



Pioneering digitally enabled, patient-centered oncology in Croatia

Radiochirurgia Zagreb

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"We built Radiochirurgia with one goal in mind: to offer patients the most precise, timely, and compassionate cancer care, enabled by the best technology in the world."

Prof. MD. Dragan Schwarz,
CEO and Chief of Surgery

Tucked away in the quiet town of Sveta Nedelja, just 20 kilometers from Zagreb, Radiochirurgia stands as a beacon of innovation in cancer care, not only in Croatia but across Central and Eastern Europe. Founded in 2016 by a visionary team of surgeons, including renowned surgical innovator and CEO Professor Dragan Schwarz, the center has rapidly become a national leader in delivering advanced, patient-first oncology services enabled by cutting-edge technology.



Digitally enabled, patient-centered oncology

A modern alternative in a traditional healthcare landscape

In a region where public hospitals still dominate, Radiochirurgia has charted its own path. The privately owned institution operates with about 100 employees, 12 high-comfort patient beds, two operating rooms, and an expanding suite of radiotherapy treatment facilities. What sets it apart is not only its infrastructure, but also its relentless commitment to precision medicine through cutting-edge diagnostic technologies, including CT, MRI, and PET/CT systems.

At the core of the center's philosophy is a multimodality diagnostic approach, enabling timely, accurate clinical decisions and fostering interdisciplinary collaboration.

The challenge: legacy systems holding back innovation

Despite its state-of-the-art clinical infrastructure, Radiochirurgia's digital backbone was held back by a legacy PACS system. Limited performance, a lack of vendor support, and minimal clinical utility posed serious barriers. It functioned mainly as a storage archive, lacking the responsiveness and interoperability essential to modern oncology workflows.

Initially seeking a replacement, the team engaged Siemens Healthineers. This inquiry led to a broader and more strategic collaboration, resulting in the implementation of **Syngo Carbon IDM¹**, a comprehensive image and data management platform specifically designed to support complex oncology workflows.

The solution: end-to-end system integration

The biggest hurdle was fragmentation: image reading, oncology reporting, radiotherapy planning, and patient registration all operated in silos. This inefficiency disrupted multi-disciplinary tumor board (MDT) meetings and delayed clinical workflows.

With the implementation of **Syngo Carbon IDM**, Radiochirurgia achieved complete integration across its core systems, including the **Varian ARIA** oncology reporting and workflow management platform and the Varian Eclipse radiotherapy treatment planning system.²



“Before, our tumor board meetings required juggling between systems and manually exporting studies. Now, everything is right there, ready for discussion and decision-making.”

Ivo Pedišić,
Chief of Radiology

Key benefits included:

Automated workflows: DICOM Modality Worklists reduce manual data entry and ease radiographer’s workloads.

Streamlined data flow: Patient information entered at registration flows automatically through imaging, minimizing duplicate entry.

More efficient MDT meetings: Clinicians access relevant patient data from a single system, reducing manual image exports and system switching.

Enhanced data quality: According to Radiochirurgia, automation reduced manual data entry and contributed to more consistent data handling.

Empowering patients through digital engagement

Beyond enhancing clinical data and image management, Radiochirurgia is deeply committed to advancing patient engagement as a core element of personalized care. Recognizing the value of informed and empowered patients, the center implemented the **Siemens Healthineers eHealth Patient Portal**³. According to Radiochirurgia, the portal supports transparency, facilitates communication, and encourages active patient participation. The portal is intended to support patient-provider communication and engagement and aligns seamlessly with the center’s vision of delivering high-quality, patient-centered oncology care.

In the initial phase of the rollout, the eHealth Patient Portal enables patients to access their medical documents, view appointment details, and receive notifications via the portal, SMS, and email. It also supports secure document sharing between patients and physicians. Patient onboarding is managed at the institutional level, with demographic data transferred from the Varian ARIA to eHealth Patient Portal. Additionally, patients will be able to upload documents directly to the Patient Portal. Depending on configuration, uploaded documents can be transferred to either Varian ARIA or Syngo Carbon IDM, integrating the documents into clinical workflows and providing clinicians with immediate access to review

them during multidisciplinary team meetings or whenever needed throughout the diagnostic or treatment process.

With a solid digital foundation in place, Radiochirurgia is shifting its focus toward enhancing patient engagement, automating tasks, streamlining appointment management, and expanding AI-enabled decision support. As part of the ongoing evolution of its patient-centered digital oncology ecosystem, the eHealth Patient Portal will continue to advance with new capabilities designed to further empower patients and improve operational efficiency.





“Segmenting organs used to take up to 40 minutes per patient. Now it’s automated, freeing us to focus on more strategic decisions.”

Hrvoje Kaučić,
Chief of Radiation Oncology and Radiosurgery



One of the upcoming enhancements includes ambulatory appointment booking, allowing patients to schedule consultations or imaging exams online, while more complex surgical and radiotherapy appointments will continue to be coordinated manually due to their clinical nature. Additionally, task automation will enable pre-appointment forms, tasks, and action items to be automatically delivered through the portal for patients to complete and submit in advance, ensuring smoother clinical workflows.

This initiative marks a significant milestone in advancing patient engagement and fostering more active participation in each patient’s care journey.

AI-powered oncology: Precision across the continuum

Another cornerstone of the center's innovation strategy is the integration of **Siemens Healthineers' AI-Rad Companion⁴** across the entire oncology care continuum; from diagnosis and treatment planning to follow-up. Seamlessly embedded within the center's end-to-end digital oncology workflow, the solution delivers structured data and annotated images directly into the radiologist's reading environment. This integration has significantly enhanced radiologist productivity and efficiency.

Use cases include:

- **Lung Cancer:** AI-Rad Companion Chest CT⁵ automatically detects and highlights pulmonary nodules. This supports consistent tracking throughout the treatment cycle: before, during, and after radiotherapy.
- **Prostate cancer:** The MRI-based AI-Rad Companion automatically segments the prostate gland on MRI images, detects lesions, and classifies them using PI-RADS scoring, supporting both treatment planning and ongoing monitoring.
- **Treatment planning:** AI-powered segmentation tools such as Organs RT, dramatically reduce the time required for manual contouring by automatically contouring organs at risk using deep-learning algorithms. This streamlines workflow while maintaining clinical precision and consistency. These tools are embedded directly into the radiologists' workflow, improving reproducibility, reducing inter-reader variability, and ensuring faster time-to-treatment.

"For me, the quality of findings is the most important advantage of AI-Rad Companion. It's a big time-saving to use it, too. But for me personally, this is less important. It's the quality."

Professor Ivica Mažuranić,
Assistant Professor of Radiology and Pulmonology





“We’ve built a digital ecosystem that not only connects departments – it connects people, from our specialists to our patients.”

Domagoj Kosmina,
Chief of Physicist

A fully connected oncology ecosystem

The integration of these systems has established a fully connected oncology IT ecosystem spanning diagnostics, treatment, workflow management, and patient engagement. Varian ARIA serves as the central oncology workflow platform, while Syngo Carbon IDM provides the backbone for image and data management. Patient engagement is further enhanced through the eHealth Patient Portal, offering seamless access to medical information and services.

Additionally, AI-Rad Companion delivers AI-powered segmentation tools that automate routine measurements, improving efficiency and consistency in clinical decision-making. According to Radiochirurgia, these technologies support their vision of a highly digitalized oncology environment.

With the implementation of a comprehensive end-to-end cancer care pathway, Radiochirurgia reports improvements in:

- Increased operational efficiency and reduced errors according to Radiochirurgia
- Seamless, consistent patient data across the entire hospital and all modalities
- Greater automation and structured care pathways
- Reduced administrative burden on clinical staff
- Transparent patient access to medical records
- Radiochirurgia reported stronger patient retention and return within the center’s care network
- Achieved results (KPIs) by enabling full cancer care workflow through D&A Portfolio including eHealth Solutions³, AI-Rad Companion and Syngo Carbon IDM.





Looking ahead: A platform for continuous innovation

With a robust digital infrastructure in place, Professor Schwarz and his team are setting their sights on the future. Together with Siemens Healthineers, they are exploring further automation, expanding AI-driven decision support, and advancing patient participation.

Radiochirurgia is more than a medical center, it is a model for the future of digital oncology. Through visionary leadership, bold investment, and a clear mission, the center is redefining what is possible in cancer care – not only in Croatia, but around the world.

“Innovation isn’t a one-time project. It’s a mindset. Our patients deserve nothing less.”

Prof. MD. Dragan Schwarz,
CEO and Chief of Surgery



At Siemens Healthineers, we pioneer breakthroughs in healthcare. For everyone. Everywhere. Sustainably. As a leading medical technology company, we want to advance a world in which breakthroughs in healthcare create new possibilities sustainably. We've been pushing the boundaries in medical technology for more than 125 years. Today, we are active in imaging, diagnostics, cancer care, and minimally invasive therapies – augmented by digital technologies and artificial intelligence.

With our unique combination of strengths in Patient Twinning*, Precision Therapy, and Healthcare AI, we take on the greatest challenges in healthcare. We help improve access to healthcare for underserved communities worldwide and overcome the most threatening diseases: Neurodegenerative and cardiovascular diseases, stroke, and cancer. We partner with healthcare providers to address their most pressing challenges so that they can deliver high-quality, patient-centered care, efficiently.

Motivated by our purpose and guided by our values, we foster an inclusive and innovative workplace for our diverse and engaged teams globally. We are a team of around 74,000 Healthineers in over 70 countries passionately pushing the boundaries of what is possible in healthcare so that patients can live with hope, not fear of disease.

** Early detection, accurate diagnosis, individualized therapy selection, simulation and planning, continuous monitoring, and aftercare.*

1 Syngo Carbon consists of several products which are (medical) devices in their own right. Some products are under development and not commercially available. Future availability cannot be ensured.

2 Varian Medical Systems as a medical device manufacturer cannot and does not recommend specific treatment approaches. Individual treatment results may vary. Specifications subject to change without notice. Not available in all markets. All trademarks are property of their respective owners. ARIA CORE Insights, NOONA, ARIA STM, and ARIA CORE Mobile are not commercially available in all countries. Future availability cannot be guaranteed.

3 eHealth Solutions consist of several products. eHealth Virtual Visit and eHealth Stroke are manufactured by Siemens Healthineers AG, Forchheim, Germany. eHealth EHR, eHealth Master Patient Index (MPI), eHealth Adaptor Set (AS), eHealth Healthcare Provider Directory (HPD), eHealth Health Data Repository (HDR), eHealth Patient Portal, eHealth Physician Portal, eHealth Patient Access and eHealth Result Notifier are manufactured by ITH icoserve technology for healthcare GmbH – A Siemens Healthineers Company, Innsbruck, Austria. Products of eHealth Solutions are not intended for diagnostic purposes. The product offerings are not commercially available in all countries. Please contact your local Siemens Healthineers organization for further information.

4 AI-Rad Companion consists of several products that are (medical) devices in their own right, and products under development. AI-Rad Companion is not commercially available in all countries. Future availability cannot be ensured. Their future availability cannot be guaranteed. Please contact your local Siemens Healthineers organization for further details.

5 AI-Rad Companion Chest CT consists of several medical devices in their own right, which are not commercially available in all countries, and its future availability cannot be ensured.

Please note:

The statements by customers of Siemens Healthineers described herein are based on results that were achieved in the customer's unique setting. Because there is no "typical" hospital or laboratory and many variables exist (e.g., hospital size, samples mix, case mix, level of IT and/or automation adoption) there can be no guarantee that other customers will achieve the same results.

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