy and productivity while enhancing patient outcomes.



**JOHN MATTHEWS**

Managing Director  
Oaklins  
DeSilva+Phillips

John specializes in technology, SaaS, information services, deep tech and AI, digital media and digital marketing deals. He has 10 years of investment banking experience, focusing on advising middle-market clients on M&A transactions.

## How did you know that the problem was scalable?

The notion of using medical imaging to improve healthcare is more than a century old. Starting with the discovery of X-ray radiation by Wilhelm Conrad Röntgen in 1895, and soon after, Nobel Prize winner Marie Curie used an array of bandwagons with portable X-ray machines to take pictures of injured soldiers in WW1, to be used to improve the ability to treat them in the field. This is what I focused on as it was the most scalable use of X-rays for healthcare-related purposes, and that was over 100 years ago.

Looking at what has happened since that time, in the case of an X-ray, you have a single image. This is a relatively simple problem for human analysis from a data size perspective. But then CT came along and then MRI and ultrasound and all these other types of imaging. This created 1,000 times more data on a per scan or per patient basis. This created a huge data crunch, and it is growing globally at about 20% annually. The data still needs to be processed and analyzed by radiologists — doctors with specific training to interpret medical images. There's more data, but less time to read it. The technology improvements themselves, be it in scanner resolution or scanning speed, are continuously driving the exponentially increasing volumes of medical imaging data that are being created. What's more, you might be shocked to learn that the number

of physicians who are reviewing those exponentially growing numbers of images is not increasing globally. In some countries, it's actually declining a little bit year over year. One of the biggest reasons for this is burnout.

We know today that better medical imaging is one of the most important parts of the healthcare workflow when it comes to providing better outcomes to patients.

## Doctors need better information, higher accuracy and higher resolution images to do better diagnosis.

There's no question about it. If you can do it faster, then you could treat more people and it becomes more accessible. We are essentially underserving the population. This is really the bottom line.

## How did you approach the data crunch problem in medical imaging?

RADLogics was one of the pioneers in leveraging computer vision and data science to support radiologists by alleviating most of the busy work that is being done in analyzing medical imaging, and to help produce more consistent and accurate diagnostic reports, faster.

We realized back in 2008 or 2009 that medical imaging by itself was a big

problem. We understood that there could be great benefits in focusing solely on this and isolating ourselves from any other sources of information.

## One of the reasons medical imaging is so critical is because it is objective. You're essentially looking at what the body looks like inside without any qualifications or other information that might bias image interpretation.

For instance, a very well-known problem in this domain relates to so-called incidental findings. For example, when a person comes to the hospital because of a certain accident, he or she are referred for an imaging study. But by law or by care standards, the imaging diagnosis report must not be limited only to the condition or the suspected indication that brought the patient in in the first place. The diagnostic report needs to look at all the information that's there and diagnose everything that is found in the scan.

But many studies have shown that incidental findings are typically missed or underdiagnosed. It's human nature. The focus of the physician who's looking at the scan is to find something related to why the patient has come to the hospital, and they misidentify or underdiagnose other findings.



If you were to dig into the context of the patient, you would be biased by that information. So we decided to do a pure imaging solution that does not look into any contextual information. It just gives you information that our algorithms identify in the images. This is very critical to understanding our solution.

**Different healthcare systems operate differently across the world. How did you address this problem?**

We had to solve that problem as well. The delivery of the analysis outcomes was just as important as the actual creation of the analysis results. Please note that we have not mentioned the word AI so far in our discussion. RADLogics was not founded by some AI freaks, 12 years ago, looking for an area where they could apply their technology. What is key to our solution is that we started by identifying the problem, the key pain points.

**We went looking for tools or technologies that could best fit or solve that problem cost-effectively, which is what we have today.**

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To solve the analysis results delivery problem, we created a 'Zero-Click' solution, where the analysis is injected automatically into the existing workflow of the healthcare system. That's key for making the solution as efficient and as scalable as possible in terms of deployment to healthcare providers. We created a platform that can connect to the existing systems in hospitals, and we tested it in eight different countries.

**We know it works. We don't need to spend months on integrating it into each and every hospital. Typically we deploy it and within a day it's up and running.**

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No matter what infrastructure you have, we have found the lowest common denominator in terms of the hooks that

we need to source the imaging data, the DICOM, and put the analysis results back into the existing system so it is readily available to whichever physician needs to review it.

That accessibility of the analysis to the healthcare delivery workflow is critical. If we didn't have that, this would be a nice scientific paper or presentation, but it would not be possible to deploy at scale and upend healthcare delivery around the world.

**Did you spend a lot of time observing how clinicians were working?**

Day and night, in multiple locations and in different kinds of clinical settings — academic hospitals, private imaging centers and community hospitals. And we made a key observation.

If you go into a radiology reading room anywhere in the developed world, you'd be at a loss to be able to tell whether you are in Germany or Italy or China or the USA or Russia. They all use the same type of clinical workflow. If you see an opportunity to improve or to be more precise, more accurate, more consistent, it would be applicable globally. That's what we found.

We also identified that radiologists, when analyzing images, spend between 80 and 90% of their time on being a visual search engine and a visual measurement tool. The actual diagnosis time, once all elements are found, characterized and measured, is brief.

**Creating trust in the technology is critical. Crossing that bridge was a challenge, yes?**

It was a big challenge. The value proposition is essentially to alleviate most of the busy work that is being done in analyzing medical images to produce good, consistent accurate diagnostic reports.

In 2017 at UCLA, there was a milestone moment during a study in a real hospital setting to measure the benefits and see how quickly the radiologists would get accustomed to using this RADLogics

enhanced AI platform workflow. After they did two or three cases, our Chief Medical Officer and co-founder, Dr Patrick Browning, asked the radiologists that participated in the study if they had any questions. They said: "We got it, it's very, very straightforward. We don't have any concerns. We understand what this could do for us. We're good to go."

I'd also like to mention the late Dr Bill Bradley, who was my mentor while serving as chairman of the radiology department at UC San Diego. He was one of the pioneers in the use of MRI. Back in the day, he was one of the luminaries in our space that told us: "This has huge potential." He said, "You don't have to solve everything, just focus on a few indications that are essentially occurring frequently and are time-consuming for radiologists to find and diagnose." It's essentially the 90/10 rule. If you find a solution that deals with 10% of the indications that create 90% of the workload, that would be huge. That is what we've done with the help of Bill and others such as Dr Elliot Siegel from the University of Maryland and the VA in Baltimore. Very early on, we created a medical Advisory Board that would provide insights and continuous feedback through the years.

**So you have two approaches to growth: scaling up through partnering, which you are already doing with Nuance, and finding a partner to take over the business that's already got that scale. Are you looking at both or whichever presents itself?**

I've learned my lessons over previous lives that you build a business to be a market leader or market segment leader. That is what we've set out to do from the get-go. We would not say no to a good opportunity, but it has to be real in the sense that it can provide that friction-reducing element to the go-to-market scalability problem.

**It cannot be just a financial transaction. It has to fit from a strategic perspective.**

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The partner almost has to do nothing, which is the beauty of the value proposition. You got the trenches — the connections to the data source and radiologists' reading environment? You got those purple cables or the laydown in the trench? You don't need to do anything. Just give us a way to connect to that purple cable. We'll take it from there.

**So, fast forward to today and tell us about your partnership with Nuance and the impact of COVID-19.**

We've been working with Nuance for more than six years now. To perform imaging diagnostics, a radiologist uses two screens or views. One is of the original images from the scanner and the other screen is typically where they report their findings. We solved the issue at the lowest common denominator with DICOM and DICOM SR for the reporting piece. But most radiologists today, in particular in the USA, typically report their findings in a dedicated reporting system. Once we identified that, we said our platform should support that as well. In the USA, Nuance has a more than 80% market share of radiology reporting systems. So we teamed up with them to integrate our platform with their reporting solution. It was a no-brainer.

The pandemic put the large-scale adoption of these types of solutions on pause. But we see good signs of things getting back to normal, specifically in the USA.

Other countries, however, adopted specific tools for COVID that we were among the first to develop. We are the only company today that has FDA emergency use authorization for AI tools to analyze CTs and X-rays for COVID-19-related indications.

The thing is, the USA is not using imaging by and large for COVID-related patients whereas in other countries, outside the USA, we saw a huge uptick and adoption of all of our tools, specifically for COVID-19 patients.



We've learned from many of our experts that the typical symptoms that doctors would look at to identify the severity of the disease are quite misleading. The idea with our tool is to quantify precisely the extent of the disease in the lungs and we do that on the per lung lobe very accurately, very consistently. We summarize all this huge amount of raw data. This is what it's all about: distillation of raw data into valuable clinical information that you use to make clinical decisions. We narrow all this down to a single number that gives you the extent of the disease per lung lobe and that's it. You look at those numbers and you know how sick the patient is.

It's a precise volumetric measurement of the ratio of inflammation in the different parts of the lung. This is what doctors use in hospitals to figure out what is the actual condition of the patient, and whether the patient's condition is improving or deteriorating after treatment is provided, be it a ventilator or medication. The only consistent robust way to know what's actually going on is by using imaging, but in the USA this notion has not caught on.

But I think in the healthcare system as a whole, there is an acceptance or, essentially, a resolution that we need to move beyond COVID-19 and get back to dealing with the issues created by other clinical indications. All the top killers like cancer-related issues, cardiac-related issues and stroke-related issues are

now back on the shortlist of problems that could benefit from these kinds of solutions.

**Why did you decide to partner with Oaklins?**

The reason for partnering was to try and find the least resistant path for identifying potential partners with deployment scale. This is really what it's all about. We've proven our solution in eight different countries, in a myriad of clinical settings. Now it's about scaling to serve thousands of healthcare sites in a cost-effective way.


We believe that there is a path to fast scalability and we do not want to use funding for digging trenches in the road. We know that trenches have already been dug. Conduits have already been laid to be able to access the data and the systems that we need to provide our value-add. We're trying to find the path of least resistance that can get us in front of the 10,000 providers in the USA that deal with medical imaging.

Some other companies have this 'do it alone' kind of approach. I value their effort. It's just I think in this day and age, in our situation, it would be misplaced because the conduits, the trenches exist. We know it, we tested it. Why put effort and money into this, when we can just leverage existing channels and bring this new valuable content to the existing pipeline?


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**GRAZPER**


has been acquired by

YOKOGAWA ♦


M&A SELL-SIDE  
TMT




has been acquired by




M&A SELL-SIDE  
TMT



has been acquired by



A portfolio company of



M&A SELL-SIDE  
TMT



has been acquired by




M&A SELL-SIDE  
Private Equity/TMT




has formed a joint venture with

AI-42 Market Intelligence Ltd.


M&A SELL-SIDE  
TMT



has sold a 60% stake to



M&A SELL-SIDE  
Private Equity/TMT



has been acquired by

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M&A SELL-SIDE  
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John is a managing director at Oaklins DeSilva+Phillips in New York. He has over 10 years of TMT investment banking and M&A experience. Notable AI-related transactions he has advised on include the sale of Admeta to WideOrbit and the sale of Helixa to Telmar. Earlier in his career, John was an AI software developer for a UK AI startup and at a large US IT services company. Later, he worked as an AI consultant at a UK IT management consulting firm, before joining the management consulting firm New Science Associates (acquired by Gartner), as an AI market analyst for the US market.

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