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Yossi Srour

## Viztek, the Radiology Company

### The Commercialization of Innovation in Digital Radiography and Healthcare IT

#### Viztek Inc.

In March 2003, after rigorous testing Viztek & Orex<sup>1</sup> Computed Radiography were awarded an exclusive purchase agreement with the US Army to supply over 250 **mini-PACS** (Picture Archiving Communication Systems) called **Onyx-RAD** to be installed by Orex Computed Radiography (a subsidiary of Kodak, later changed to Carestream, acquired in 2005) on its Computed Radiography (CR) systems. "At the time, I was President and Chief Executive Officer of Orex," said Hillel Bachrach, who later became Viztek active Chairman. "I was at my Orex US headquarters office in Newton, MA when I got the call from Joe Cermin 'We got it!!! We got it!!!' he shouted. 'The Army just ordered our 250 units.'" The Army tender was very complicated and Orex couldn't have done it without incorporating Viztek's unique SW technology and their support during and after the tender. "Viztek and Joe deserve a great deal of credit for this successful deal with the US Army. Our efforts finally paid off. It was a great win for both Orex and Viztek technologies and products". The US Army recognized the valuable role CR could play throughout the Iraqi conflict and purchased Orex CR systems with Viztek's cutting-edge image generation, manipulation and archiving software for use in the harsh battlefield desert environment. These systems allowed soldiers injured in battle immediate assistance by the medical personnel providing x-ray images in digital format to the physician on staff. Viztek's mini-PACS software with its telemedicine capabilities enabled the remote digital image communication and was vital to the overall functionality and value of the Orex CR hardware system. "The US Army order reinforced Orex's status as the premier manufacturer of mobile CR systems and Viztek as the leading provider of PACS solutions," continued Hillel.

In 2004, recognizing that Viztek innovative software presented the PACS industry best value, Orex purchased Viztek PACS source code to offer as their embedded combined system. However, Viztek had retained a permanent license to sell the software to other Orex end-users as well as the right to develop new PACS software not based on the original code. In later years, a few thousands of Orex CR systems bundled with Viztek mini-PACS software package could be found at local healthcare clinics close to home as well as far from home in US Army mobile field units patrolling Iraq, Afghanistan and other remote locations around the world.

Viztek ([www.viztek.net](http://www.viztek.net)) is a leading and innovative provider of healthcare information technology (healthcare IT or HCIT) software as well as digital and x-ray hardware solutions. The innovation in software is complemented by the company's comprehensive line of x-ray hardware solutions supporting configurations ranging from retrofit packages to complete new

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<sup>1</sup> In 2005 Orex Computed Radiography was acquired by the Kodak Corporation, whose medical business later changed its name to Carestream

radiology rooms and mobile solutions. This proprietary healthcare IT software solutions and complementary x-ray hardware configurations help medical practices produce and manage all of their patient diagnostic imaging data from other image capturing modalities (such as CT, MR, Ultrasound etc.) as well as processing, distributing and storing this data through internal and cloud-based networks. See Exhibit B: Digital Imaging Process and Components.

Historically, in its earliest days, Viztek targeted the small private, single doctor practices making up the majority of the lowest segment of the healthcare providers' market. It later moved up to serve the larger, multiple physician practices and finally it started targeting the lower level of the hospital market, (i.e. < 300 bed hospitals). Over the years the company continued to develop its software/hardware capabilities to service larger institutions in the higher segments of the market pyramid, competing with large companies, such as GE, Siemens and Philips. See Exhibit C: US Healthcare Market Pyramid.

On October 1, 2015 – Konica Minolta, Inc. announced the acquisition of Viztek. "The acquisition of Viztek will strengthen our Healthcare IT solutions and broaden our Primary Imaging Solutions portfolio so that in turn we can enable our customers across all market segments to better meet the evolving healthcare requirements for Meaningful Use and value-based care," said David Widmann, President and CEO, Konica Minolta Medical Imaging.

## **Viztek 1.0: 1999 to 2007**

### **History of the Company**

Josip ("Joe") Cermin, a successful entrepreneur, then based in Jacksonville, Florida, first became interested in medical software in 1998 after attending, for the first time, the annual meeting of the Radiology Society of North America (RSNA), in Chicago. "At that time, healthcare was the least IT-forward industry I was aware of. Nothing was digital, everything was analog. I had years of background in building and servicing the IT markets and my knowledge of the topic was rather advanced. However, though medical devices and telemedicine were not my strong suit I found them the least sophisticated and realized that if I applied my talents quickly I could curve myself a nice first comer position. Today, I am more medical than IT", recalled Cermin, Viztek founder and CEO.

Until that time, the cost of providing digital solutions to replace analog x-ray films and the supporting image management infrastructure was prohibitive. Joe recognized the potential of digitization in medical imaging and the corresponding impact it would have on the healthcare industry. He also learned the importance of extended broadband high-speed internet communications on telemedicine and teleradiology. Joe recalled, "It was clear to me that the advance of PACS held the potential of expanding the transfer of data with unprecedented speed".

Viztek Inc. was founded formally in 1999, when Joe brought together a team of highly motivated programmers and gave them the tools to develop software for capturing, storing and manipulating x-ray images. Their charge was to address the requirements of the lower echelon of the medical community in capturing and interpreting their patients' x-ray images through modern information technology. The team achieved a breakthrough with the development of Onyx-RAD, a patient-centered imaging solution that created a profile of the patient's medical history able to travel with the patient through the course of the medical treatment and its history.

"We are always asking ourselves, how will an end-user customer benefit and be able to pass that benefit on to the patient? In an EHR (electronic health record) workflow, how long

does the patient have to wait before their name is called for x-ray images to be taken and their exam is interpreted? In delivery of radiology reports, how would a patient get access? How can we facilitate a doctor who might just click on a checkbox indicating that he or she agrees to automatic delivery of images to patients, instead of burning a CD or printing out a report? How can we learn from Apple about end-user experience?” explained Joe. “Rather than compete with the larger, more entrenched providers of HCIT solutions to hospitals and national clinics we targeted the least served rung of the healthcare industry in a segment where the technology shift to digital solutions replacing film based x-ray imaging was previously prohibitive,” continued Joe.

Although Viztek’s original innovative software platform was on par with its competition, their unrelenting focus on product development and customer satisfaction distinguished Viztek from its competitors. Joe’s goal was to evolve Viztek’s products into one of the industry standards for every targeted market segment. “I started with picking brains and continuously customizing our single software platform for the lowest level segment of the US healthcare market pyramid i.e. the single physician private practices, small clinics, veterinarians and chiropractors. This way we understood the expanded needs, listening to each and every customer. This allowed me to continue and tailor the entire offering to the larger community of end-users,” said Cermin.

### **Diversification of the Computed Radiography (CR) Market**

From its inception, Viztek established close relationship with Orex Computed Radiography (an Israeli company, acquired in 2005 by a subsidiary of Kodak/Carestream) to distribute their line of Computed Radiography (CR) scanners. CR provides immediate x-ray images in digital format, eliminating the need for film and developing. The Orex CR line of products was known as the first compact desktop CR. At that time, Kodak, Agfa, and Fuji, the top three CR manufacturers, targeted mainly the high-end segment of the healthcare market – hospitals – allowing them to rapidly become a driving force in the digital healthcare conversion revolution. CR scanners replaced messy, space consuming, hard to store, costly film with two steps digital x-ray conversion/processing. The Kodak/Orex line of CR scanners was designed to bring similar revolution/conversion to the smaller clinics. Still, even at that level, the Orex CR could be networked together over a conventional local area network (LAN) to create a Distributed CR (D-CR) solution. However, the most important distinction of the Kodak/Orex CR line as compared to the competition was its compact size and competitive pricing.

Seeing this opportunity, Viztek recognized the need for an affordable and functional Picture Archiving and Communications System (PACS). Orex provided Viztek the ability to address the lower end-user market seeking to join the digitalization revolution. While other PACS vendors existed at that time, none were both affordable and as reliable for that market segment as the combined solution offered by Viztek SW & Kodak/Orex CR system HW. In 2002, Viztek developed its first PACS, called Onyx-RAD, to support Kodak/Orex CR. From its inception, the Viztek PACS became the standard that was used by Kodak/Orex CR.

General enterprise PACS vendors focus almost exclusively on producing and marketing their own software leaving the hardware to be sold by a third party vendor or partner. As such, these solutions did not tightly integrate with hardware applications such as DR and CR. Viztek embedded its software within the Orex CR system, supporting of DICOM standard (Digital Imaging and Communications) of image generation, manipulation and archiving. Viztek’s innovative software also enabled remote digital image communication and was vital to increasing the overall functionality and value of the Orex CR system.

Viztek's unique position as both the provider of hardware and its own integrated software solutions made it a valuable resource of information. The other hardware manufacturers didn't have the internal capabilities to solve the end users' technology related questions. Because of this dynamic, Viztek had also evolved into the leading support center for Orex/Kodak on its CR related issues.

### ***Exclusive service agreement with the US army***

By 2003 Viztek had become a proficient provider of HCIT and CR scanners. Viztek enhanced its service offerings by becoming a one-stop provider of hardware and software with full installation and support services.

In March 2003, after a rigorous set of environmental and functional testing, Viztek signed an exclusive service agreement with the US Army to support over 250 Orex systems to be deployed in harsh combat environments. The US Army recognized the valuable role of the combined Orex-Viztek units in accelerating the diagnosis process and eliminating the need for film and chemicals in a battlefield. "I am proud of our team's ability to work out a complex deployment strategy making reliable medical diagnostic technology available to the US Armed Services in remote locations around the world," said Cermin.

Viztek continued to enhance its software platform through extensive customization to further focus and serve and support several new market segments such as the chiropractic market segment with the Onyx Chiro software product. By successfully fulfilling the role of customer support, Viztek was able to incorporate end-user feedback into the development of a variety of versions of its innovative software, further distancing itself from the competition. While the perceived market value in these lower segments was thought to be small compared to standard clinics, the overall size and margin potential was determined to be an extremely attractive market entry proposition for the company. Viztek faced very little competition in these market segments, given their smaller size.

Viztek's design philosophy for its homegrown innovative HCIT software products and digital x-ray systems was dictated by the diversity of the multiple applications, medical specialties, and clinical utilizations – size-wise and functionality-wise – in the markets it served. "Viztek's philosophy is that we don't compare ourselves to anybody else. We don't compete. We are setting our own goals and objectives without taking other competitors into consideration," said Cermin. "We don't orient ourselves relative to other companies in the market space. Our customers' needs set our goals and objectives 'bottom up' development. We feel satisfied to bring benefits to doctors and patients," Cermin continued.

Although Viztek's initial innovative software release was on par with its competition, its unrelenting focus on product development and customer satisfaction distinguished the company from its competitors. Viztek's software has evolved into one of the industry standards for the market segments it targeted.

### **The Digital X-ray Market**

The digital x-ray technology market is segmented based on clinical applications, i.e. mammography, chest imaging, dental, orthopedic, podiatrists, chiropractors, and veterinarians among other applications. The CR and DR digitizing technologies, come in both fixed and portable configurations depending on end-users' needs. See Exhibit D: Viztek's Market by Vertical Segments.

There were several external factors that positively influenced Viztek's products and

services growth outlook. It started when US President George W. Bush called for better utilization of healthcare technology for generating, storing and sharing medical records.<sup>2</sup> President Bush called for the adoption of this technology to make healthcare businesses more cost-effective, more efficient and more productive. It continued in 2010 with the US Healthcare Reform/ObamaCare Program (Affordable Care Act) attempt to reduce cost at medical facilities, cut reimbursements year-over-year for all clinical procedures, and to push for more procedures to be performed outside the hospital. With the continued need to drive costs down and move medical procedures out of the hospital, clinics and other healthcare providers were finding the need to convert all of their analog processes to digital. However, most of these healthcare service providers lacked the necessary training and resources required to benefit from technology. Lastly, the population continues to require increased medical attention as it continues to age and as life expectancies continue to climb.

Viztek became a pioneer in introducing high quality and economical PACS and CR bundled solutions. The company's innovative software platform helped medical practices manage all their digital imaging, including images from other diagnostic imaging modalities like CT, MR, and ultrasound. "While Hillel and I were constantly scanning the healthcare IT market for possible organic and inorganic growth opportunities, our software engineers were constantly refining, updating and extending the functionality of the PACS to fit different market segments by adding new clinical workflow features," said Cermin. "My vast years of experience in the diagnostic imaging arena put me in a great position to look at the market, analyze the trends and assess our strategy, while Joe's expertise is more tactical; he was the car driver, I was that car's GPS," added Bachrach. "Our continued innovation was not only in the software and its new features, but also our ability to foresee market trends and demands," continued Cermin. "We used leapfrog technologies to fulfill the needs of our customers. When hearing our customers' needs and tracking the market trends/opportunities additional strategies came to the surface with regard to fit, availability and affordability," explained Cermin.

The company has historically targeted the bottom and middle segments of the healthcare provider market, representing over 100,000 potential points of sale. It represented the largest and fastest growing segments of the diagnostic imaging market. The company's longer-range goal was to extend the software and hardware features and capabilities to serve larger institutions in the higher segments of the US healthcare market. Large companies, such as GE, Siemens, Philips, Sectra, DR Systems and Cerner, focus on selling healthcare information technology software mainly to the upper segment of that market. While these large companies probably recognized the opportunity in the segments served by Viztek, their features, workflow and overhead structure (supported by an upper echelon focused and expensive sales channel) designed to serve larger medical institutions prevented them from materially entering the Viztek segments.

Driven by a diversified business model of hardware, software and support, Viztek's revenue grew from \$531K for fiscal 2001 to approximately \$10.33 million for 2005, resulting in a compounded annual growth rate ("CAGR") of over 110%. When all is said and done, Viztek sold over 2,500 CR systems, including 300 to the US military.

## New Viztek CEO

With the rapid 2001-2005 compounded annual sales growth rate of over 110% and the plan to grow by 50% in 2006, pressure on the management team grew, especially on Joe

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<sup>2</sup> <http://www.digitalhealth.net/news/21650/bush-renews-call-for-more-use-of-healthcare-it>

Cermin. “It was shortly after my appointment as Chairman of the Board that I spent hours talking with Joe to have him recognize that such continued rapid growth would soon exhaust his ability to effectively manage the company, and rather than react when that moment arrived, he had better help us in the search for and the selection of a professional CEO with the appropriate background of managing and growing larger companies,” recalled Bachrach. “The Board of Directors thought that in order to support Viztek’s continued and rapidly accelerating growth, the new CEO record should include leadership of a rapidly growing company or operation. Joe expressed his interest in continuing with the company under the right scenario to help in the transition of his knowledge and relationships,” continued Bachrach. “It is typical for fast growing startup companies to upgrade the management ranks and add professionally experienced CEOs,” said Bachrach. “Both Joe and the board felt it was the right timing”.

In February 2007, Viztek named Mr. **Roger Davis** as its CEO. Mr. Davis had previously served as Vice President at GE Healthcare, responsible for IDX Systems Corporation, a GEHC subsidiary. He was responsible for the expansion of the IDX consulting practices and its entry into the healthcare outsourcing business. In his prior position, he was an Executive Vice President at Xtria Healthcare, responsible for business development. Despite his seemingly appropriate background, this relationship was found to be unsuccessful and it ended after a few months. “Roger was all about processes and procedures with very little about human relationships. He spent too much time designing the way the office looked; it was more important for him to put a sign at every cubicle with the employee’s name on it rather than getting to know each of them and understand what they do,” explained Cermin.

Only after one more unsuccessful attempt with a new and experienced executive to lead the company, did Viztek’s Board of Directors determine that Viztek founder, Joe Cermin should be in an active role as President and CEO. See Exhibit E: Management Team.

“Despite their reputation and vast experience, the two high level executives we hired in order to try and create a professional management structure assisting Joe were found to be unsuitable for the close-knit Viztek culture. We were not talking the same language, we were not seeing things eye-to-eye. While with Joe, we were always on the same page working to establish and achieve the same objectives, with these two, seemingly, reputable executives who had experience I felt totally different,” said Bachrach. “My philosophy is to be an active chairman, meaning being active. Joe and I had a great relationship both at work and outside of work. As Orex CEO and President, ever since I met Joe, Viztek’s founder and our master dealer, we have been talking two to five times a day.”

### **Continued Organic Growth with Web-based PACS**

Aside from diversifying within its current market segments, Viztek was looking to substantially penetrate new ones. In 2006, Viztek developed a truly integrated IT suite of products called Opal-RAD. Opal-RAD comprised several applications, including PACS, mini-PACS, RIS, specialty viewers, and EHR. The company initiated beta testing and intended to bring Opal to market before the end of the second quarter of 2006. Based on the initial assessment of the market, the opportunity for this product was projected to be substantially greater than the market where Viztek previously operated.

In January 2007, Viztek **Opal-RAD** received FDA 510K clearance, which soon spearheaded the company’s targeted market expansion. The Opal-RAD package included a full range of high-performance features available at an affordable price, bringing all the advantages of state-of-the-art digital imaging software. “Our new Opal-RAD suite design philosophy was similar to that of Microsoft Office Suite. Not like the old Lotus software

package that offered several components and called it 'a suite', but more like the Microsoft Office family of products, offering a seamless interface between word processing, spreadsheets, database management and presentations. Unique at its price-point, Opal-RAD relied on a single integrated database storing information from both RIS and PACS for data integrity and ultra-fast operation, delivering seamless RIS and PACS integration and advanced image streaming capabilities anywhere, anytime, 'bringing down' the radiology department walls," said Cermin. "Introducing Opal-RAD, a pioneering Web-based healthcare IT platform with value pricing aimed at small hospitals opened a new market segment with great potential," added Bachrach.

Viztek's new Web-based architecture with shared database eliminated the duplicate information input required by separate systems for scheduling, billing and other functionalities, allowing data to move seamlessly through the entire medical practice and beyond. The combination of RIS and PACS allowed patient demographics to be entered during the scheduling process and automatically produce a modality work-lists entry that became part of that patient digital study record. Opal-RAD also allowed radiologists to dictate a patient report directly into the study file and enable the voice recognition feature to automatically create a written report. "To improve our unique direct-to-exam dictation, we decided to license speech recognizing technology which helped support an integrated patient record," explained Cermin. "As part of our continued search for possible organic and inorganic growth opportunities, we found that M\*Modal technology was the perfect fit with our vision to deploy new medical and information technologies in our products," Cermin added. "The next intuitive expansion was adding a billing module called **Opal-BILLING** supporting Viztek's ability to offer a comprehensive radiology digital workflow from start to finish. It provided an advanced but affordable digital environment for managing any radiology practice," said Steve Deaton, Vice President of Sales at Viztek in a 2007 article titled *iztek Debuts Opal-BILLING at RSNA 2007*.<sup>3</sup>

At the same RSNA (Radiological Society of North America) 2007 meeting, continuing the expansion, Viztek decided to enter into the mammography market segment, by introducing a comprehensive mammography solution called **Opal-CAD**. Partnering with Cintec (Haifa, Israel), Viztek offered Cintec mammography HW acquisition systems, with a full range of accessories to meet a wide range of imaging needs, from digital and analog acquisition to computer aided detection (CAD). "We are pleased to expand into the growing mammography arena," said Hillel

In a 2007 press release Debbie Hoyt, the Radiology Director at Pershing Memorial Hospital in Brookfield, MO recalled, "A major benefit of the Viztek Opal RIS system was that it integrated seamlessly with the company's Opal-RAD PACS for tightly integrated workflow. Viztek was willing to implement a range of customizations for us. Our staff radiologist with years of experience in the field had no problem switching almost immediately to digital workflow."<sup>4</sup>

By the end of 2007, Viztek had installed its 100th Opal-RIS, 500th PACS and 2850th CR.

## Viztek 2.0: 2008 to 2010

### Inorganic Growth - the Reina Digital Imaging Acquisition

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<sup>3</sup> <http://viztek.net/blog/viztek-debuts-opal-billing-at-rsna-2007/>

<sup>4</sup> Viztek Installs 100th Opal-RIS at Pershing Memorial Hospital Marks 500th PACS and 1500th CR Sites; Written by Viztek on November 12, 2007. Posted in News & Events.



While selling into the lower market segment, through various large and small dealers, Viztek was looking for ways to initiate a strategic and direct entry into the lowest- segment of the market, the chiropractic and podiatry specialties. The options included either forming a strategic partnership, or ownership of a developer, manufacturer or a supplier of diagnostic medical imaging equipment. The preference was to identify a company that would both advance Viztek's strategic footprint and also enhance the combined group's manufacturing and development competencies. In 2008, Viztek acquired Reina Digital Imaging (Crystal Lake, IL), renamed 20/20 Imaging, and named Bob Salzman as its President. "This acquisition positions our company to further expand our current services in the Podiatry Market," recalled Salzman.

To meet the evolving needs of the radiologists, the Opal-RAD Web-based PACS needed to include such features as workflow streamlining, and multiple locations support. In February 2008, Viztek introduced a sophisticated OnCall Feature to its Opal-RAD PACS providing auto-routing functionality able to deliver designated exams to any Web-enabled PC, providing flexible access from anywhere to anywhere.

In 2008, supporting the needs of different market segments, through extensive customization Viztek continued the enhancement of its products. While, compared to standard clinics, the dollar value per unit sold value in these markets was relatively low, the overall size and margin potential was still an extremely attractive proposition for the company. "My sales reps indicated that demand for PACS grew significantly in the chiropractic and orthopedic market segments," said Cermin. "Thus in the beginning of 2008 we introduced the **Opal-CHIRO** PACS and less than a year later we introduced **Opal-ORTHO** PACS especially designed for orthopedic practices of all sizes."

## **DR Market and Mobile Radiology**

In 2008, the fast rise in the US healthcare expenditures entered a crisis mode. To reverse this trend, more and more medical procedures were pushed to be performed outside the hospital and even more to the patients' living locations – home, nursing home, and hospices. This trend dramatically increased the importance of portable x-ray systems and thus the growth of this market segment. Viztek believed that it was able to serve this growing market using their Web-based IT technology, allowing their product to provide quality service to newly served medical locations and rural underserved communities.

In April of 2008, Viztek completed a turnkey fitting of a fully equipped van including mobile x-ray imaging unit fitted for digital image generation, capable of imaging patients, virtually anywhere. Using image compression technology Viztek provided mobile imaging units the freedom to communicate patient data quickly and securely, using wireless hotspots, cellular wireless cards and satellite connection. Viztek's mobile imaging vans complete with **Opal-MULTI-POINT** (Opal-MP), installed on-board laptops with Viztek's acquired software automatically pushed images to the interpreting physician's main Opal-RAD server.

Due to the initial DR panels' very high end-user price, it took a while for digital technology to become the norm in facilities beyond the x-ray departments at the larger hospitals, allowing CR sales volume for other medical imaging facilities to persist for a while. In some instances, medical facilities were turning to the combination of CR and DR to avoid the very high initial investment. According to DOTmed Industry Sector Report "Imaging centers are finding that by going digital they are improving efficiency, reducing costs, and improving safety, yet there are differences of opinion on whether CR or DR is the correct



choice.”<sup>5</sup> The larger hospitals, able afford to pay the higher prices, were the first to favor DR technology that facilitated higher patient throughput and provided better image quality.

As DR panels became more common, Viztek’s traditional customers, the two lower segments of the US healthcare market, demanded affordably priced DRs. After a worldwide search for a suitable DR panel, Viztek was able locate and sign an exclusive distribution agreement for such a product and initiate the distribution of a good quality, low priced DR solution. To be in the position of taking full advantage of this new opportunity, being a master DR dealer and a master x-ray dealer, Viztek shifted its focus from a software driven hardware company, to a hardware driven software provider, offering the latest DR technology solutions supported by its single software platform at very attractive prices.

“In order to make Viztek a one-stop shop, in addition to our bread and butter CR line, we had to be in the position to offer advanced DR technology. We understood that either by signing a distribution agreement or by licensing we would be in a position to bring DR to market in a fast way,” said Cermin. “Our software for acquiring and controlling DR panels was designed to allow for easy adaptation and seamless integration with a growing DR product line,” he continued.

Viztek’s growing DR product line included a variety of DR panels which targeted different market segments. For the podiatry market Viztek signed an exclusive distribution agreement with a Japanese company selling a LED-based, low-cost DR panel called Neomi. For the same low-end market, in July 2007, Viztek introduced an in-house DR by 20/20 Imaging. “Our new 20/20 DR transforms an ordinary practice to a workplace on the cutting edge of digital imaging technology and it was found to be a catalyst for workflow efficiency. 20/20 DR was a true click and view process!” explained Bob Salzman, President of 20/20 Imaging.

For higher market segments, in May 2008, Viztek signed an exclusive agreement with CMT Medical Technologies (later acquired by the large French defense entity, Thales) for the distribution of its SmartRAD family of DR panels. “Together with CMT’s DR, we were able to offer a sophisticated, high-end, digital solution for a wide range of applications to higher market segments than ever before and at the same time allow CMT to enter into lower markets that it had never served before,” said Cermin. “Viztek’s acquisition and controlling software for x-ray DR panels was designed to allow for easy adaptation and seamless integration with the entire Viztek DR product line,” he continued.

At the end of 2009, Viztek added the wireless feature to the Viztek DR product line. A wireless DR panel allowed orthopedic physicians the freedom to position their x-ray systems at special and difficult angles, maximizing the cost benefit of the system. This wireless feature addressed the cost justification issue of the low volume of these orthopedic physicians’ practices.

The very fast buildup of the DR department resulted in \$12M revenues during 2008 and 2009.

### **The Opal-WS Mini PACS**

The Viztek Opal-RAD family of PACS solutions relies on Web-based thin-client

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<sup>5</sup> DOTmed Industry Sector Report: CR vs. DR, March 15, 2009 by Keith Loria, DOTmed Business News.

architecture that provides advanced image viewing, streaming and manipulation tools with full modality work-list functionality. Utilizing imaging industry standards it seamlessly integrates radiology images, reports, RIS data and other software features. Opal-RAD is based on a scalable architecture and as a practice grows it makes adding new modalities, users and locations easy. With the growing set of features and associated end-user price levels, to maintain its small practices market advantage, in 2009, Viztek added a **Mini PACS** offering specific targeting, with a corresponding price for smaller practices. The philosophy was to add a scalable system where based on its size, number of sites, number of annual image studies performed and level of sophistication, facilities could choose the type of PACS features, storage space, Web components and concurrent users and, of course, were charged accordingly. **Opal-WS Mini PACS** gave customers the freedom to tailor a PACS to their practice. It offered practices, of all sizes, the comfort of knowing they would pay only for features that were necessary to best serve their current facility needs, while allowing them to add new tools as their practice grew. The Web functionality, advanced customizable features, and lower price tag put Viztek's Mini PACS in an advantageous position to be the most cost effective solution compared to other Mini PACS vendors.

### **Relocation to Raleigh, NC**

To support its growing need for new employees, its expanded list of new customers, new products and the need for a new training center, in 2008 Viztek moved its corporate offices, including its headquarters to Raleigh, N.C. The new 80,000 square foot facility included offices, warehouse and laboratories for R&D, integration, administration, customer support, and pre-staging, as well as sales management and distribution activities. The facility also hosted the Web-based PACS' data storage services for remote hosting and disaster recovery services. "The new facility provided us a higher level of product offerings and services. Overnight it enhanced the security and reliability of our Web-based services to our customers," said Cermin.

By the end of 2009, Viztek (including its recent acquisition of 20/20 Imaging subsidiary), with its comprehensive line of Opal-RAD Web-based PACS solutions coupled with the various DR HW solutions was addressing the needs of physicians at a variety of small and medium facilities from orthopedists to chiropractors and podiatrists. Viztek solutions provided a range of workflow improvements as well as enhanced features that streamlined multi-site reading and added new conveniences. Opal-WS has Web capabilities, allowing users to login from any Web-enabled PC. The Web functionality, advanced customizable features, and lower price tag put Viztek's Mini PACS way ahead of other Mini PACS vendors as the most cost effective solution.

Viztek ended 2008 with total revenues of \$29 million, and 2009 with \$31 million, yielding \$2 million, and \$1.9 million adjusted EBITDA, respectively. By the end of 2009 Viztek's installed base included more than 3500 CR and 700 PACS solutions worldwide.

### **The Cloud-based Opal-RAD PACS Solution**

As the company grew and its brand became more recognized, Viztek shifted its strategic landscape/focus to service larger healthcare institutions, 300-plus beds institutions, situated at the upper segment of the US healthcare market: "To address the strict demands imposed by the larger facilities, urban hospitals and large imaging centers, we had to introduce a Web-based PACS solution. These institutions were looking to integrate all electronic patient records, including the ability to share images with any authorized user, from anywhere. Viztek's new concept was fully cloud-based, pay-per-use utilizing the family of Opal PACS

solutions,” explained Cermin. “The cloud architecture enabled physicians in different medical facilities to access prior exams for comparison as well as to forward exams to referring physicians in different facilities. Consulting and collaboration on cases was faster and easier than ever before. At the end of 2010, we also introduced Opal-wRIS to include a new Web-based RIS application with advanced features and functionalities,” ended Cermin.

## The U-Arm DR System

From its entry into the higher segments of the market, Viztek looked to offer its new customers the U-Arm solution integrated with a digital flat-panel detector, designed to streamline patient positioning and workflow, as well as to optimize the time required to complete each exam. A single new DR panel equipped U-Arm often allowed the replacement of multiple old analog x-ray rooms, while meeting and even exceeding prior patient volume. Viztek General Manager Bruce Ashby says: “The Viztek U-Arm DR is a great fit for Patients First Healthcare. Multitudes of specialties and services require a versatile digital x-ray solution, and we’re happy to say Viztek’s U-Arm meets the criteria.”<sup>6</sup>

## Viztek 3.0 year 2011 – 2015

### The Competitive Landscape

In 2011, the competitive landscape included three categories – specialty PACS, DR/CR hardware, and enterprise PACS:

- **Specialty PACS** – Companies that provided PACS and RIS for specialties such as orthopedics and chiropractic clinics, and includes companies such as Stryker, MedStrat, and DR Systems. Their solutions were applicable to all levels of the US healthcare market, with DR Systems & Stryker focused on the higher levels and MedStrat focused on the lower levels. Viztek’s key competitive advantage was the home grown, in-house developed, 1111407Web-based, customizable software platform, fully-integrated with all OEM hardware, allowing for profitability even at the lower levels of the market and for scalability, customization and price competitiveness at the upper levels. Viztek was also the only competitor to deliver a fully-integrated, Web-based software and hardware solution.
- **DR/CR Hardware Vendors** – Companies such as Fuji, Carestream and Konica Minolta provided software and hardware. Although these companies also offered a PACS-like solution, these solutions were typically not Web-based and un-scalable across facility sizes. As such they tended to focus on the largest hospitals and imaging sites due to their above average pricing and limited operational and customer scalability. GE, Siemens, Philips and Canon were also active in this market segment but with limited success.
- **Enterprise PACS** – Enterprise PACS and RIS competitors included GE, DR Systems, eRad, Sectra, Agfa and Merge Healthcare for use in large hospitals and large imaging centers. They focused almost exclusively on software and left the low-margin hardware to third-party vendors/partners. As such, these solutions did not integrate tightly with hardware applications such as DR and CR. Many of these competitors offered a client-server RIS/PACS or solutions that had been pieced together through acquisitions and did not integrate well. These vendors typically focused on larger hospitals and facilities

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<sup>6</sup> <http://viztek.net/blog/viztek-introduces-new-u-arm-system/>

See Exhibit F: Viztek and 20/20 Imaging Set of Solutions, by 2011.

### **The Low-Cost Samsung DR Panel – ViZion DR**

Signed into law on March 23, 2010, the Affordable Care Act (ACA), a.k.a. Obamacare, had the most profound and wide-reaching changes on the healthcare industry markets and products. Reimbursements to healthcare providers were cut and consequently influenced the behavior of medical providers and healthcare consumers. To maintain its growth pattern and to further increase the depth and breadth of the company's product offerings Viztek's strategic landscape had to be constantly re-evaluated. "Hillel and I jointly with the Viztek leadership team had to continue our non-stop scouting of the strategic landscape in order to identify and introduce new products and features to serve varied clinical specialties and different market segments," said Cermin.

"The company's state-of-the-art Opal-RAD PACS and RIS suite combined with advanced DR turned Viztek into a one-stop shop serving medical specialists from orthopedists to chiropractors and podiatrists, as well as the small- to medium-hospital market. However, we still felt that the current leading DR panel suppliers were too expensive and we looked for alternatives that offered good DR quality at lower prices. The effort proved fruitful with our discovery of a new entrant to the DR panel market, Samsung Mobile Display," described Bachrach. "After a few mutual visits between Seoul and Raleigh, a collaborative deal was signed. Following a short development, integration process and testing, in May 2011, we introduced two Samsung DR panel models integrated with our proprietary acquisition software. One panel was Cesium Iodide (CsI) based and the other Gadolinium Oxyorthosilicate (GdOS) technology based. Our customers found the Samsung DR panels' image quality to be very good, providing relatively high diagnostic quality," added Cermin.

Hillel Bachrach recalled: "We became the largest Samsung US distributor. It started when I discovered that Samsung Mobile Display had embarked on the development and manufacture of new DR panels. I asked my friends at Goldman Sachs to locate and introduce Joe and me to the right top people at Samsung in Seoul, South Korea. Goldman was nice enough to open the door for us, and shortly after, Joe and I were invited to visit the Samsung headquarters in Seoul. It was a great opportunity for Joe and me to negotiate a lower DR panel price in return for a high volume commitment. Joe and I saw this opportunity as our ticket to become the DR panel volume leader in a market segment where price sensitivity was high. So, to be able to get the lower prices from Samsung, we had to obtain a commitment from our sales leadership team to be able to sell a large annual quantity of DR panels. The proposition was that to take advantage of low price for a good quality DR panel manufactured by a recognized brand name such as Samsung could be our entry ticket to the market. Our strategy was to offer Samsung DR panel and our Viztek SW in a single, cost effective bundle, where we make a low gross margin on the panel and a larger margin on our own SW." Until that meeting, a single DR panel price was roughly \$100,000 and up. The Carestream DR price was \$100,000, while Thales, Philips, GE and others were around \$130,000 for the panel only. The initial DR panels offered by Samsung were priced to Viztek at \$25,000, per panel, while the Thales per panel price to Viztek was \$43,000. Bachrach continued: "In order to commit to quantities, we had to work it out with it with Bruce, the DR product manager. He calculated and came back with a suggested annual commitment of 90 units, while, to obtain the low price, Joe and I committed to Samsung a 100 panels minimum purchase quantity for the first year. After further discussions with Bruce, we reached an internal agreement and upped the annual 2011 minimum purchase commitment from Samsung to 150 DR panels. While Bruce knew the x-ray market very well, there were several market segments that he was not as familiar with, one of which was the mobile x-ray market. Joe and I felt that with our knowledge, and leadership of this growing market as well as the overall market, we could

target a few new market segments and enter, with the new Samsung DR panel, areas where Viztek had not been active before. Thus, we committed to 150 DR panels allowing even more favorable pricing from Samsung. Though our internal budget for 2011 was 150 Samsung DR units, we ended up selling 250 units.”

In the 1st quarter of 2011, Viztek sold more than 40 Samsung DR panels, a retrofit DR solution to existing x-ray systems. In the first half of 2011, Viztek sold a total of 150, its internally committed volume sales budget for the entire year. Overall, Viztek ended up selling over 580 of all kinds of DR panels in 2012, which was awe inspiring to say the least. From 2011 till 2013 Viztek sold 2,200 DR panels of all kinds, i.e. Tales, Samsung and Naomi.

As referenced above, as reimbursements for performing diagnostic imaging procedures were being lowered, year after year, profit margins at the said larger medical facilities were being squeezed forcing these procedures to be performed outside the hospital. Faced with potential long-term profit margin problems, these medical institutions put pressure on the diagnostic imaging manufacturing/distribution supply chain to further lower their purchasing prices. At the end of the day, the squeeze on the healthcare institutions eventually transferred to a squeezing of the diagnostic imaging supply chain. This was happening during the peak replacement trend of the first generation DR conversion, from the cumbersome CR units to the lower priced, good image quality DR panel units. “Seeing this trend, we released the Viztek ViZion DR solution, utilizing the Samsung DR panels, for the mobile imaging market, priced at less than \$55,000. As we were able to offer the Samsung DR solution at very competitive pricing, this was a true game-changer, on both ends of generating x-ray images, on one hand by easing mass proliferation to the mass mobile market and on the other by reducing, almost eliminating, the existing CR buyer’s market,” ended Cermin

By the end of 2011, Viztek had more than 3500 CR, 580 DR and 1000 PACS solutions installed worldwide.

## The PikoPACS

At the end of 2011, Viztek added **PikoPACS** to its product offering. The goal for this new product was to provide the urgent-care and other emerging private practices with a no-cost entry solution. Viztek sales representatives recognized that the small-office market was flooded with products that may not have the functionality to fit their needs. The logic was to offer users a free download of a small PACS from Viztek’s Website. PikoPACS included multiple basic PACS functionalities. “Our PikoPACS solution was found to be an excellent answer for physicians who needed an image reading solution outside of their main locations/facility. After a month we recorded 1500 downloads of our free PikoPACS,” said Steve Deaton, VP of Sales.

For 2011, Viztek recorded a significant revenue growth of 25 percent across all product offerings. “We were able to significantly grow market share in 2011 through our efforts to consistently upgrade our products with the latest features to meet clients’ needs,” said Joe. “Viztek 2011 can only be defined as explosive.”<sup>7</sup>

“The x-ray imaging industry transformation was increasing rapidly, and we were able to accommodate and ride on that growth trend through innovation and novel thinking. With our team approach of assembling and bundling unique solutions all based on the core innovative software, we were moving into larger and larger healthcare facilities as well as attracting some of the largest clinic chains around the country,” said Bachrach.

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<sup>7</sup> January 3, 2012. Viztek 2012 – Exceeding Expectations – A letter from VP of Sales, Steve Deaton.

## **The Straight-Arm DR and Wall-Mount CR**

“Our 2011 successes created very high growth expectation for 2012. Despite the steady declining trend in PACS prices, we were very successful in 2011, winning business against competitors such as GE, McKesson and DR Systems, causing the Viztek brand to be gradually further accepted by the larger medical institutions,” described Bachrach.

“With the introduction of the ViZion Straight-Arm DR during 2012, we further expanded our DR solutions portfolio. This new product was ideal for the limited space, limited budget medical settings requiring low-cost digital solutions. Viztek also experienced a highly successful launch of its wall-mountable Opal-CR II, a breakthrough CR product designed specifically for the confined spaces of the private practice. The small, lightweight unit with an extremely small footprint produced 60 plates per hour and required no construction in physicians’ offices or clinics. Due to the rapid market acceptance, Viztek placed 75 units in 60 days, making it one of the most successful products introduced to the market. Viztek notched sales of 300 units for 2012,” added Cermin.

In 2012, Viztek sold over 900 DR panels, including more than 150 complete DR rooms. Viztek software sales, including RIS, PACS and its newly introduced Meaningful Use-Certified HER, recorded 20% growth. PACS sales highlights during 2012 included Viztek’s orthopedic-specific Opal-ORTHO PACS, as well as the Opal-RAD PACS. “This represents a significant growth over 2011’s sales and increases our market presence substantially,” commented Steve Deaton in a 2012 press release. He continued: “The escalating popularity of our entire product line is due largely to our innovative solutions to different market segments using our software platform technology with affordable price points.”

## **The Low-Cost iRay Wireless DR**

In 2012, Samsung Mobile Displays announced their decision to get out of the flat panel detectors (DR) business for medical applications. Joe recalled. “I immediately called Hillel and we both thought we must explore our legal rights with Samsung and at the same time we must initiate the search for alternative vendors. We approached one of the best litigating law firms in the US to explore initiating legal proceedings against Samsung for the abrupt termination of the agreement and loss of future revenue. We knew that the possible alternate vendor to the low and middle markets had to be of good quality and cost effective in the price range of \$20,000 or less, per panel.” At the time the low-end market was served by 20/20 Imaging’s different DR solution while Viztek the high-end market was served by the Thales and CMT DR panel technology. Viztek initiated discussions with several DR manufacturers and ended up with iRay Technology, a new and upcoming Chinese DR panel manufacturer.

Following an intensive R&D effort with iRay, Viztek introduced the ViZion + DR family of products in January 2013, after receiving United States Federal Food and Drug Administration (FDA) 510k clearance. The approval included multiple panels suiting an extremely versatile range of clinical applications offering high quality images at a good image processing speed for a very competitive price. The ViZion+ DR panels have been included in new x-ray rooms as well as in retrofit rooms, and in mobile implementations.

## **More Features to Viztek’s PACS**

“What was novel about our approach was that instead of continuing to add more

features/versions to the Viztek PACS software platform, we decided to leapfrog straight to the ‘top of the hill’ by moving our entire PACS platform to a Web-based infrastructure,” said Cermin. “Our extensive expertise allowed us a much more efficient development process and a short turnaround time from definition to the launching of the new product. We focus hard on interactions with our newer customers, radiologists and referrers, to better define the needs to streamline and refine the care they provide,” added Cermin.

A key focus for Viztek during 2013 was the delivery of end-to-end digital solutions for hospitals, enabling them to close and better control the clinical care loop of ordering the x-ray procedure, presenting the results, interpretation and diagnostic reports. To offer a completely turnkey solution for all orthopedic practices, Viztek signed a strategic partnership with **Phoenix Ortho** in which Viztek integrated Opal-ORTHO with the Phoenix Ortho EHR .

For the mammography market segment, Viztek partnered with **Matakina** to integrate a breast density assessment feature into their PACS, creating a comprehensive mammography RIS/PACS imaging software suite. Viztek was also the first PACS vendor to provide viewing capabilities for **Digital Breast Tomosynthesis (DBT)** imaging, eliminating the need for stand-alone viewing software.

Instrumental to Viztek successful expansion beyond the small and medium market segments into community hospitals was a successful new line of innovative quality DR panels such as the Leggera Wireless DR detector. This new wireless DR panel, the industry’s lightest, leapfrogged other DR panel detectors with its advanced technologies for image storage and unrivaled productivity.

Summarizing the 2013 financials Cermin recalled: “We showed an impressive 45% year-over-year revenue growth from the calendar years 2011-2013. Strong DR panel and PACS sales supported this, with 20% growth in DR hardware, 15% growth in software and 75 PACS. 2013 was The-Year for Viztek with a significant jump in the customer base of 200-bed hospitals and above. Our remarkable growth at a time when others competitors were struggling in this tough market can only be explained by our innovation and short turnaround of the development process fueled by a talented and energetic team,” said Joe Cermin, Founder and President.

## The Enterprise Exa PACS

According to the last market survey published in November 2016,<sup>8</sup> the North American digital x-ray market was estimated at \$2.5 billion in 2016 and is expected to reach \$4.7 billion by 2021 at a CAGR of 17.31%. See Exhibit G: The US Digital X-ray Sales and Forecast.

In January 2014, Viztek introduced the first platform-agnostic EHR solution with zero footprint viewing/storage, compatible with MAC, Android, Windows and more. Exa the new Viztek PACS platform functions at the browser-based level independent of the device or its operating system. Viztek’s unique and truly market-leading platform was a modular EHR system designed to provide facilities with all essential radiology workflow including, practice management, billing, order entry, radiology reports, patient portals and other clinical features. “Radiologists and referring physicians need advances in PACS and RIS to provide real value, and that’s exactly what we provided them. When Viztek claims innovation, you can count on it being delivered. There is no middle ground, I was proud to be leading and shaking up the radiology market with our vision of innovation and speed-of-development,” said Bachrach. “Viztek’s ‘secret sauce’ is not only our intellectual property it is our culture, experience,

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<sup>8</sup> <https://www.mordorintelligence.com/industry-reports/north-america-digital-x-ray-market-industry>



relationships, service, and commercialization of new innovative products and features combined with a strategy of volume sales,” he added.

“Viztek’s plan was to leverage relationships with distributors, resellers and their loyal customer base to continue and expand its market footprint and to launch the most advanced product line for imaging departments. I suggested that imaging departments and the referring physician community need advanced and reliable technologies supplied by an innovative partner, and Viztek was answering the call,” proclaimed Cermin. “Our goal was to lead the market with full-featured, diagnostic viewing for all modality types with nothing required to be downloaded on the local physician workstation. With continued pressures from government regulations and changes in reimbursement, it is a necessity for radiology departments to operate efficiently while maintaining a high standard of care,” said Cermin.

Viztek was able to successfully capitalize on the market trends with its versatile and innovative modular solution. Viztek’s financials showed a 20% increase in software sales for the 2013-2014 calendar year. Additionally, the expansion of the Viztek DR product line, with the introduction of the ViZion + wireless DR panel and the rapid adoption of the Viztek U-Arm and Straight-Arm bolstered DR equipment sales by 25%. “The demand for the Viztek ViZion + Wireless DR panel affirms the company’s leadership position in DR solutions, bringing panels to market that address the needs of healthcare facilities to best care for their patients,” Cermin said. “The pace of sales has exceeded our own forecasts, and based on feedback we expect to see this continued demand for the foreseeable future.”

Viztek finished 2014 with sales of \$55 million and \$4 million EBITDA. Orthopedics, urgent care and physicians’ offices accounted for 45% of total sales for 2014. Of these, 15% was in chiropractic, 14% was in imaging centers and 9% in podiatry, the rest went to the mobile market and service. See Exhibit H: Viztek’s Software Sales by Market Segments, in 2014.

During 2015, Viztek continued expanding the EHR system with new features and the DR product line targeting the hospital market. “We continued adding new features like patient portal, improvements in the system security and readiness for Big Data access. This elevates our integrated PACS platform to serve as the backbone of data analytics and decision support capabilities and foster the dive into Big Data, thus, extending our software capabilities to better serve larger institutions,” explained Cermin.

## **The Acquisition by Konica Minolta**

In 2015 Viztek recorded sales growth of +20% over 2014 sales of \$55 million, which translated to more than doubling the 2009 sales level. Either as the cause or an effect, Viztek also experienced a substantial growth in brand recognition and leadership in the healthcare IT market arena. Viztek became the classic candidate for an acquisition by one of the large companies in the medical imaging healthcare market.

As a candidate for acquisition, Viztek offered superior strategic value as outlined by the following features:

### Innovative Culture and Disruptive Technology

- From its founding in 1999, Viztek had a history of introducing and commercializing disruptive innovating technologies in the digital radiography market

### US Market Access

- Viztek offered a gateway into the robust US digital radiography market, which is expected to reach \$1.7 billion in sales by 2018 (Exhibit F)

#### Broad Range of Hardware Product Offerings

- Viztek's product portfolio included DR panels and radiographic systems which targeted all medical specialties in the low, middle and a good portion of the high-end range of the radiology hardware market.
- The portfolio included both fixed and portable offerings as well as new room and retrofit solutions

#### Customer Expansion Opportunities

- Viztek had deep penetration in a number of key vertical markets, including orthopedics and the mobile x-ray markets
- The success of Viztek's comprehensive software platform was driving sales to larger customers (i.e. 300-bed hospitals), the upper two levels of the US healthcare market (ExhibitC)
- The scalability and adaptability of Viztek's software was highly suitable for expansion into international markets

#### Access to Extensive Distribution Network

- Viztek had a significant distributors network and relationships in the US, as well as expertise in managing these relationships
- A US dealer network comprised of 305 dealers reaching 5,884 end customers across all 50 states and the District of Columbia

#### Strong Connectivity Platform Enabling Participation in the HCIT Integration Market

- High standard connectivity enabled participation in the HCIT integration market known as the meaningful use market
- The global HCIT integration market, which was \$1,737 million in size in 2013, is expected to reach \$2,746 million in size by 2018

#### Enabling a Product Roadmap into Data Analytics

- Data elements currently available in the Viztek database can serve as a platform for building data analytics and decision support capabilities

#### Foundation for Multiple Growth Opportunities

- Growth opportunities include development of data analytics capabilities, product line extension (particularly in software), market expansion and greater penetration of current clients.

See Exhibit I: Viztek Selected Product Offering.

On October 1, 2015 – Konica Minolta, Inc. announced the completed acquisition of Viztek, LLC, through Konica Minolta Medical Imaging. With this acquisition, Konica Minolta enhanced its capabilities to offer comprehensive, end-to-end healthcare IT solutions from image acquisition to physician diagnosis. It also added to the established strength and foothold of Konica Minolta in primary imaging and enhanced their healthcare IT software solutions to better meet the market need for image sharing and viewing.

“As we aim to significantly grow our business, we can now be further assured that we are responding to customers’ needs with healthcare solutions offered and supported by a single company,” said David Widmann, President and CEO, Konica Minolta Medical Imaging, the Americas.<sup>9</sup>

In the transaction, Viztek LLC, 20/20 Imaging LLC and their holding company, 20/20 Healthcare LLC, became subsidiaries of Konica Minolta Medical Imaging USA, Inc.

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<sup>9</sup> <http://www.radiologybusiness.com/topics/leadership/konica-minolta-medical-imaging-viztek-both-excited-future-after-acquisition>

## The New Viztek

Naturally, in friendly acquisitions, achieving successful integration has to start with a high level of goodwill from both parties. In their joint interview, ‘Creating a unified vision,’<sup>10</sup> Joe Cermin, Viztek and David Widmann, Konica Minolta, were very positive on their ability to continue the historical growth pattern of the two companies. Having Viztek as a subsidiary, Konica’s objective was to beef up its healthcare IT solutions and broaden its imaging solutions basket with well-established product lines in digital radiography (DR) and healthcare IT. Through the Viztek acquisition, Konica expected to provide its customers with the best cost effective digital imaging solution (Konica termed it XYZ – I’ll find out) assisting those customers in navigating healthcare’s evolution from a volume-based model to one rooted in value. On the other hand, Joe Cermin expected that by taking advantage of Konica’s marketing and sales capabilities and worldwide distribution network he would be able to realize his founder vision of improving healthcare not just in the USA but all over the world. “We saw that their approach to business is a mirror to ours, except they have a much bigger and more powerful name. It was natural for Viztek to say, ‘We’re still going to be us. This doesn’t change us,’” said Mr. Cermin.

In reality, contrary to Joe’s expectation, Viztek had to change.

According to the company’s press releases, Viztek under Konica’s leadership experienced a dramatic slowdown in its organic growth. The differences between the two companies with respect to knowledge of the market, relationships with customers, organizational culture, and management style led Viztek to spend a lot of resources over the collaboration and implementation.

From frequent (at times monthly) releases of products and/or features, the company announced only a few releases in the whole of 2016 and up to the end of the 1st quarter of 2017. Viztek continued the development of its Exa RIS/PACS/EHR system and improved the DR solution. Very few improvements and customization tools were introduced at the beginning of 2016<sup>11</sup> and only one in 2017.<sup>12</sup> The one in 2017 was related to the new Exa platform announcing much faster access to large files, such as 3D mammography, and improved cybersecurity capabilities.

The development of the DR systems was also slowing down as can be surmised by the few related releases. In mid-2017, Viztek/Konica introduced an improved U-Arm DR system offering better throughput and greater department efficiency,<sup>13</sup> and at the end of 2016, Viztek/Konica announced the AeroDR HD Wireless Flat Panel Detector combining high sensitivity and smaller pixel size in a lightweight and waterproof enclosure.<sup>14</sup>

Additional to the PACS products, DR and CR systems, Viztek was assigned to take over the development of Konica’s ultrasound system. Later in 2016, Viztek introduced an improved ultrasound unit with better image quality, streamlined workflow and new cardiac

<sup>10</sup> <http://www.imagingbiz.com/sponsored/1174/topics/business/creating-unified-vision-widmann-and-cermin-konica-minolta%E2%80%99s-viztek-acquisition>

<sup>11</sup> Imaging Biz: Distinguished Diagnostic Imaging banks on Exa Platform to extend reach in NYC. January 27, 2016.

<sup>12</sup> <https://www.konicaminolta.com/medicalusa/wp-content/uploads/2017/02/Exa-Enterprise-Imaging-HIMSS-2017-M1059-217-RevA.pdf>

<sup>13</sup> Konica Minolta Debuts First-of-Its-Kind Digital U-Arm System at AHRA. July 27, 2016. Posted in News & Events

<sup>14</sup> <https://www.konicaminolta.com/medicalusa/wp-content/uploads/2016/11/KMHA-AeroDR-HD-Press-Release-FINALdocx.pdf>

functionality. This high-end ultrasound unit in a hand-carried system was an ideal point-of-care solution for rapid and confident evaluations.<sup>15</sup>

During April and May, 2017, the new Viztek, under Konica's leadership, announced the releases of five new and improved products/features. It was the first fruitful sign of Viztek's efforts to be back to productivity under Konica Minolta Medical Imaging (KMMI) leadership. Joe Cermin, KMMI President Healthcare IT Americas and founder of Viztek is getting close to fulfilling his founder vision.

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<sup>15</sup> Paralympian Celebrates the Launch of SONIMAGE HS1 Hand-Carried Ultrasound System in Brazil. June 7, 2016. Posted in News & Events.

## Exhibit A: Definitions

- **HCIT** – Healthcare information technology
- **Computed Radiography (CR)** – The use of an erasable photostimulable phosphor plate, housed in a cassette, to capture an x-ray exposure which is then run through a filmless laser scanner (CR reader) to digitize the image. The digital image can then be viewed, enhanced, stored and shared using software.



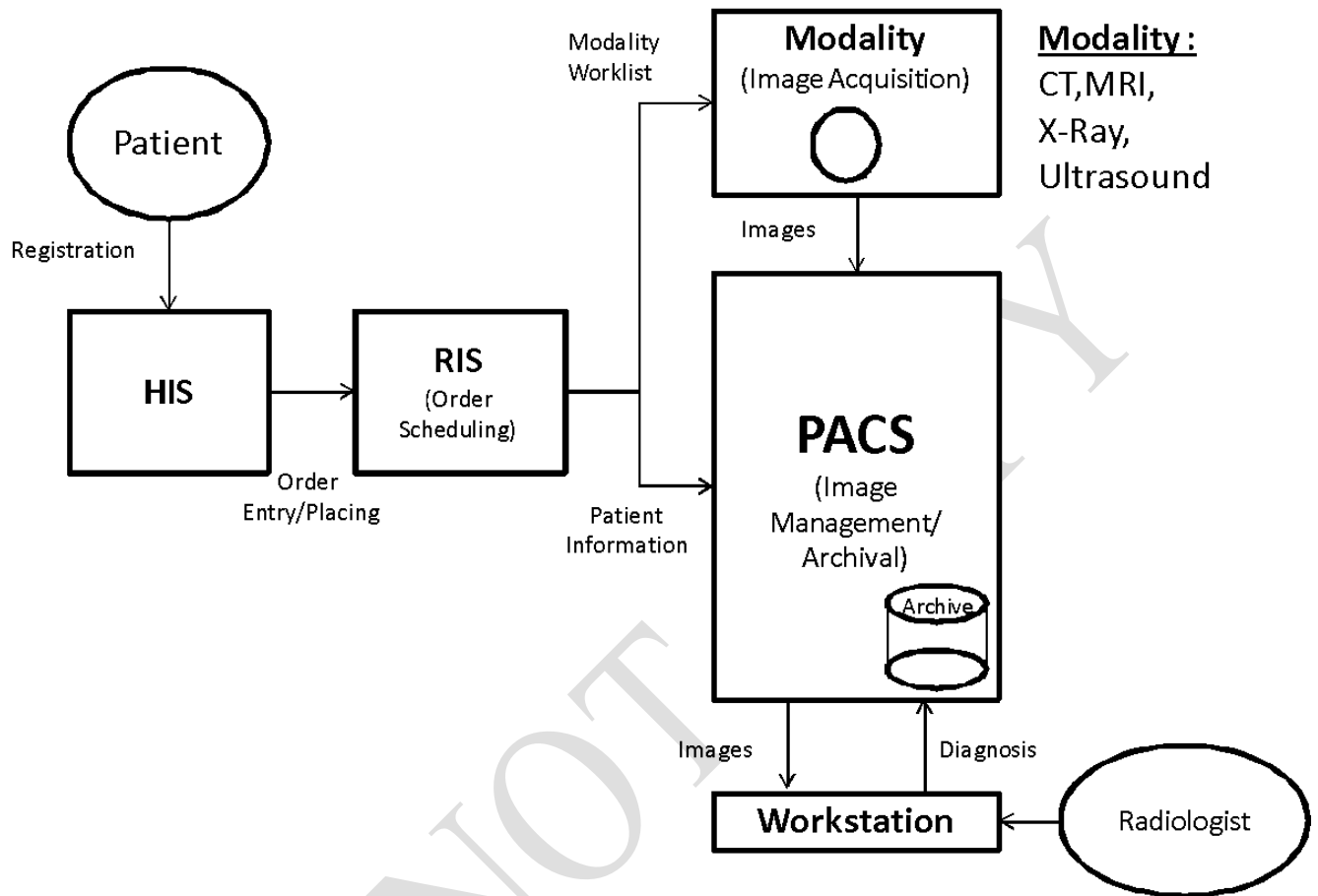
- **Direct Radiography (DR)** – A system for the capture and digitization of an x-ray exposure onto a flat panel detector without the use of an image plate, i.e. a direct digital radiography technique.



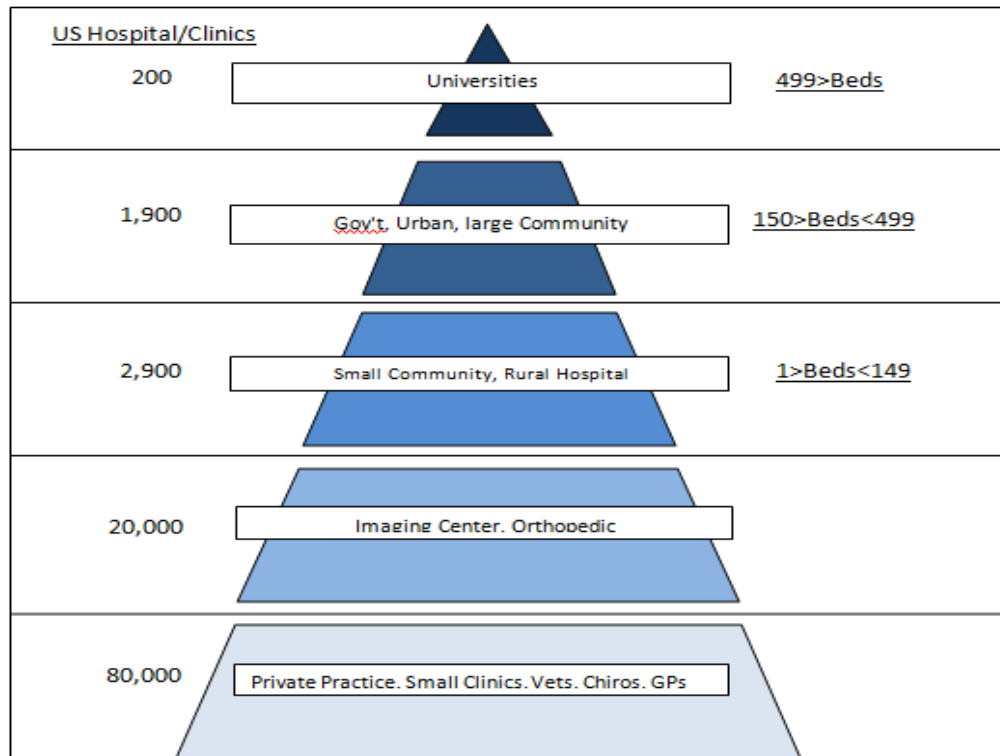
- **Picture Archiving and Communication System (PACS)** – An electronic platform for the storage, viewing, transmission and archiving of x-rays and medical records.



- **Radiology Information System (RIS)** – A database which stores, manipulates and distributes patient radiological data and imagery and often includes patient tracking and scheduling functions to facilitate efficient practice management/workflow.
- **Hospital Information System (HIS)** – A computerized system that can manage all the information to allow healthcare providers to do their jobs effectively. The system manages the data related to the clinic, finance department, laboratory, nursing, pharmacy and also the radiology and pathology departments. The modern HIS includes many applications addressing the needs of various departments in a hospital.
- **Digital Imaging and Communications in Medicine (DICOM)** – A standard for handling, storing, printing, and transmitting information in medical imaging. It includes a file format definition and a network communications protocol.

**Exhibit B: Digital Imaging Process and Components**

## Exhibit C: US Healthcare Market Pyramid



**Figure 1:** US Healthcare market



## Exhibit D: Viztek's Market by Vertical Segments

**By Year 2011**

	Vertical Segmentation								
	Application					Technology		Fixed/ mobile	
	Cardio-vascular	Respira-tory	Mammo-graphy	Ortho-pedic	Others	CR	DR	Fixed/ Stationary	Mobile/ Portable
Private Practice, Small Clinics, Vets, Chiro's, GPs	A	A	A	A	A	A	A	A	A
Imaging Center, Orthopedic	A	A	A	A	A	A	B	A	B
Small Community, Rural Hospital	B	B	B	B	B	B	B	B	B
Gov't, Urban, large Community	C	C	C	C	C	C	C	C	C
Universities	C	C	C	C	C	C	C	C	C

Level of Viztek's product fit

A	High fit
B	Moderate fit
C	No fit

**By Year 2014**

	Vertical Segmentation								
	Application					Technology		Fixed/ mobile	
	Cardio-vascular	Respira-tory.	Mammo-graphy	Ortho-pedic	Others	CR	DR	Fixed/ Station-ary	Mobile/ Portable
Private Practice, Small Clinics, Vets, Chiro's, GPs	A	A	A	A	A	A	A	A	A
Imaging Center, Orthopedic	A	A	A	A	A	A	A	A	A
Small Community, Rural Hospital	A	A	A	A	A	B	A	A	A
Gov't, Urban, large Community	B	B	B	B	B	C	A	B	B
Universities	B	B	B	B	B	C	B	C	C

## Exhibit E: Management Team

### ***Hillel Bachrach, Chairman and quasi-Chief Executive Officer***

**Hillel Bachrach** is a dynamic executive with 30 years of operating and executive management experience in all aspects of successful commercial global introductions of new, innovative and revolutionary medical technologies. His work has led to significant sustained and profitable growth providing a direct and positive impact on the valuation of the given enterprise.

Bachrach founded ESC Medical Systems (now Lumenis) in 1993, one of the first medical laser/flash lamp companies addressing cosmetic applications. From a total VC investment of \$2.0 million, ESC went public on NASDAQ in January 1996, with a secondary offering in June of 1996. Through multiple strategic acquisitions, ESC reached a valuation of close to \$1 billion in 1998. In 1999 Bachrach founded MSq, Ltd., another innovator in the medical laser field.

Bachrach served as the CEO of Orex Computerized Radiography, a manufacturer of computed radiography (CR) systems and software. He led the sale of Orex to Eastman Kodak in 2005. He also served as the President of Odin Medical Technologies, Inc. In addition, he is Director of UltraSPECT, Ltd, which is distributed by GE HealthCare under an OEM distribution agreement and through independent sales reps. Bachrach is also the Chairman of Corindus, Ltd., a development company in the field of interventional cardiology and Rcadia Ltd., a development company in the field of diagnostic imaging algorithms and software. In 2006, Bachrach's finance and management advisory services company, 20/20 Healthcare Partners LLC, led the buyout of Viztek Inc. from Josip Cermin. He has been active in leading Viztek since then, particularly with regard to new products and strategies. He received his MBA from the Kellogg Graduate School of Management in 1976 and a B.S in Electrical Engineering from Technion Israeli Institute of Technology in 1971.

### ***Joe Cermin, Founder and President***

**Josip (Joe) Cermin** founded Viztek Inc. in 1999. Cermin is a world-class serial entrepreneur. Prior to founding Viztek, Joe founded World One Technologies, Inc. in 1993, serving as that company's CEO until 2000. World One Technologies was the largest IBM distributor in northeast Florida with over \$10 million in revenue. Prior to World One Technologies, Cermin was founder and president of Integrated Computer Designs from 1990 to 1993.

Cermin led the development of Viztek's picture archiving and communications systems (PACS) and its radiological information system (RIS). He is responsible for Viztek's farsighted vision, which has helped to create the core company offerings and has now evolved into a multi-faceted enterprise. Cermin's remarkable ability to perceive opportunity and apply unlimited energy to succeeding has become the operational standard for the company. Cermin was awarded the Ellis Island Medal of Honor in 2006 for his work developing medical imaging software that is helping serve countless people in Iraq and in his native Balkans. He attended Jacksonville University.

### ***Clark Coogan, CPA, Chief Financial Officer***

**Clark Coogan** brings to Viztek 30 years of corporate finance experience focused exclusively in the healthcare and wholesale-distribution industries. He served as Chief Operating Officer at one of the nation's largest radiation oncology practices, overseeing its multi-state expansion, and as CFO of a \$600 million division of a \$1.3 billion NASDAQ-listed physician supply distribution company. He has successfully led client-company turnarounds and restructurings, and managed corporate audit and tax clients for six years with the international accounting firm PriceWaterhouseCoopers. Clark's political appointments include the Federal Reserve Bank of Atlanta's Advisory Council on Small Business, Agriculture and Labor. Coogan earned his accounting degree from Florida State University and received his license as a certified public accountant in 1985.

***Steve Deaton, Vice President of Sales***

**Steve Deaton** has served as Vice President of Sales at Viztek since 2008. His responsibilities include managing the Viztek sales and marketing staff, and expanding the dealer distribution channel. He also works closely with the development and implementations teams to ensure the company is proactively managing its software product portfolio and pricing. Steve worked as a Product Manager at Viztek from 2006 to 2008. As a Product Manager, Steve managed the company's research and development efforts. Prior to joining Viztek, Steve was Director of IT at CIMS, a distributor of medical imaging solutions. Steve holds an undergraduate degree in Electrical Engineering and Telecommunications from Texas A&M University.

***Bruce Ashby, Product Manager, Digital Radiography***

**Bruce Ashby** joined Viztek in 2008 as a Product Manager for the Digital Radiography line of business. Bruce is responsible for creating and defining the market for DR, DR sales management, in addition to other responsibilities. Bruce has worked in sales and operations at medical imaging organizations since 1985, bringing to Viztek nearly 30 years of direct experience, encompassing marketing, sales, territorial and branch management, strategic planning, marketing communications and training.

***Bob Salzman, Product Manager, 20/20 Imaging***

**Bob Salzman** is President of 20/20 Imaging, a role he has held since Viztek's acquisition of its predecessor company, Reina Digital Imaging, in 2007. He has devoted his entire career to healthcare, specializing in diagnostic imaging sales and support channel management. His knowledge and dedication to the radiology community has allowed him to evolve with the industry. Prior to 20/20 Imaging, Bob was Co-founder and Vice President of Reina Digital Imaging, which successfully provided digital imaging solutions including a full spectrum of electronic imaging acquisition, transmission, and archiving products to the alternative care market space. He was instrumental in launching the first podiatric digital imaging system in 2002. In addition, he held a consultative position as Vice President with a startup digital dental company providing panoramic DR to the dental community. Before that, he spent two decades in leadership roles with Diagnostic Imaging Inc. (PSS/World Medical) and Jno. V. Doehren Co., responsible for growth in the imaging supply and capital equipment chain. Bob is a founding member of IXRDA (Independent X-ray Dealers Association) and a founding member of XMA (X-ray Marketing Association).

## **Exhibit F: Viztek and 20/20 Imaging Set of Solutions, in 2011**

At the end of 2011, Viztek's OEMs x-ray hardware solutions included the following products:

- CR – AGFA, Belgium – one model white box
- CCD DR – RF Labs, Japan – two models 11x14 and 14x17
- FPD DR – Samsung, S. Korea – three models 17x17 fixed CSI, 17x17 fixed GOS, tethered 14x17 CSI
- FPD DR – Thales, France – two models fixed 17x17 CSI, wireless 14x17 CSI
- X-Ray – Sedecal, Spain – three u-arm models: fully automatic, manual and dual-detector
- X-Ray – X-Cel, IL, USA – one podiatry model
- X-Ray - SourceRay – portable x-ray system

The PACS software solution included the following:

- Onyx-RAD
- Opal PACS Suite
  - Opal-RAD
  - Opal-CHIRO
  - Opal-ORTHO
  - Opal-MP
  - Opal-RIS
  - Opal-CAD
  - Opal-BILLING
  - Opal-WS Mini PACS
- Web-based PACS
- Cloud-based PACS

## Exhibit G: The US Digital X-ray Sales and Forecast

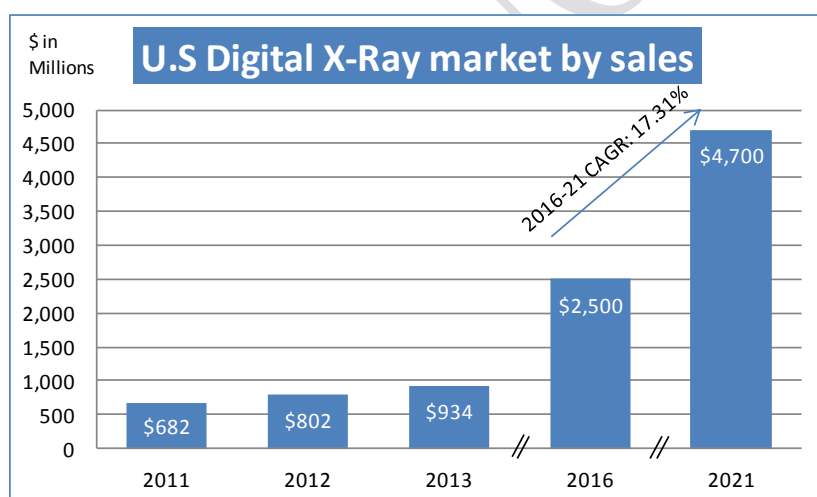
The US x-ray equipment market is segmented based on application, technology, mobility, type, end-users, and price.

Viztek's internal reports provide information relating to the major market segments, which are application, technology and mobility. Products include stationary/fixed and portable x-ray systems. The portable x-ray products have been further categorized into two sub-segments, mobile and handheld x-ray systems. On technology, the x-ray market is divided into two major segments: analog and digital x-ray systems. The digital x-ray systems market is sub-divided into two major technological segments: computed radiography (CR) and direct digital radiography (DR) systems.

The major application areas of x-ray equipment segments are cardiovascular, respiratory, mammography, orthopedics, dental and others (including urology, infusion systems, therapeutics, ophthalmology, general surgery, minimally invasive surgery, and hemodialysis).

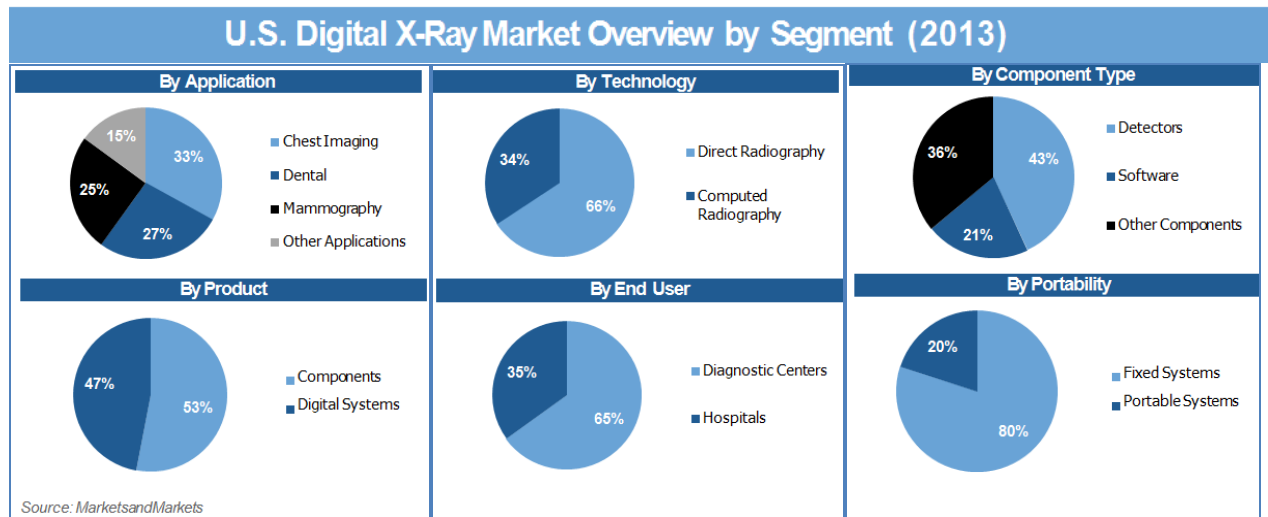
The key players in the x-ray equipment market are profiled on the basis of various characteristics such as business description, financial health and budget allocation, product portfolio, and news coverage. The major players profiled in this report include GE Healthcare, Philips Healthcare, Siemens Healthcare, Thales group, Toshiba Corporation, Hologic, Inc., Hitachi Medical Corporation, Agfa-Gevaert N.V., Bracco Imaging S.p.A, Canon, Inc., Carestream Health, Inc., Fujifilm Holdings Corporation, Konica Minolta, Inc., and Shimadzu Corporation.

The global digital x-ray market is expected to reach \$10.46 billion by 2020 from \$6.15 billion in 2015, at a CAGR of 11.2% from 2015 to 2020. The size of the US market was \$934 million in 2013, comprising approximately 20% of the global digital x-ray market. According to last market survey published in November 2016,<sup>16</sup> the market was estimated at \$2.5 billion in 2016 and is expected to reach \$4.7 billion by 2021 at a CAGR of 17.31%.



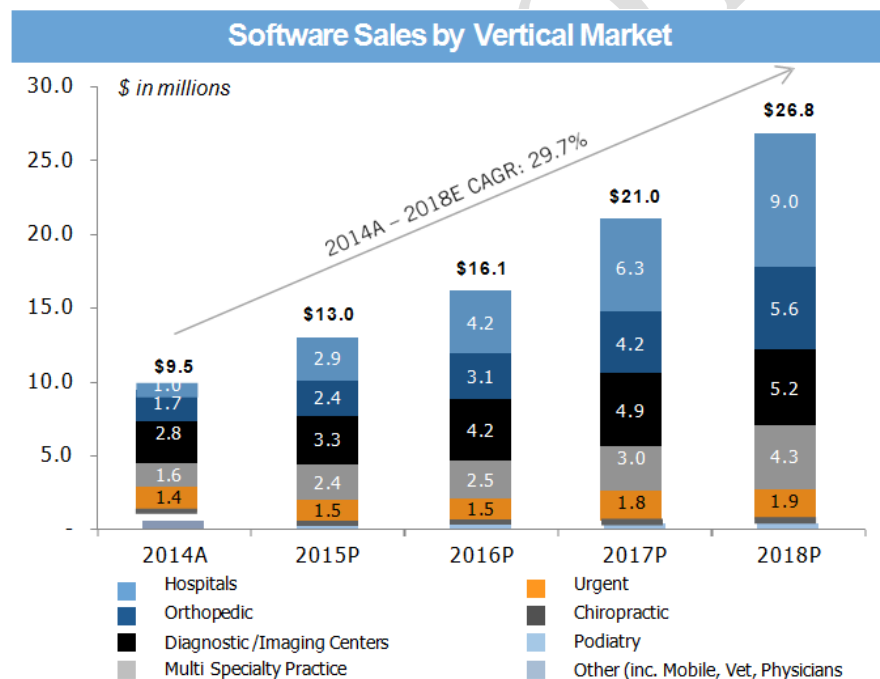
**Figure 2:** US Digital X-Ray Market by Sales

<sup>16</sup> <https://www.mordorintelligence.com/industry-reports/north-america-digital-x-ray-market-industry>



**Figure 3: US Digital X-Ray Market by Segment<sup>17</sup>**










## Exhibit H: Viztek's Software Sales by Market Segments, in 2014



<sup>17</sup> Source: MarketsandMarkets



## Exhibit I: Viztek Selected Product Offerings, in 2014

Viztek Selected Product Offering		
<b>U-Arm DR</b>  <ul style="list-style-type: none"> <li>■ Superior image quality allows for greater visualization of soft tissue and bones</li> <li>■ User-friendly controls that operate dual speed motorized movements</li> </ul>	<b>Straight Arm DR</b>  <ul style="list-style-type: none"> <li>■ 17" x 17" detector for superior image quality</li> <li>■ Manual swivel arm design allows for viewing flexibility, including wheelchair and table work views</li> </ul>	<b>Dual Detector DR</b>  <ul style="list-style-type: none"> <li>■ Integrated system featuring high-frequency generator, radiographic table, wall bucky and overhead tube crane (OTC)</li> <li>■ Ceiling suspension features auto-tracking and auto-positioning</li> </ul>
<b>Ultra U-Arm DR</b>  <ul style="list-style-type: none"> <li>■ State-of-the-art functionality for superior digital imaging</li> <li>■ Features a motorized swivel arm, detector cabinet, convenient table-side controls and a mobile patient table</li> </ul>	<b>Platinum DR</b>  <ul style="list-style-type: none"> <li>■ Can be utilized for both Digital Radiography and Dynamic Fluoroscopy</li> <li>■ Provides X-ray images within 5 seconds of acquisition and fluoroscopy images with up to 30 frames/second</li> </ul>	<b>OTC</b>  <ul style="list-style-type: none"> <li>■ Viztek's OTC room is customizable with overhead tube crane (OTC), upright stand and elevating table</li> <li>■ Features high throughput and versatile handling for a range of radiology testing needs</li> </ul>
<b>Portable and Mobile Solutions</b>  <ul style="list-style-type: none"> <li>■ Versatile DR system that offers images within seconds and fits easily into smaller X-ray rooms or vehicles</li> <li>■ Provides for window-level imaging and image preview</li> </ul>	<b>ViZion DR and DR+ Detectors</b>  <ul style="list-style-type: none"> <li>■ Outstanding image quality in a variety of configurations to fit each radiologist's needs</li> <li>■ Features Gadolinium technology, image capture, manipulation and sending, with a wireless option</li> </ul>	<b>Wireless Solutions</b>  <ul style="list-style-type: none"> <li>■ Features Cesium or Gadolinium technology, superior image quality and speedy throughput</li> <li>■ Available in cassette sized wireless and 17"x17" fixed panel configuration</li> </ul>

PACS software solutions included the following:

- Onyx-RAD
- Opal PACS Suite
  - Opal-RAD
  - Opal-CHIRO
  - Opal-ORTHO
  - Opal-MP
  - Opal-RIS
  - Opal-CAD
  - Opal-BILLING
  - Opal-WS Mini PACS
- Web-based PACS
- Cloud-Based PACS
- PikoPACS
- Exa PACS (Enterprise PACS) platform: an entirely Web-based, zero footprint, integrated radiology software platform offering superior speed and workflow efficiency utilizing a single database residing on-site or on the cloud.

## Exhibit J: Viztek's Main Milestones

2001	<b>Introduces the Orex CR system</b> , the first desktop CR product on the market.
2003	The <b>US military</b> selects Orex as its CR solution in battlefield situations
2006	<b>Introduces the Opal PACS product</b> suite, a pioneering Web-based healthcare IT platform with value pricing aimed at small hospitals and imaging centers
2007	Initiates entry into the low end of the chiropractic and podiatric markets via the <b>acquisition of Reina Digital Imaging</b> , which the company renames as 20/20 Imaging
2008	Enters the DR market and introduces the <b>Viztek U-Arm</b> . The <b>DR system</b> featured an integrated flat-panel detector in a U-arm configuration, designed to streamline patient positioning and workflow
2011	Launches new <b>portable DR panel</b> in partnership with Samsung Mobile Display. Offers a low-cost, high-quality means to upgrade to digital or to phase out older digital solutions
2012	Expands DR portfolio with introduction of the <b>Viztek Straight-Arm</b> . The product is ideal for medical settings that require a low cost and space-saving solution with no reduction in quality
2013	Introduces <b>iRay wireless DR detector</b> , a low-cost panel manufactured in China. To-date sales have exceeded 1,200 units
2014	Introduces <b>Exa PACS</b> , the first truly integrated digital radiography IT solution on the market
2015	Introduces the <b>Basic U-Arm Digital X-ray System</b> . The product is introduced at an affordable entry point for many facilities <b>Acquisition by Konica Minolta Medical Imaging</b>

