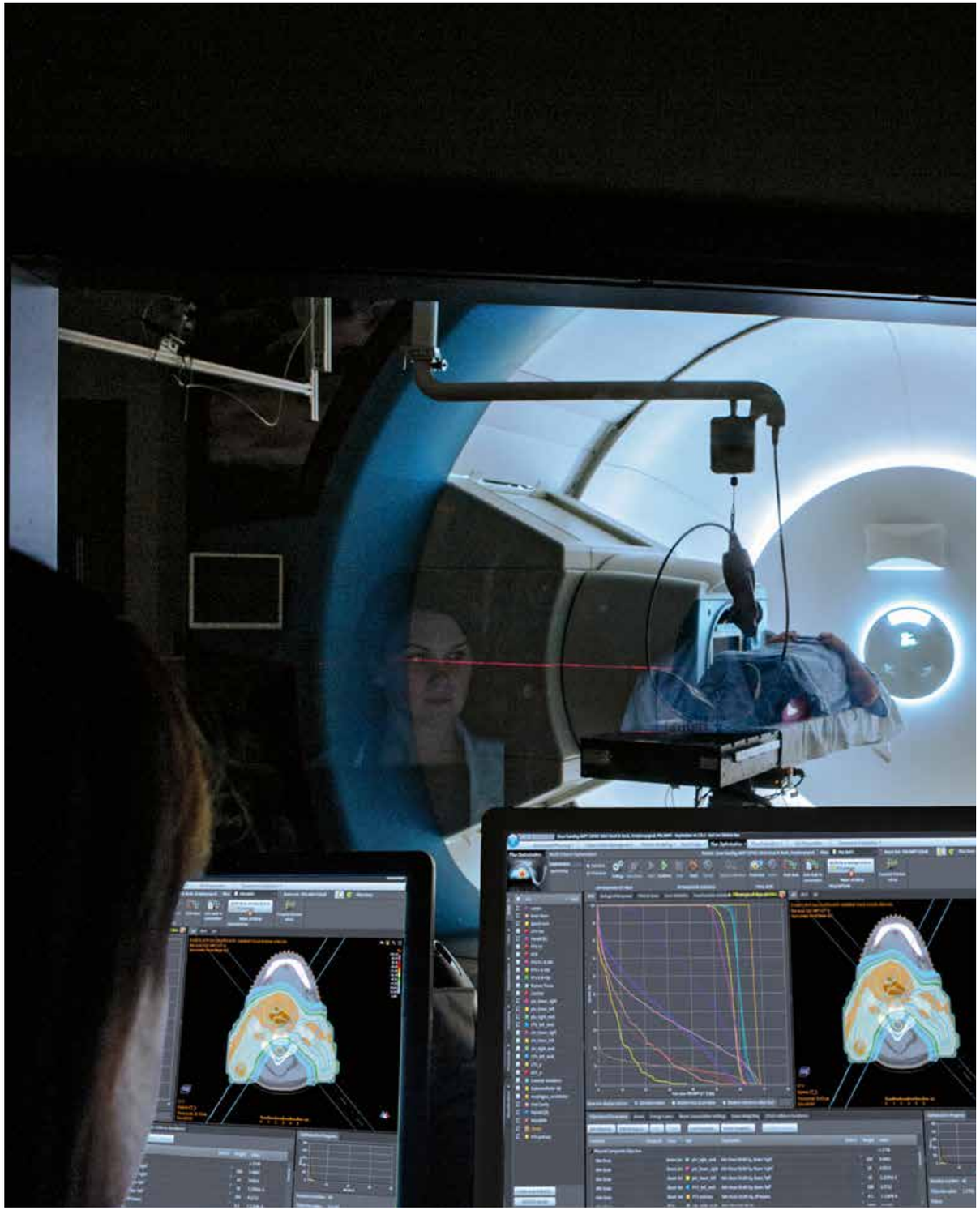
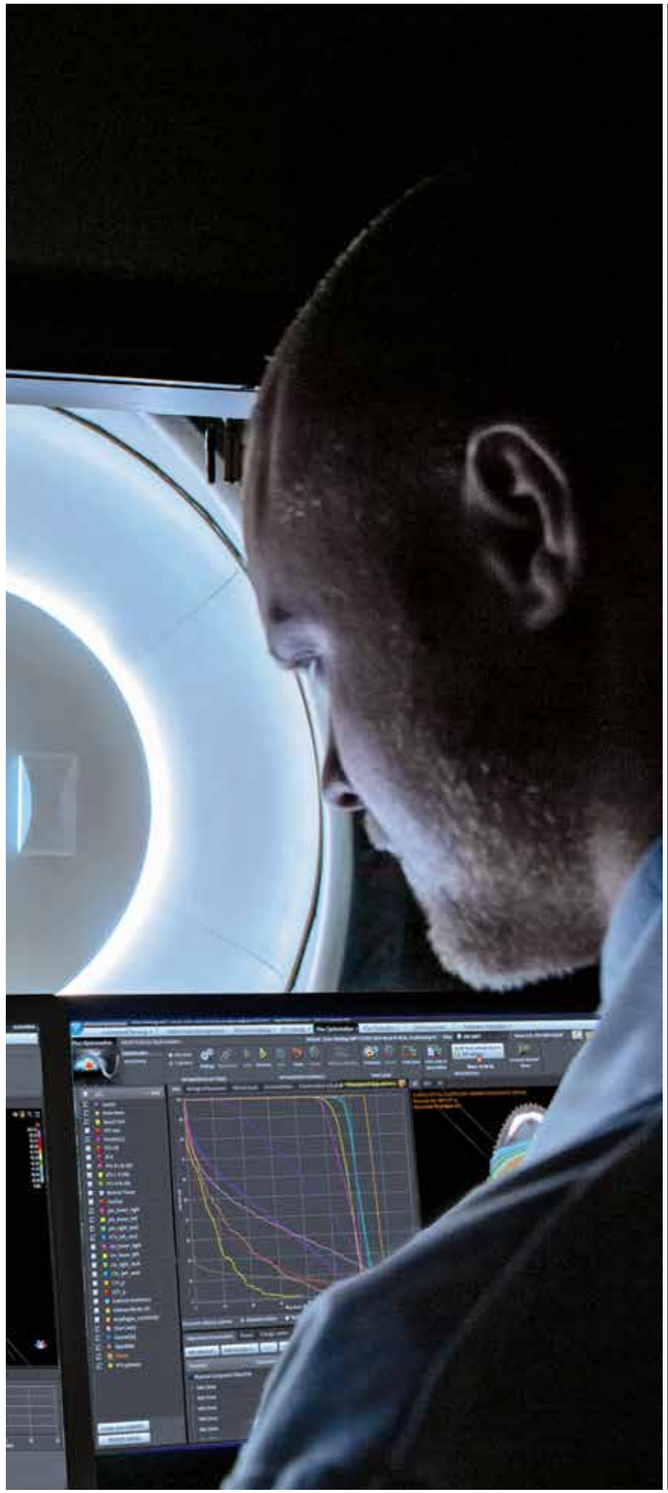
RAYSEARCH/REVIEW/15

ADVANCING CANCER TREATMENT





CONTENTS

BUILDING A WORLD-LEADING BRAND. IN 15 YEARS.

IN 2015, RAYSEARCH CELEBRATES 15 YEARS OF OPERATION. DURING THIS PERIOD A DRAMATIC CHANGE HAS OCCURRED IN RADIATION THERAPY – THE SHIFT IN FOCUS FROM HARDWARE TO SOFTWARE. RAYSEARCH IS AN ENGINE IN THIS TRANSFORMATION, CONTINUING AT ACCELERATED SPEED.

To understand the significance of the change in focus from hardware to software, you need to appreciate the story of RaySearch. Here it is, as told by Johan Löf, the founder and CEO of the company. The success of a company is, of course, not a one-man effort. But he is clearly the man who has set the scene, laid out the visions and leads the way forward.

JOHAN LÖF,
FOUNDER & CEO
RAYSEARCH

THE EMBRYO

–The story of RaySearch really began back in 1994. I was finalizing my studies in Engineering Physics at the Royal Institute of Technology in Stockholm and was considering what subject to choose for my master's thesis. Since I had an interest in medical physics, I contacted the Karolinska Institute and they suggested a subject that immediately caught my interest. The challenge was: 'How do you design a radiation beam for a tumor when the tumor's exact position is uncertain?'

–In retrospect, the scope of the assignment was quite challenging for me as a student. I had to develop new algorithms and I also had to write a lot of software code in the process of finding a solution. I worked hard on it for some time and can still remember how thrilled I was when I finally succeeded.

–By then I was firmly captivated by the subject! But I also realized immediately that this was just the start of a long journey. My solution was only applicable to a very simplified model of a patient. The next step seemed obvious – I wanted to go further with my mathematical models for the optimization of radiation therapy in real-life situations. So I decided to continue the work as a PhD student at the Department of Medical Radiation Physics at the world-leading Department of Oncology-Pathology at the Karolinska Institute. The department became more or less my home for several years. Another PhD student, Anders Liander, joined me and during long days and nights we developed the software platform that later became the commercial foundation for RaySearch. I also remember that I began to explore ways to continuously adapt the radiation beams during the treatment course to account for positioning uncertainties. I called the approach 'an adaptive control algorithm' and presented it at a conference in Vienna in 1996. Looking back, I think that this was one of the very first contributions to the field of adaptive radiaton therapy and it's very exciting that this is becoming a clinical reality today.

THE BIRTH OF THE COMPANY

– At the end of my PhD studies my supervisor Professor Anders Brahme drew my attention to the business plan contest Venture Cup. The purpose of Venture Cup is to encourage university-based scientists to turn their research results into business opportunities. I decided to participate and jotted down a business idea on a single page. Over the year that the contest lasted the business idea envolved into a full-blown business plan. We came third in the final, but that was not the end of the world. More important I had a very good business plan in my hand and I had gained a lot of knowledge about how to commercialize innovations.

–So in 2000 I decided to start a company based on the scientific knowledge I had acquired during my years as a PhD student at the Karolinska Institute, and the commercial insights gained from the business plan contest. I managed to attract some highly experienced members to the Board of Directors. I was also successful in raising capital. We only needed SEK six million and secured that from a local Swedish venture capital firm after negotiating with several interested venture capitalists.

–That year was extremely hectic. I finalized my Ph.D. thesis and my first child was born. Anders Lianders had left Karolinska to work for a company but I asked him to join

RaySearch and he has been with the company ever since. Today he is a major shareholder and also the Chief Technical Officer of our company. We worked extremely hard on developing the software platform. And only two months after starting the company, we got our first commercial partner!

– At that time Philips was a major supplier of treatment planning systems. The market for planning systems for IMRT (intensity-modulated radiation therapy) was taking off rapidly in the US because of a new reimbursement policy, and they didn't have the capacity to develop a solution for optimizing IMRT treatments themselves. For several years they had maintained a research collaboration with the Department of Medical Radiation Physics at the Karolinska Institute so they were well acquainted with my algorithms and software in this area. So when they needed a rapid solution they turned to us. The timing was perfect and we signed a license agreement for our IMRT optimization module to be integrated into their treatment planning system. We hired more people, started our focused work, and before the summer of 2001 the first 131 systems were delivered to clinics! This may sound like a Herculean effort, and it certainly was. But it is also fair to say that we had a head start since so much of our groundwork was already done.

– Ever since that summer, RaySearch has been profitable, and we have consistently managed to finance our rapid expansion with a strong cash flow from our operating activities. Our healthy financial position has been crucial to our continuing success, as it has enabled us to independently undertake long-term development projects with high potential, without having to compromise due to short-term needs.

ALGORITHMS FROM JOHAN LÖF'S THESIS THAT HAVE BEEN IMPLEMENTED IN RAYSEARCH'S SOFTWARE

THE (R)EVOLUTION

– Our contract with Philips was exclusive for the first four years. After that period we were allowed to enter into similar agreements with other commercial partners. We entered into several more partnerships and that gave our partners access to our expertise and offered them solutions that they were unable to develop themselves. We acted as their technology supplier and developed advanced module-based solutions. They in return gave us access to a worldwide distribution network. Over 10,000 licensed RaySearch products have been sold in this way. Today our solutions are used at more than 2,500 clinics in over 65 countries.

–In addition to our commercial partnerships, which involved little contact with the end-users, we conducted advanced research projects with leading scientific institutions and clinical users worldwide. These projects gave us deep insight into the challenges of cancer therapy. And it soon became clear to us that the partner-based business model was problematic, as we were not able to fully leverage our know-how and our technology platform. We were ahead of our partners and they were not ready to integrate more technology from us. We could not get our innovative solutions and treatment methods out to the clinics and we were not in control of our own destiny as a company.

–We therefore decided to develop our own treatment planning system that we could sell directly to the clinics. We branded it RayStation. It was a thrilling decision to make, but a very natural one. We already had most of the building blocks for a complete system. In fact, the most advanced modules were already in place. Our job was mainly directed at creating modules for patient modeling and conventional treatments, and integrating all the bits and pieces into a comprehensive and attractive package. We also created our own design and user interface, which is now becoming more or less an industry standard.

–Our first RayStation order was a real breakthrough. We signed an agreement with WPE (Westdeutsches Protonentherapie-zentrum Essen) in Germany in 2009. They selected us to supply the most advanced solution on the market with the most modern tools and algorithms for dose calculation and optimization that would fully leverage the potential of proton therapy. Their demands were incredibly high but in the end that was good for us as we had to develop the most advanced treatment planning system on the market.

– Another early success was our collaboration with MGH (Massachusetts General Hospital in Boston). Initially we developed our tool for Multi-Criteria Optimization together. They also became our first US customer and purchased eight systems in 2010. Today they have 28. I must also mention PMH (Princess Margaret Hospital in Toronto, Canada). Together with this world-leading cancer center we have developed state-of-the-art modules for adaptive therapy. These tools are now instrumental to enable adaptive therapy in clinical practice. The problem from my master's thesis in 1994 is finally being addressed for real. This feels incredibly rewarding as I firmly believe that adaptive therapy is the next big step in the evolution of radiation therapy and has the potential to improve cancer care significantly.

THE FULL-GROWN SYSTEM

– The first complete version of RayStation was released at the beginning of 2012. You can read more about its unique features on the following pages of this Review. Let me just point out some highlights. The system supports all treatment modalities and is much faster and easier to use than the other systems on the market. It contains a wide range of tools to automate tedious tasks and has unique features like Multi-Criteria Optimization that let's the physician take a much more active role in the planning process. The system is also built for the needs of tomorrow and incorporates full support for adaptive radiation therapy. New and improved tools are added at least once a year as new versions of RayStation are introduced. These frequent upgrades enable RayStation to stay at the cutting edge in terms of both technology and usability.

– Dealing directly with end-customers has imposed new demands on RaySearch. As a result, we are adapting our organization step by step. We cover the global market with a combination of our own sales offices and distributors. And our customer service is constantly being extended to match the rising number of users. The demand is increasing at a high pace and we have doubled our customer base every year since the introduction of RayStation. By the end of 2014, 198 clinics worldwide had selected RayStation as their treatment planning system. But this is just the start. There are some 8,000 clinics in the world and our firm objective is to gain a substaintial market share over the coming years.

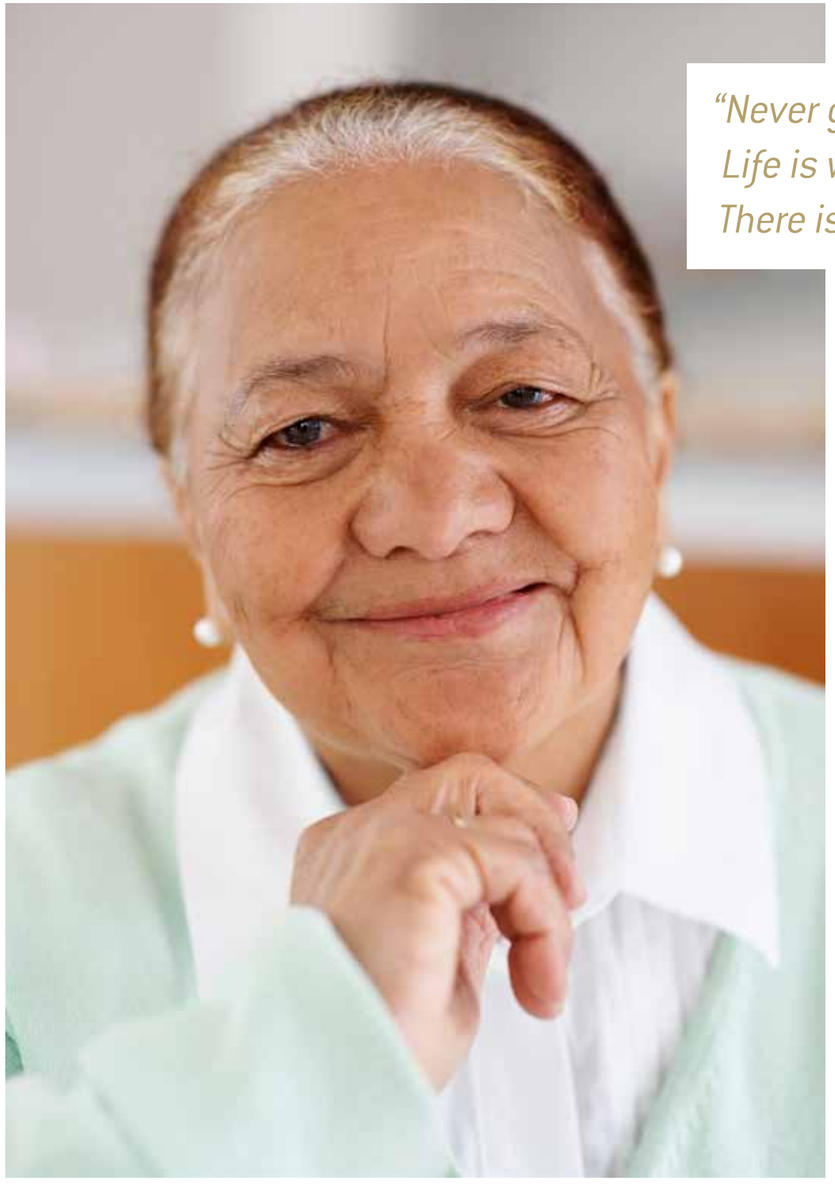
JOHAN LÖF AND ANDERS LIANDER, THE TWO ORIGINAL TEAM MEMBERS OF RAYSEARCH.

"Our goal is ambitious, I say that with pride. Today RayStation is already the brand for hospitals and clinics that want to stay at the forefront of cancer therapy. Our belief is that most of the world's cancer treatment facilities have an ambition to reach this position. RayStation is their key to success."

IMPROVING THE 2/3 RATIO

EVERY YEAR, MORE THAN 14 MILLION NEW CANCER CASES ARE DIAGNOSED WORLDWIDE. THE NUMBER IS INCREASING AND EXPECTED TO PASS THE 20 MILLION LEVEL BEFORE 2030. THE FIGHT AGAINST CANCER WILL REMAIN ONE OF THE GREATEST CHALLENGES FACING MEDICAL SCIENCE FOR THE FORESEEABLE FUTURE.

At present, more than eight million cancer sufferers die each year. This accounts for more than 13 percent of all registered deaths worldwide. The total is expected to go on rising, but at a lower rate than the increase in new cases of cancer. In other words, the prediction is that the fight against cancer will, step by step, become more successful.



"Never give up.
Life is worth living.
There is life after cancer."

NEARLY TWO OUT OF THREE SURVIVE

The 'war against cancer' really began in the 1970s in the United States when President Nixon signed the National Cancer Act. At that time, only 40 percent of cancer patients survived. The corresponding figure today is about 60 percent, and the trend is still upward. This significant improvement is due to a series of decisive developments in cancer treatment.

MOVING THE FRONT LINE FORWARD

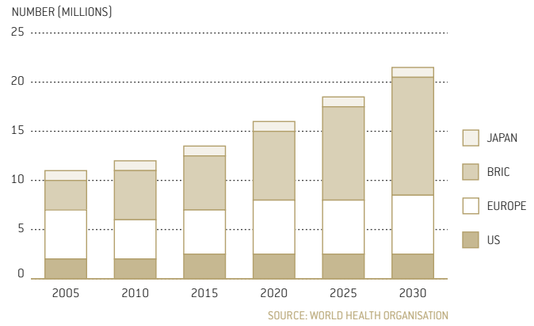
Basically, there has been a rapid increase in allocation of resources to healthcare. Today healthcare is one of the major items of expenditure for most developed countries. Preventive healthcare has also become a major concern. Early detection of cancer means a much higher chance of successful cure. Imaging technologies such as ultrasound, CT and MRI scans have played an important role in this process.

ENTER RADIATION THERAPY

One of the most important factors in improving the cancer survival rate was the introduction of radiation therapy some 40 years ago. The gradual but escalating introduction of linacs (linear accelerator radiation machines) has added a new dimension to cancer treatment. Another important milestone was the development of the multi-leaf collimator to protect surrounding healthy tissues from damage. This has been improved rapidly since its inception and is nowadays crucial for more advanced radiation therapies such as IMRT (intensity-modulated radiation therapy).

Currently some 8,000 clinics and hospitals around the world administer radiation therapy. However, its penetration differs substantially between geographical areas. In North America, which is at the leading edge of development in the field, 60 percent of all cancer patients are treated with radiation therapy. The level in Europe varies between 30 and 50 percent depending on the country. But in Japan only 25 percent of patients are currently treated.

NEW CASES OF CANCER, WORLDWIDE 2005–2030



SOURCE: WORLD HEALTH ORGANISATION

OF ALL PATIENTS **50%** ARE TREATED WITH RADIATION THERAPY → AT ONLY **10%** OF TOTAL COST

Radiation therapy is a cost-efficient method for treating cancer. Compilations show that radiation therapy accounts for less than 10 percent of the costs associated with the fight against cancer. In contrast nearly half of all cancer patients are now treated with this method.

THE SOFTWARE BREAKTHROUGH

The development of treatment machines has reached a point where the introduction of new hardware has very limited impact on treatment quality. Fighting cancer more effectively is increasingly becoming a software challenge. The key to success is to plan radiation treatments in a more precise, accurate and adaptive way to suit each patient as precisely as possible. That is the best way to increase the success rate of radiation therapy.

This is also where RaySearch comes into the picture. The introduction of RayStation has established a new generation of treatment planning systems and a completely new way of working for hospitals and clinics. RayStation is based on state-of-the-art software architecture and relies upon pioneering algorithms. The extremely user-friendly handling of the system makes it faster and considerably easier to create radiation treatments of outstanding quality.

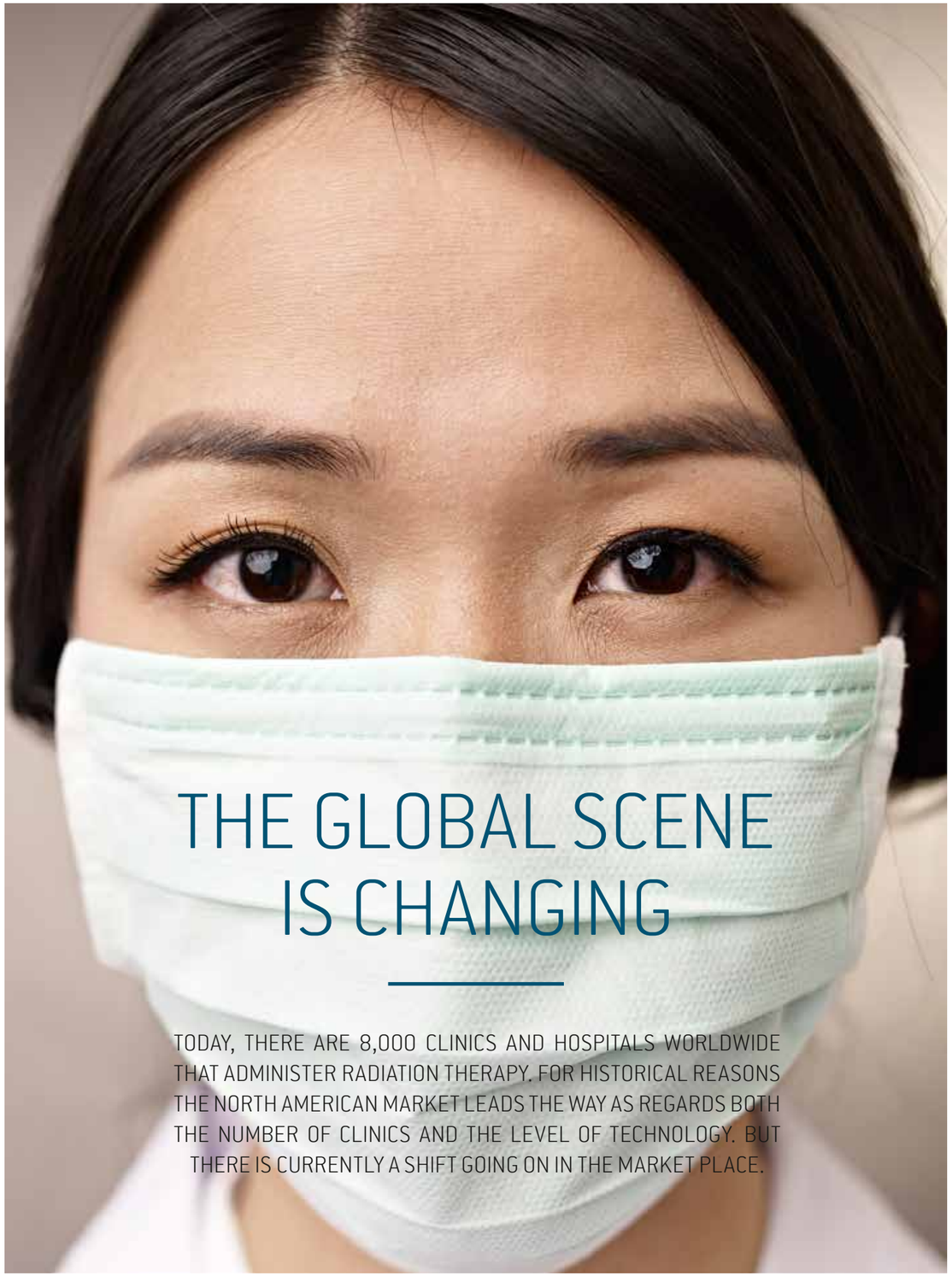
Step by step, radiation therapy methods are becoming increasingly advanced and accurate. The traditional 3D-CRT (3-dimensional conformal radiation therapy) which was introduced about 20 years ago is still the most common treatment technique. But new techniques like IMRT and VMAT (volumetric modulated arc therapy) are quickly gaining ground. RayStation can be used with all types of radiation equipment and for all types of radiation therapy. The system has also been developed from the outset for 4D adaptive radiation therapy, which takes account of the changing shape of tumors over time and is expected to be the next major advance in the field.

THE EMERGING CHALLENGE

While the mortality rate for most types of cancer is falling in most western countries, it is likely to rise in emerging economies which account for a major part of world population. This is basically due to the adoption of unhealthy western lifestyles. From a global perspective, therefore, it is fair to say that the fight for cancer is still in its infancy.

"RayStation has been used in our hospital for about a year, and we have mastered the technology of the system. It integrates all RaySearch's advanced treatment planning solutions into one flexible system. Unique features such as Multi-Criteria Optimization are combined with full support for 4D adaptive radiation therapy. RayStation also includes functionality for IMRT and VMAT optimization. The system is built on the latest software architecture and has a graphical user interface offering state-of-the-art usability."

DR. MING CHEN, ZHEJIANG CANCER HOSPITAL, HANGZHOU, CHINA



THE GLOBAL SCENE IS CHANGING

TODAY, THERE ARE 8,000 CLINICS AND HOSPITALS WORLDWIDE THAT ADMINISTER RADIATION THERAPY. FOR HISTORICAL REASONS THE NORTH AMERICAN MARKET LEADS THE WAY AS REGARDS BOTH THE NUMBER OF CLINICS AND THE LEVEL OF TECHNOLOGY. BUT THERE IS CURRENTLY A SHIFT GOING ON IN THE MARKET PLACE.

During 2014, the market for radiation hardware and software remained strong in North America, which is still the high-end market in this business. The European market continues to be steady with a strong trend towards improving efficiency. RayStation is well positioned in this respect and as a result more than doubled its sales in Europe in 2014.

A SHIFT OF FOCUS

Asia is in many ways the most interesting geographical market for radiation therapy. 60 percent of the world population lives in Asia, yet only 30 percent of all linacs are located there. This present lack of capacity combined with the current rapid expansion of healthcare systems is an indicator of sharp growth in the field of cancer treatment.

The available figures confirm this. The global market for radiation therapy equipment grew by 7.3 percent annually during the period 2004–2011. The continued growth up to 2018 is expected to be in the region of 9 percent annually.

14%

ANNUAL INCREASE FORECAST FOR THE PERIOD 2011–2018 IN CHINA. THAT IS DOUBLE THE GROWTH RATE EXPECTED FOR THE US.

A closer look indicates that Asia – and China in particular – is the engine for the rapid global growth in cancer therapy. China is currently the world's second-largest market in this area. Growth during 2004–2011 reached 12.6 percent annually and the forecast for the period 2011–2018 indicates an annual increase of a full 14 percent in China. That is double the growth rate expected for the US.

THE CHINESE MEDICAL REVOLUTION

The World Health Organization recommends that there should be four radiation machines for every one million inhabitants in a country. The US far exceeds this figure with eleven machines per million people.

In most Asian countries, the figure is substantially lower than the WHO recommendation. China, for example, has less than one machine per million inhabitants. But the scene is changing rapidly. The country is currently focusing on expanding its healthcare resources heavily. Extended and improved cancer treatment plays a key role in this giant project. In the nine years up to 2020, the number of clinics is targeted to rise from 1,300 to 3,300.

There is a direct correlation between sales of linacs and sales of treatment planning systems. This is reflected in the fact that sales of RayStation in China increased approximately 300 percent in 2014. Since the build-up of China's resources for cancer treatment is progressing according to the long-term plan, prospects for the coming years look very bright.

A NEW MARKET OPPORTUNITY FOR RAYSTATION

The rapid build-up of linac capacity in China has triggered local manufacturers to enter the linac business to take advantage of the emerging business opportunity and to cope with growing demand. Several Chinese companies are now producing and selling linacs for the lower and mid-market segments in China. These linacs are competitively priced compared with the 'Big 2' linac suppliers but still offer functions that are technically competitive.

The changing market dynamics create a very interesting market opportunity for an independent software vendor like RaySearch. If the capabilities of the linacs from these new hardware manufacturers are to be fully utilized, they need to be supported by innovative and efficient software such as RayStation. This combination has a large potential to compete with the bundled offerings from the incumbent players: both in Asia now, and over time in more evolved markets.

STRONG ASIAN POSITION

Asia in general is a priority market for RaySearch. In Japan, RaySearch started a dsitribution partnership with Hitachi Medical Corporation during 2014. This collaboration has worked out according to plan and more than ten Japanese clinics bought RayStation during the first year of the partnership.

In South Korea, the plan for a large national extension of cancer therapy is expected to be realized during the next few years. RaySearch is well positioned to take advantage of this.

In Thailand, RayStation has recently established a partnership with a local distributor. The first RayStation systems were sold to a Thai clinic at the end of 2014. In Australia the existing distributor partnership was consolidated during 2014.

India is an emerging market for RayStation. Following the trend in China, local manufacturers of linacs are emerging. As in China, this provides an opportunity for RaySearch to introduce RayStation. A natural step in this direction is to establish a solid distributor partnership.

ESTABLISHING AN ASIAN HUB

There is also a lot of current activity in Asia in the area of particle-beam radiation therapy using protons or carbon ions. This calls for RaySearch to work in close partnership with the equipment manufacturers to develop new and better solutions.

All in all, RaySearch requires extended resources in Asia to meet existing and expected future demand. The company is therefore building an Asian hub of competence in Singapore, similar to its existing American and European hubs. The global success of RayStation means that we have to come closer geographically to our customers.

DID YOU KNOW...?

... THAT RAYSEARCH'S IMRT SOLUTION IS THE MOST USED WORLDWIDE

AMERICAS
86
Dec. 2013: 33
Dec. 2012: 19

+

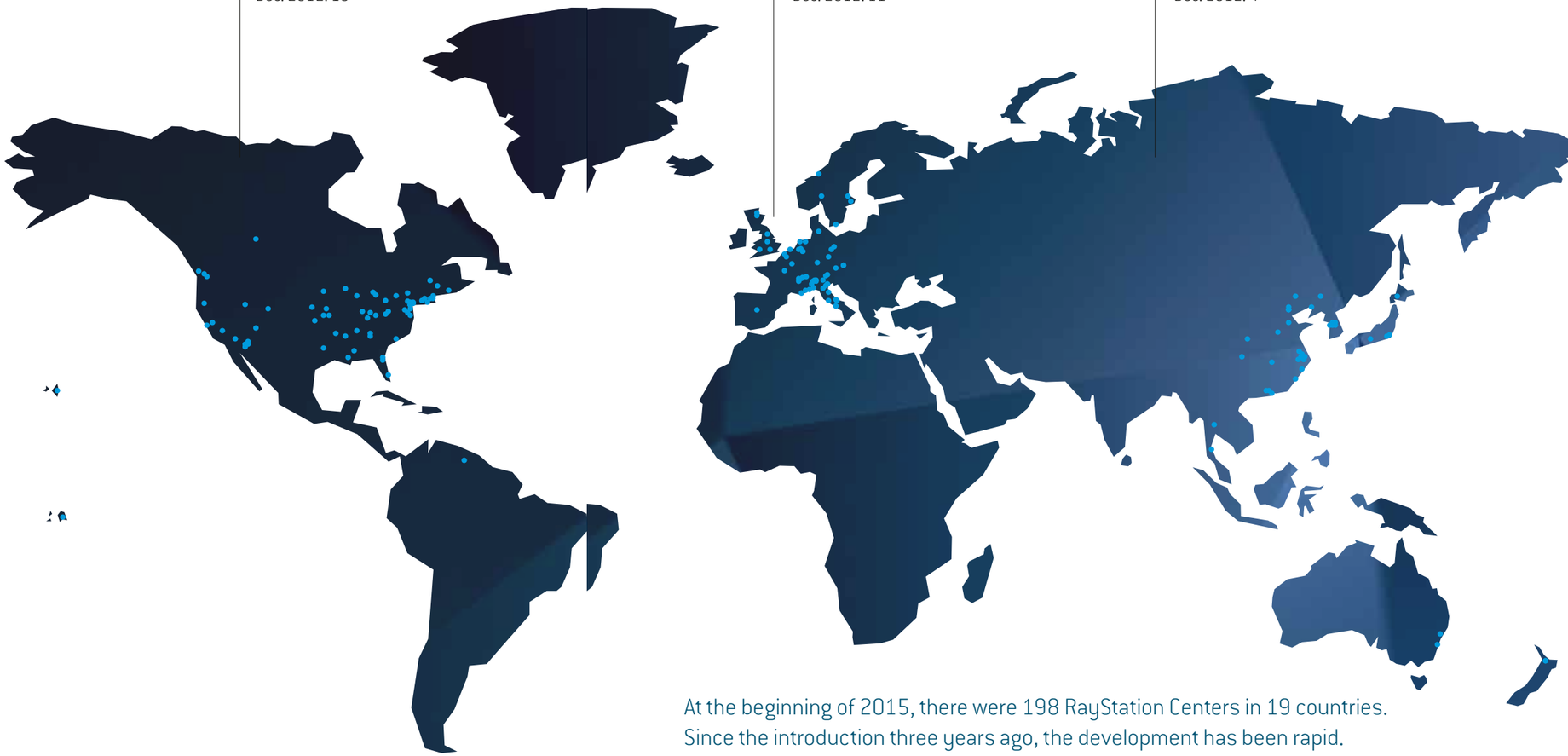
EUROPE
61
Dec. 2013: 28
Dec. 2012: 11

+

ASIA
51
Dec. 2013: 15
Dec. 2012: 4

=

198



At the beginning of 2015, there were 198 RayStation Centers in 19 countries. Since the introduction three years ago, the development has been rapid. The customer base has more than doubled every year. Overall, more than 10,000 licenced RaySearch products have been sold since the company was established in 2000. Today, they are used in more than 2,500 clinics in over 65 countries.

THE WOW! FACTOR

EXPERIENCING THE TRUE ADVANTAGES OF THE RAYSTATION SYSTEM IS BASED ON ‘SEEING IS BELIEVING’. EVERY TIME WE DEMONSTRATE OUR TREATMENT PLANNING SYSTEM OR A PHYSICIAN SEES IT FOR THE FIRST TIME THE RESPONSE IS THE SAME: ‘WOW, HOW EASY AND FAST IT IS!’

RayStation represents the next generation of treatment planning systems with a dramatically enhanced user experience and ground-breaking features.

TAILORED TO THE USER

RayStation is based on state-of-the-art software architecture. The graphical user interface reflects the latest advances in this area. The extremely user-friendly tools and icons make it faster and considerably easier to create treatment plans of the highest quality. For example, we are the only supplier that provides a simple but important button: UNDO/REDO. The system is based on comprehensive tests and developments carried out in collaboration with professional users to create the intuitive concept that characterizes RayStation.

While older planning systems call for the user to adapt to the system, RayStation takes the opposite approach. It is tailored to the user's needs so as to improve efficiency. All options are cleverly and intelligently organized. Everything is there, one click away.

NO MORE COFFEE BREAKS!

The users can create and compare alternative treatment plans easily and quickly or re-optimize the plan they are working on to achieve better results. With RayStation there is no need to take a long coffee break while the computer works things out. For example, you can create two plans in a few minutes, since optimization and dose computation only take seconds. RayStation is setting new computation speed standards all the time.

The revolutionary Multi-Criteria Optimization (MCO) tool means that it is easy to balance different treatment objectives against each other and find the best trade-off. This allows the oncologist to become more closely involved without spending a lot of time in a tedious trial-and-error process.

DRIVEN BY PATIENT NEEDS, NOT TECHNOLOGY

Of course, RayStation is high-tech. But the basic principle behind the system is to make the complex simple. The whole system is designed to create patient-driven radiation therapy.

RayStation offers large potential to automate critical parts of the treatment planning system. This ensures that all patients with similar needs are treated consistently. Variability is minimized. This saves time for the planner, who can focus his/her know-how, time and effort on the most severe and complex cases that need closer attention. The clinic can utilize its precious specialist resources in the best possible way and all patients get a treatment adapted to their own specific needs.

DESIGNED TO BE THE BEST – TODAY AND IN THE FUTURE

RayStation has been designed and developed from a blank sheet, avoiding the 'patchwork principle' that characterizes older systems revised over many years. We have been able to start from the most modern technology and to build on the opportunity this offers. All functions are integrated into a single system.

Furthermore, RayStation is based on pioneering algorithms that have been tested and refined for over a decade. Not only to cope with current requirements but also to manage future challenges. Treatment techniques are evolving rapidly and RayStation is designed to help advance the frontiers in cancer therapy.

WITH RAYSTATION YOU BENEFIT FROM UNRIVALLED COMPUTATION SPEED THAT CAN RADICALLY TRANSFORM YOUR TREATMENT PLANNING PROCESS.

FOR ALL TYPES OF RADIATION THERAPY

RayStation naturally has algorithms for optimizing both traditional 3D-CRT and new techniques like IMRT and VMAT. Planning of conventional 3D-CRT is time-consuming because finding the right treatment setting involves significant manual work. RayStation offers outstanding opportunities to radically improve this process. When it comes to IMRT and VMAT, RayStation provides state-of-the-art tools to design and optimize treatment plans. Both the planning and the delivery process are speeded up significantly.

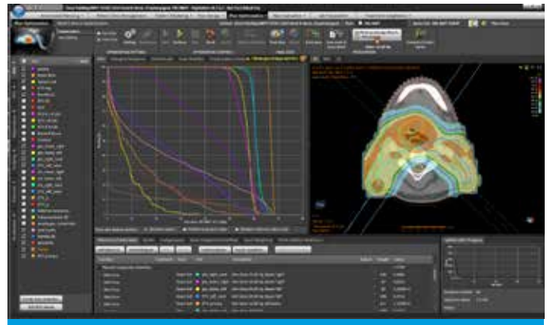
But the system goes further than this. RayStation is also leading the way in proton and carbon-ion therapy. These are the most advanced (and expensive) methods of cancer therapy and RayStation is the key for making proton and carbon treatments successful. We are leading the way in this complex area.

Finally, RayStation offers full support for four-dimensional adaptive radiation therapy. This is the next step in cancer treatment, offering the opportunity for truly tailoring the treatments to the patients' needs every day. To fully explore this area and advance its development, RaySearch is cooperating closely with PMH (Princess Margaret Hospital in Toronto, Canada), the world's leading institution in this area.

ALWAYS AT THE CUTTING EDGE

The first complete version of RayStation was launched in January 2012. New and updated versions are now released once a year. These frequent updates enable RayStation to stay at the cutting edge in terms of both technology and usability.

Working with RayStation means that you know that you have the best. Always.



RAYSTATION KEY FEATURES

- Compatibility with most linacs OIS and third-party QA software.
- Workflow-driven design. User experience is an integral part of our product development.
- Extraordinary speed and accuracy that make planning easier and more effective.
- Robust optimization for all treatment techniques.
- Real-time evaluation of clinical trade-offs with rayNavigator.
- Automatic creation of Fallback Plans for all your machines with rayFallback.
- Flexibility beyond the standard user interface aided by scripting, templates and protocols.
- Advanced particle therapy expertise. RayStation is in use at several proton sites worldwide.
- Cutting-edge technologies such as adaptive therapy and automatic planning.
- Emphasis on partnership, focused on scientific collaboration and training and support of our customers.

"Planning is one of the most important things in radiation oncology, because you want to treat the tumor right, and you don't want to give a high dose to the normal tissue. Multi-Criteria Optimization in RayStation allows us to balance the clinical trade-offs in real time to reach a more personalized treatment plan for the patient."

SANDRINE VAN DE POL, RADIATION ONCOLOGIST, RISO, RADIOTHERAPIEGROEP,
DEVENTER, THE NETHERLANDS

MEET THE RAYSTATION FAMILY

THE NUMBER OF CUSTOMERS AND USERS OF RAYSTATION IS RISING STEADILY. BY THE END OF 2014, 198 CLINICS HAD CHOSEN RAYSTATION, AND THE NUMBER OF USERS IS EXPANDING RAPIDLY. YOU COULD SAY THAT THERE IS A 'RAYSTATION FAMILY' NOW EMERGING ALL OVER THE WORLD.

THE RAYSTATION TRAINING SESSIONS IMPROVE USER SKILLS. THEY ARE ALSO IMPORTANT TO ESTABLISH PERSONAL NETWORKS OF COLLEAGUES.

All the professionals using RayStation – comprising medical physicists, dosimetrists and oncologists – have two things in common: they are dedicated to getting the best outcome for their patients, and they have chosen an advanced treatment planning system to help them in that mission. Their challenge is to make optimum use of the inherent opportunities of the RayStation system. At RaySearch we do everything we can to help them accomplish this.

OUTSTANDING SUPPORT TO MATCH AN OUTSTANDING SYSTEM

In parallel with the technical development of RayStation, the company has been working systematically to develop its support facilities.

RayStation is a leading-edge product. It is a new-generation system that takes treatment planning to new levels. This must also involve developing the skills of users so that they can take full advantage of the system's inherent opportunities.

GETTING TO KNOW RAYSTATION

When a clinic is considering implementing RayStation we are happy to demonstrate how the system can make a difference to the way they conduct cancer therapy. Our promise is that the user-friendly tools of RayStation will make it both faster and considerably easier to create radiation treatments of the highest quality. Seeing is believing. Therefore a demonstration of its increased efficiency is by far the best way to become acquainted with RayStation.

GOING CLINICAL

Once a sale is closed we do everything to make the transition to RayStation as smooth and convenient as possible. This covers both technology issues and making users comfortable working with RayStation (which is usually the easy part!). We assist with the installation. And we conduct the necessary training, either on site at the customer's premises or in our own offices.

Later in the process, we also conduct advanced training sessions for dedicated users who want to improve their capabilities further. Our offices in Stockholm have the capacity to offer training to up to 20 users at the same time. A training session in our specially designed premises can also help users to meet other RayStation users, share their experiences and build a personal network of colleagues that can be of importance in their continuing day-to-day work.

SUPPORT WHENEVER NEEDED

RayStation is now entering its fourth year on the market. During this period, new versions of the system have been released at six- to nine-month intervals. At the same time our support capabilities have been expanded at a fast pace. Today, we have 25 dedicated RayStation support specialists working from our offices worldwide and the number is increasing rapidly. They are always at hand to offer help when users are facing a tricky problem or simply want some advice.

It would be true to say that our support is a built-in feature of our software.

A DEDICATED TEAM OF EXPERTS

Each customer is provided with a dedicated RayStation Support Team consisting of three experts: an application engineer, a physicist and an IT engineer. Depending on the type of question, our customers are always connected to the appropriate specialist. They can be contacted by e-mail or phone, whichever is more convenient. In our experience, American customers prefer phone, while European customers usually contact us via e mail. We're happy with both.

We can usually come to conclusions just by talking to each other and communicating online. Very often we are not so much solving problems as guiding our customers to take advantage of the full potential of RayStation. This is the small world of RayStation.

WELCOME TO THE RAYSTATION COMMUNITY!

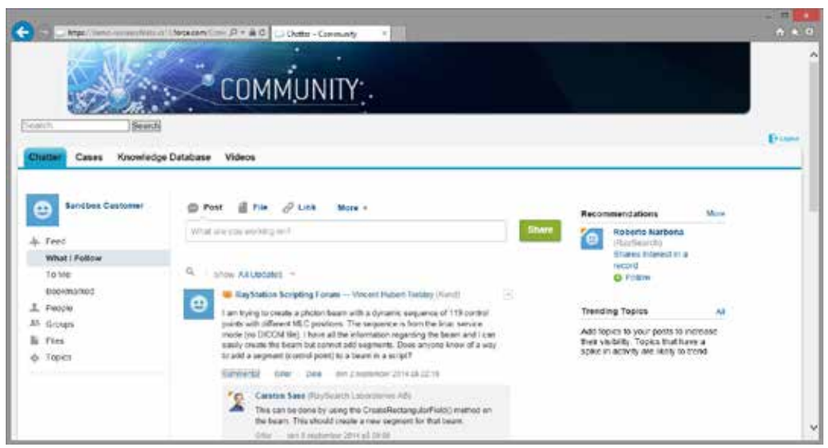
The bigger world of RayStation is that all users are automatically linked to our RayStation Community website. There they can liaise and communicate not only with our RayStation specialists but also with other users of RayStation worldwide.

This 'users club' is becoming an increasingly important feature of RayStation. The system provides so many capabilities that not even our RayStation specialists can possibly grasp them all. But the users, who live and work with the system every day, are constantly discovering shortcuts and ways to improve their use of RayStation. They are happy to share their findings with other professionals – and to be rewarded with similar benefits from time to time.

Everyone is playing in the same team in the fight against cancer.

A FAST PACE

RayStation is growing rapidly. But it is more than a treatment planning system. One of its key advantages is the new and rapidly expanding breed of users. These early adopters are the true frontrunners who are advancing cancer therapy. It is their skills and their creative use of RayStation that are the future of cancer treatment. The faster this group expands, the faster we will see the optimization of existing resources to treat cancer patients.



THROUGH THE RAYSTATION COMMUNITY USERS WORLDWIDE CAN LIAISE AND COMMUNICATE WITH OTHER USERS AND THE RAYSEARCH SPECIALISTS.

"The implementation of RayStation at our facility has transformed our approach to treatment planning. Cutting-edge functionalities within the system allow us to tailor treatment plans for individualized therapy and to easily adapt to changes in patient anatomy as required."

BON MZENDA, CHIEF PHYSICIST,
AUCKLAND RADIATION ONCOLOGY, AUCKLAND, NEW ZEALAND

THE STOCKHOLM HUB

IT IS NO COINCIDENCE THAT RAYSEARCH'S HEADQUARTERS ARE LOCATED IN STOCKHOLM, SWEDEN. THIS IS THE HOME CITY OF THE NOBEL PRIZE, WHICH EVERY YEAR HONORS OUTSTANDING SCIENTIFIC ACHIEVEMENTS. BUT STOCKHOLM IS ALSO THE CRADLE OF MODERN CANCER TREATMENT.

Back in the 1960s the Stockholm area was already emerging as a melting pot for close collaboration between innovators, university hospitals and the healthcare industry. This led to a steady stream of innovation in radiation therapy.

A GIANT STEP FORWARD

Some 20 years later, at the Karolinska Institute, Professor Anders Brahme laid the foundation for taking cancer treatment into the 21st century as he initiated the development of IMRT with scanned beams and multi-leaf collimators.

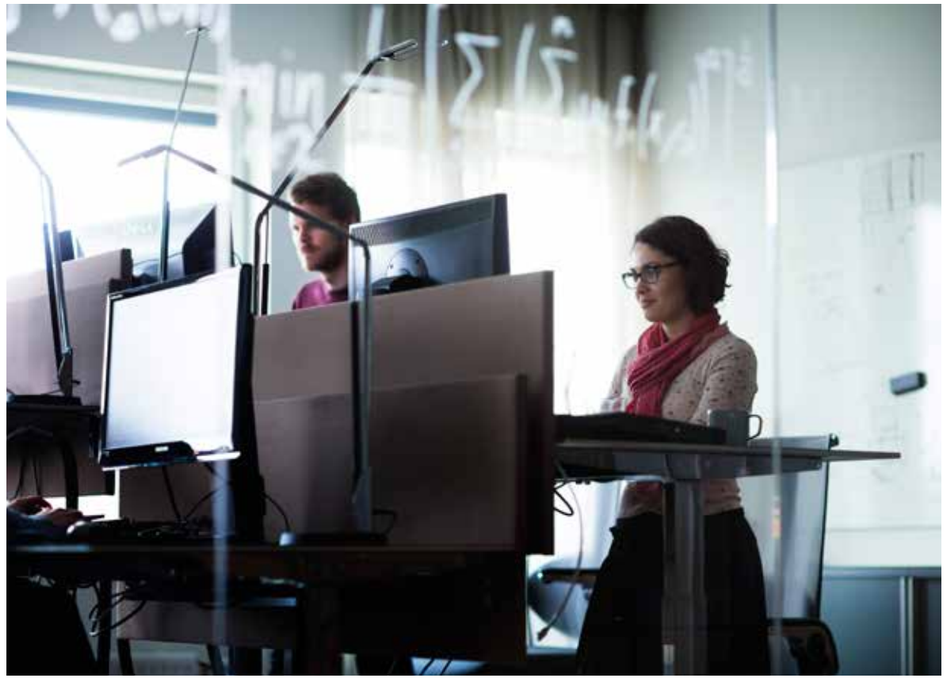
More important for our story, Anders Brahme created the pioneering basic algorithms that were further developed to constitute the basis for RaySearch. He was also a founding partner of the company. So it is fair to say that he is the man behind today's algorithms for treatment planning. His basic work was the first step in the change of focus in cancer treatment – from hardware to software.

A HOTHOUSE FOR INNOVATION

RaySearch has carried this heritage forward to become the world leader in software development for cancer therapy. RaySearch's CEO Johan Löf worked together with Anders Brahme at the Department of Medical Radiation Physics at the Karolinska Institute, and the company now has a team of some 85 specialists dedicated to the continued development of RayStation, the brainchild of this frontline work.

By tradition, there is a cluster of deep and applied knowledge of medical science in the Stockholm area. This is reflected in the RaySearch employee roster. Almost all employees have at least a university or college education.

THE RAYSEARCH OFFICES HAVE AN OPEN PLAN LAYOUT TO FACILITATE DIRECT AND OPEN COMMUNICATION BETWEEN OUR SPECIALISTS.



About one in five also has a PhD. At the same time, the spirit is young and innovative since the average employee is only 37 years old. RaySearch is a workplace where highly qualified specialists work in teams to apply their scientific skills and experiences to solve real-world problems, and in extension save lives.

TEAMWORK A KEY WORD

The RaySearch headquarters in Stockholm offers a unique creative environment for the company's engineers. They are divided into teams, each working on a dedicated assignment for up to a year and a half. Some projects are short-term, driven by current customer challenges; others are long-term and futuristic. For obvious reasons most projects are secret since they are all about developing our visions of how future cancer treatment can be arranged and organized in the best way.

Each team includes at least one specialist from five specific areas. There is a physicist who knows everything worth knowing about dosimetrics. Alongside is a specialist in algorithms, the core technology of RayStation. To connect to reality, each team contains an application specialist who can translate the algorithms to a user-friendly interface.

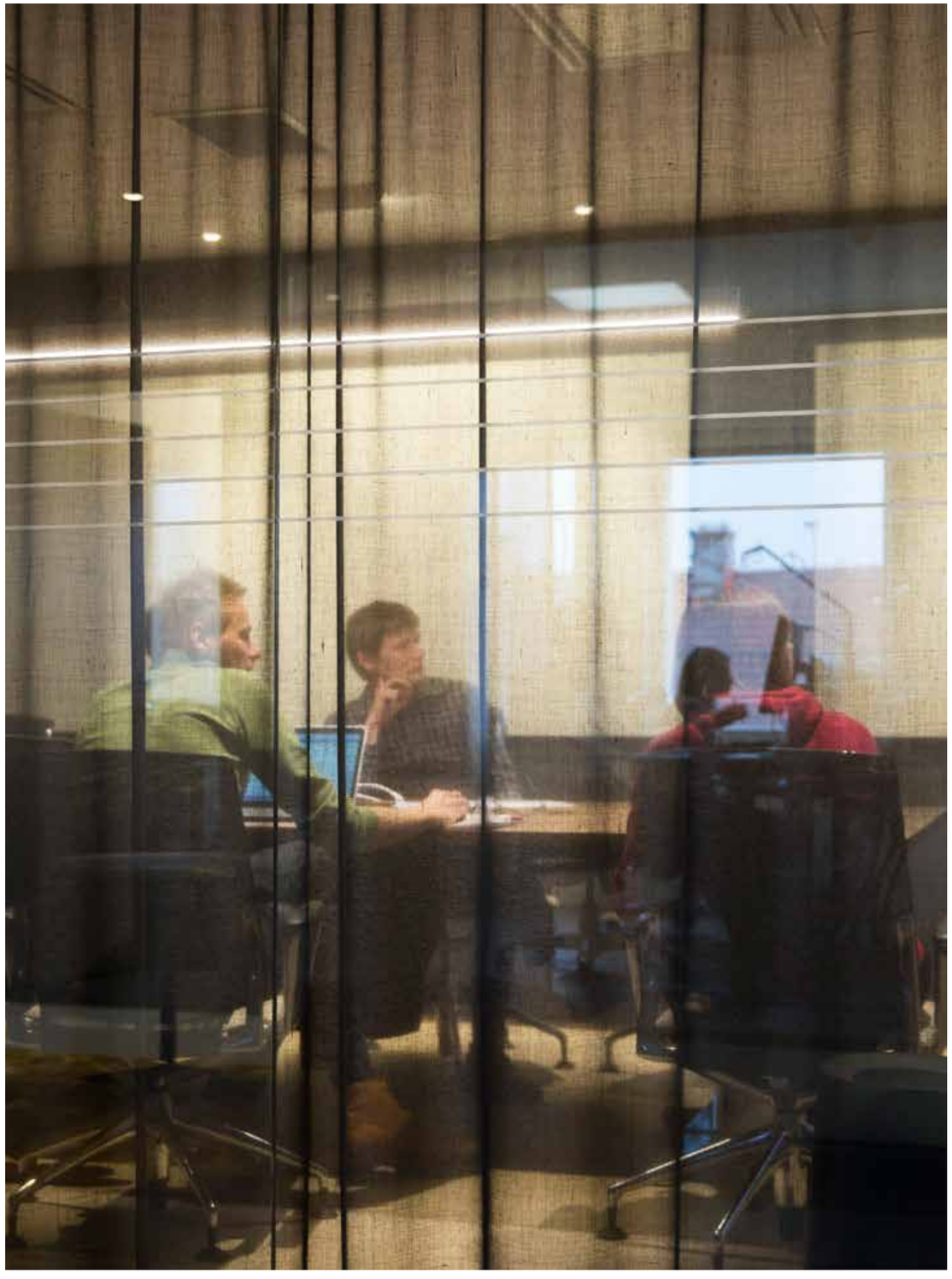
Finally, there are a specialist in visualization and image processing and a systems tester. All in all, it is this mixture of leading-edge competences that is taking RayStation further ahead as the frontrunner in its area.

CROSS-FERTILIZATION

To stimulate collaboration and advance cross-fertilization, the different specialists of each development team are located in the same room. The very soul of RaySearch's business is to encourage innovation and creativity. Daily and close experience-sharing is key is this aspect. The constant aim is to expand our interfaces, both internally and with the market – to reach out in as many areas and as many directions as possible.

DID YOU KNOW...?

... THAT ONE IN FIVE OF RAYSEARCH'S EMPLOYEES HAS A PHD



Agility is another key word for our development teams. They work according to the Scrum concept. This means that results are checked against each other on a daily basis and amendments are made accordingly. To reach the goal, you have to keep an eye on the compass constantly. Especially since you are treading unknown paths most of the time. To be a researcher at RaySearch is to be an explorer in the true sense of the word.

AN ATTRACTIVE PARTNER

The fact that RaySearch was originally a spin-off from the Karolinska Institute means that the company has an inherent understanding of the academic community, its methods and ways of working. In combination with RaySearch's unique experience this makes the company an attractive partner for hospitals and universities that are in the forefront of radiation therapy and want to expand their capabilities.

RaySearch currently has research collaborations with a number of universities and clinics that are leading players in the radiation therapy field. This takes the form of sponsored research projects, financial support for industrial PhD candidates and participation in larger and more comprehensive research projects. The aim of all these partnerships is to subject RaySearch's research findings to clinical testing at an early stage and thereby move them on to a clinical environment more rapidly.

LIVING OUR VISION

RaySearch's vision is to create a better life for people by advancing cancer treatment. That is the spirit that drives all the company's employees. It is also the concept behind our new offices in Stockholm. The layout is designed to provide a breeding ground for creating, evaluating and implementing new and better ideas for treatment planning, to help our specialists work together to achieve this, and to welcome our customers for training and workshops.

We want our Stockholm office to be the hub of software development in radiation therapy.

“I am the voice of the North American customers. My role is to communicate their needs and wish lists to our developers. It has been an exciting journey. I’ve seen the software mature, filled directly with those customer requests. The result is a rapidly multiplying installed base.”

DAYNA BODENSTEINER, DIRECTOR OF PRODUCT MANAGEMENT RAYSEARCH AMERICAS

TOWARDS A PARADIGM SHIFT

PREDICTING THE FUTURE IS ALWAYS RISKY. SO, WHAT MAKES RAYSEARCH CREDIBLE IN THIS AREA? ONE CRUCIAL THING: WE ARE ACTUALLY IN THE MIDDLE OF, AND DRIVING, THE DEVELOPMENT OF CANCER THERAPY. OUR RAYSTATION TREATMENT PLANNING SYSTEM IS INSTRUMENTAL IN THIS PROCESS.

At the moment we can see three strong trends in the market place and among our customers. And we are confident that these trends will prevail and become even stronger during the next decade.

FOCUS ON SOFTWARE INSTEAD OF HARDWARE

1 Without question the development of linacs has been extremely important for the progress of cancer treatment. They are still being developed and refined, but hardware for cancer therapy is now becoming a commodity. There is a clear comparison here with the development of the computer industry. At first hardware was everything. Today computing is all about software.

The same is now happening in radiation therapy. Today it is fair to say that no linac is better than its software. The more advanced the software becomes the more the linac is turning into a 'printer'. This will be even more true in years to come.

However, a linac represents a much bigger investment of money than a treatment planning system. It has therefore been natural to concentrate first on selecting the right linac. And then to buy the software, often from the supplier of the hardware. This approach will become obsolete. Spending more time, effort and resources at the outset to select the best and most flexible treatment planning software system is a much smarter way to go about things. By doing so, clinics can create a platform for a better overall patient flow.

In the 1990s there were many companies specializing in software for radiation therapy. Most of them eventually were acquired (mostly by linac manufacturers) in a wave of consolidation. Hardware was everything. Today the scene has changed. Once again there is space and a need for dedicated software specialists. However, entry thresholds have become much steeper and few companies will have the stamina, resources and know-how to position themselves in the market. At RaySearch we are happy to lead this development. We are specialized. We are independent. We are leading the way.

A NEW DIVERSITY IN THE MARKET PLACE

2 Today, two worldwide players in cancer therapy hardware control roughly 90 percent of the market. In the last few years, however, a number of new linac manufacturers have entered the market to compete for the hardware business.

For example, in China and India there are now linacs manufacturers primarily dedicated to the low and middle end of the market. These linacs are basically tailored for developing countries where there is a strong and fast build-up of cancer treatment facilities and an urgent need to install new machines. But it is expected that these manufacturers will eventually expand into the high-end linac market too, which will undoubtedly create a more diversified global market for linacs and break up the existing duopoly. Having access to high-quality software systems will be key in this process.

We can see the same thing happening in the top-end segment for proton equipment. Today, the investment needed to establish a proton therapy center is in the region of 100 million USD. The present development of smaller machines is likely to halve that sum, which will make this form of therapy available to more cancer patients who require treatment with a higher accuracy than photon treatments can offer.

As the hardware becomes a commodity and new players enter the linac market, the quality of a cancer treatment center will rely more and more upon the quality of the software. The choice of hardware is becoming secondary, but the right choice of software makes a big difference. This is a real game-changer.

HARDWARE IS BECOMING A COMMODITY IN RADIATION THERAPY. IMPROVEMENTS IN PATIENT CARE IS TO A LARGER AND LARGER EXTENT RELYING UPON THE SOFTWARE QUALITY.

The cancer centers of tomorrow will be based on one integrated workflow. That way, dynamic planning of resources will be possible. All patients will be treated in a more adaptive way.

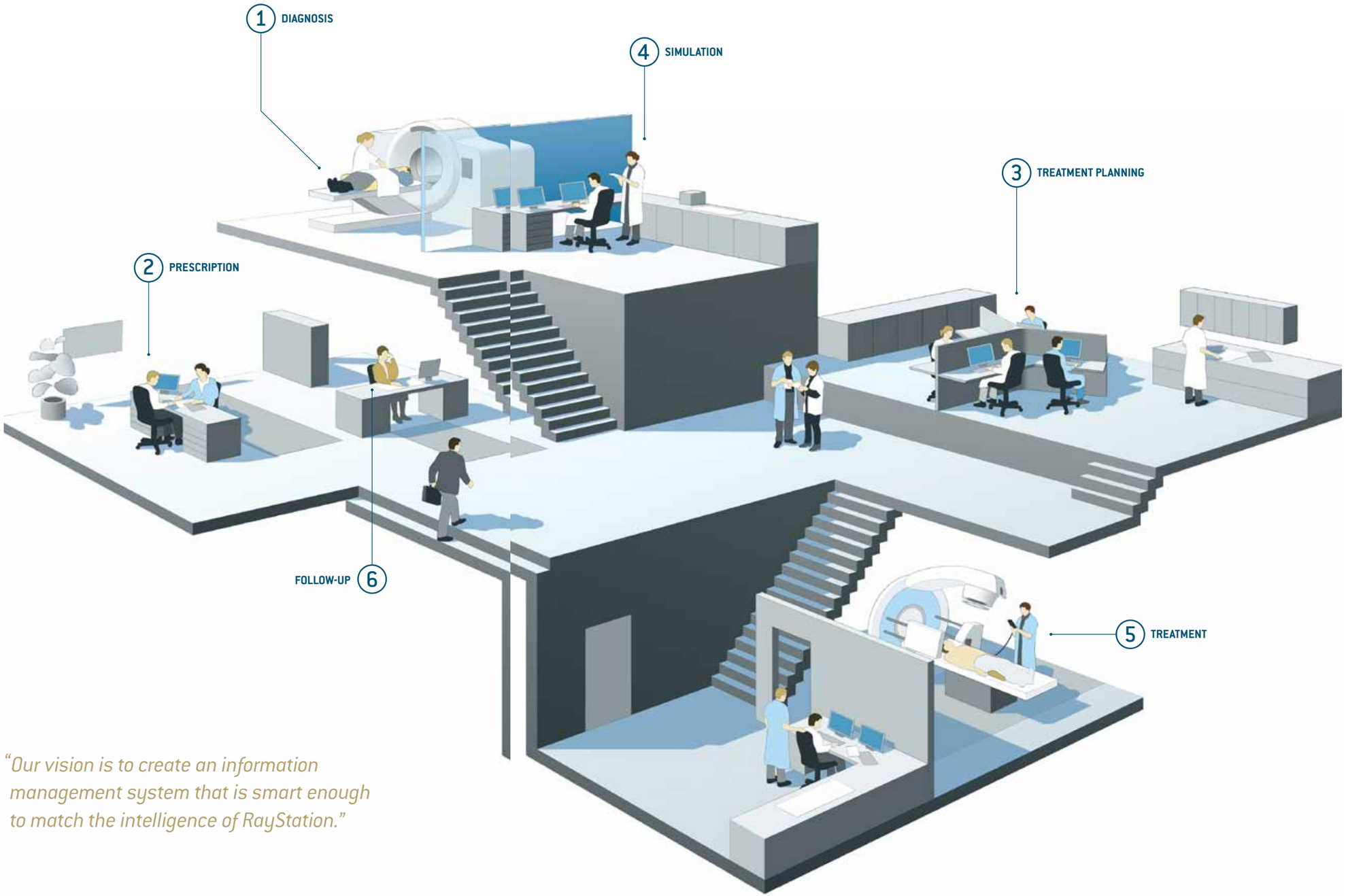
OPTIMIZING THERAPY RESOURCES IN CLINICS

The RayStation system is a catalyst for making clinics work more efficiently. The built-in advantages of the system allow for a more adaptive way to treat patients. Most patients can be given automated treatment planning that can be handled and executed time-efficiently by RayStation, thanks to its user-friendly approach. This frees up time for the physicians, who can spend more effort on patients who need a higher degree of individual treatment. All this is already happening today.

However, to take the maximum advantage of RayStation, it needs to be linked to an efficient information management system. Today's oncology information management systems are basically designed to handle scheduling, treatments and billing. At present they are not keeping up with the rapid developments in the treatment process, nor do existing systems allow for dynamic planning of resources. The need for management of information and images is escalating fast. Our vision is to create a system that is smart enough to match the intelligence of RayStation. The systems have to speak the same language. And they have to work in parallel to make the clinic more efficient.

We are now in the process of meeting this requirement in close collaboration with leading clinics. A prototype already exists. We call it RayCare and we intend to launch it in the next few years. The name says it all: it is designed to help the cancer centers to take better care of their patients – from their first visit to the center until they are given a clean bill of health.

It is all about optimizing the limited resources of a cancer center. There is a large potential for streamlining the workflow in such a way that cancer treatment can be further advanced. All for the benefit of millions of patients worldwide.



"Our vision is to create an information management system that is smart enough to match the intelligence of RayStation."

"I'm yet to find somebody in our center that doesn't like RayStation. The system has exceptional tools which are very well designed. I honestly have to say that we haven't found a single bug in the proton code of RayStation. Now, that is easier said than done and the RaySearch team can be very proud of their achievement."

NIEK SCHREUDER, CHIEF MEDICAL PHYSICIST,
PROVISION CENTER FOR PROTON THERAPY, KNOXVILLE, TN, USA

RAYSEARCH IN SUMMARY

On the preceding pages, you've been able to read about our company, our products and our views on different subjects. This double spread provides a quick guide to RaySearch, where we come from, who we are and where we are heading. And on the following pages you will find a summary of the most important facts and figures about RaySearch.

HELPING CURE CANCER PATIENTS

Nearly 14 million people are currently diagnosed with cancer each year. This figure is expected to rise sharply over the next few decades. At the same time, diagnostic methods and techniques for treating cancer are improving. Growing numbers of patients can thus overcome cancer. Nearly two out of three patients survive today, and the upward trend is continuing. RaySearch's unique expertise in treatment planning plays a key role in this development.

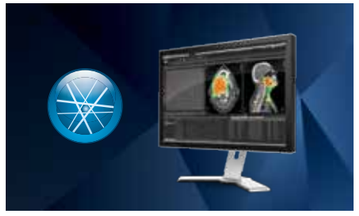
Nevertheless the fight against cancer is just starting in emerging economies. The World Health Organization recommends that there should be four linacs for every one million inhabitants in a country. In most Asian and African countries, the figure is far below this recommendation. The rapid expansion of healthcare resources that is now taking place in many emerging economies is a prerequisite for a successful global reduction of cancer victims.

TREATMENT PLANNING IS CRITICAL

Radiation therapy of cancer patients is performed using linacs (linear acceleration radiation machines). RaySearch develops the advanced treatment planning softwares that are used to create radiation treatments of the highest precision.

The physician prepares a prescription based on x-ray images of the area afflicted with cancer. The images are used to define the shape and extent of the tumor in three dimensions, as well as the bodily organs at risk. A treatment plan is then created that matches the patient's specific needs, optimizing and visualizing all parameters. The challenge is to find a way to control the treatment machine so that the tumor receives a sufficient dose but with the minimum possible injury to surrounding healthy tissue.

Fighting cancer today is basically a software challenge. Linacs are becoming a commodity. The major advances are made in software systems. RaySearch is at the frontline of this development and thus plays a key role in the fight against cancer.



ADVANCING CANCER TREATMENT

RaySearch was founded 15 years ago as a spin-off from the Karolinska Institute in Stockholm, Sweden. Today the company has a world-leading position in radiation therapy planning software.

At first RaySearch developed software products that were integrated as modules in the treatment planning systems of commercial partners. Today, more than 2,500 clinics in over 65 countries are using RaySearch's unique solutions.

Then in 2012, in order to fully leverage its inherent know-how and its outstanding technology platform, RaySeach launched its own proprietary treatment planning system – RayStation. This is sold directly to cancer centers and hospitals, offering them the opportunity to stay at the cutting edge in cancer therapy. At the end of 2014, RayStation was being used by 198 leading clinics and hospitals worldwide. And the number is rapidly increasing, doubling every year.

NEW TREATMENT METHODS, NEW SOFTWARE

There are currently some 8,000 clinics and hospitals worldwide that administer radiation therapy. The trend is moving rapidly towards more advanced methods.

The most common method is still traditional 3D-CRT (3-dimensional conformal radiation therapy). Planning 3D-CRT is time-consuming and involves significant manual efforts. RayStation offers ways to radically improve this process through automated treatment planning to optimize the use of resources.

Since the beginning of this century, new techniques that allow better adjustment to the shape of the tumor have emerged. Using the IMRT (intensity modulated radiation therapy) and VMAT (volumetric modulated arc therapy) methods, the dose of radiation to the cancer-affected area can be increased while reducing damage to the surrounding healthy tissue. RayStation is the world-leading system for creating these refined treatments.

RaySearch is also pioneering development in the most advanced new areas of radiation therapy – proton and carbon-ion therapy and four-dimensional adaptive radiation therapy.

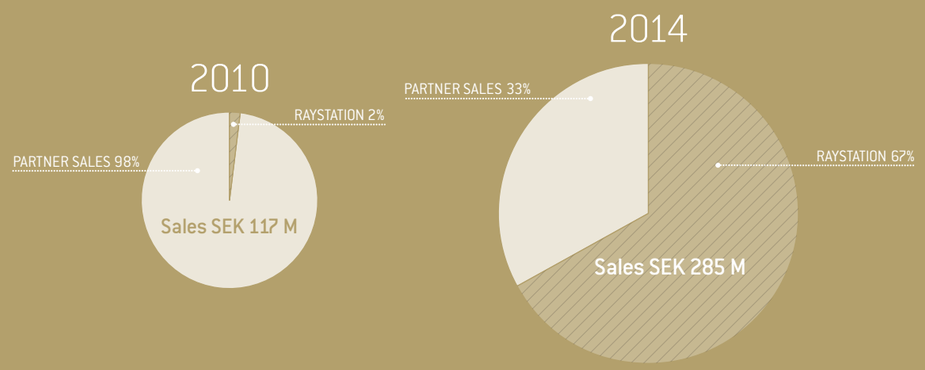
THE RAYSEARCH SPIRIT

The driving force behind all RaySearch employees is the will to constantly move the frontiers forward. Our history of success underlines this statement. In 15 years we have gone from nothing to become a world leader in treatment planning in radiation therapy. We are now creating and realizing the visions for tomorrow's cancer therapies, where the focus will definitely be on software solutions.

This spirit permeates all our fields of activity and all our employees, whether their work is in research, development, customer service, sales or marketing. RaySearch is a knowledge enterprise in the true sense of the word. Our expertise is world-class and our ambition is to have the best specialists available in our area. We provide the creative environment necessary for them to develop. By flexing their intellectual muscles together with their peers – sharing experiences and cross-fertilizing their skills – they achieve personal development while pushing the limits of cancer therapy.

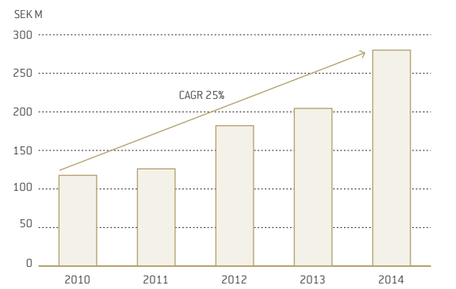
RAPID SALES AND EARNINGS GROWTH

SALES AT RAYSEARCH HAVE GROWN RAPIDLY. THE COMPOUND ANNUAL GROWTH RATE SINCE 2010 AMOUNTS TO 25 PERCENT. TOTAL SALES IN 2014 ROSE TO SEK 285 M, WITH RAYSTATION A KEY GROWTH FACTOR. EARNINGS GROWTH HAS FOLLOWED. THE 2014 PROFIT WAS CLOSE TO SEK 59 M, A LARGE IMPROVEMENT ON THE PREVIOUS YEAR.



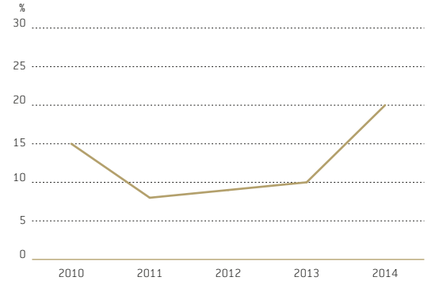
Of total sales of SEK 285 M in 2014, the share for RayStation was 190 M. This means RayStation now accounts for close to 67 percent of total sales, compared to 3 percent in 2010. In 2014 total net sales grew almost 40 percent compared to 2013.

NET REVENUE



In 2014 return on equity was close to 27 percent. In all years in the period 2010–14 except 2013, RaySearch has shown positive earnings. Excluding the non-recurring settlement cost of SEK -34.8 M in 2013, this translates into an average return on equity for the full period of 12 percent. At the end of 2014 total shareholders' equity amounted to SEK 251,548 M, or SEK 7.34 per share.

RETURN ON EQUITY, %



CONSOLIDATED INCOME STATEMENTS

SEK 000s	2012	2013	2014
Net sales	182,087	204,470	285,217
Cost of goods sold	-3,029	-6,059	-11,627
Gross profit	**179,058**	**198,411**	**273,590**
Selling expenses	-36,267	-53,024	-78,433
Administrative expenses	-39,279	-80,108[1]	-30,736
Research and development expenses	-78,657	-90,720	-95,069
Other operating income/expenses	-2,309	-280	10,008
Operating profit/loss	**22,546**	**-25,721[1]**	**79,360**
Net financial items	1,018	754	-659
Profit/loss before tax	**23,564**	**-24,967[1]**	**78,701**
Tax	-3,701	4,126	-18,869
Profit/loss for the period	**19,863**	**-20,841[1]**	**59,832**

[1] Includes a cost of SEK -34.8 M for the settlement agreement with the US company Prowess concerning patent infringement. Excluding the non-recurring settlement cost and associated legal fees, the 2013 operating profit would have been SEK 31.6 M.

A STRONG FINANCIAL BASE

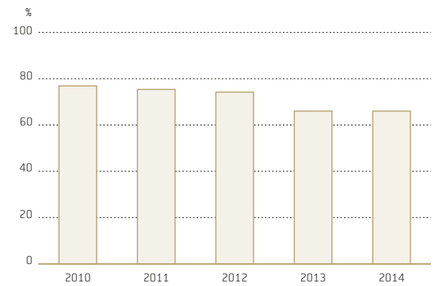
BECAUSE THE CONTINUOUS DEVELOPMENT OF NEW, IMPROVED PRODUCTS HAS PROVED A SUCCESS FACTOR FOR RAYSEARCH SINCE ITS INCEPTION, THE COMPANY HAS ALWAYS REINVESTED A LARGE PORTION OF ITS SALES REVENUES IN RESEARCH AND DEVELOPMENT. A PREREQUISITE FOR THE STRATEGY'S SUCCESS HAS BEEN THE COMPANY'S STRONG FINANCIAL BASE.

65%

EQUITY/ASSET RATIO

Being a stable and resourceful company is important in several ways. One is in attracting, recruiting and retaining the highly educated key employees needed for multi-year development projects like RayStation. At the end of 2014 RaySearch had an equity/asset ratio of 65 percent and has shown equally high numbers throughout its 15-year existence.

EQUITY/ASSET RATIO



CONSOLIDATED STATEMENT OF FINANCIAL POSITION SEK 000s	2012	2013	2014
ASSETS			
Intangible fixed assets	165,926	166,678	164,081
Other fixed assets	3,711	5,970	12,951
Total fixed assets	**169,637**	**172,648**	**177,032**
TOTAL ASSETS	**293,027**	**299,162**	**389,753**
SHAREHOLDERS' EQUITY AND LIABILITIES			
Shareholders' equity attributable to Parent Company stakeholders	217,553	196,601	251,548
Liabilities	75,474	102,561	138,205
TOTAL SHAREHOLDERS' EQUITY AND LIABILITIES	**293,027**	**299,162**	**389,753**

An appreciating share price also indicates financial strength. RaySearch is listed for trading on the NASDAQ OMX Nordic Exchange in Stockholm in the Small Cap segment. The chart shows the share price for RaySearch from January 2010 up to and including the quote of SEK 73 on March 10, 2015, and the number of shares traded per month. In the last year the share price has appreciated a full 143 percent.

At the end of 2014 RaySearch's share capital amounted to SEK 17,141,386.50. The total number of shares was 34,282,773, of which 11,324,391 were Class A shares and 22,958,382 were Class B shares. The number of shareholders was 4,885. Each Class A share has 10 votes and each Class B share 1 vote. The Class A shares are owned by members of Management and the Board of Directors.

SHARE PRICE 2010–2015[1]

[1] Up to March 10, 2015.

MEET OUR MANAGEMENT TEAM

LARS JORDEBY
DIRECTOR OF SALES,
ASIA & PACIFIC

ANDERS LIANDER
CHIEF TECHNOLOGY OFFICER

PETER KEMLIN
DIRECTOR OF SALES
AND MARKETING

JOHAN LÖF
PRESIDENT AND CEO

HENRIK FRIBERGER
DIRECTOR OF DEVELOPMENT

PETER THYSELL
CHIEF FINANCIAL OFFICER

CHIEF FINANCIAL OFFICER

BJÖRN HÅRDEMARK
CHIEF SCIENCE OFFICER

NICLAS BORGLUND
DIRECTOR OF SERVICE

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