



Healthcare Guide

2023/24

*Partnerships and Perspectives of
Arab-German Cooperation*

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Arab-German Cooperation

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Preface

Germany is well known as a major hub for medical technology, medical treatment and the pharma industry. In 2022, Germany's healthcare sector with an added value of €439.6 billion played a vital role in the country's economy, employing 8.1 million people, contributing 12.7% of GDP, and achieving exports exceeding €186 billion. Germany's leading position in healthcare, along with its strong economy boasting GDP of €3.87 trillion in 2022, underscores the sector's significance.

The Arab countries, home to 450 million people as of 2022 estimations, is working on a more modernized resilient, and robust healthcare system. The experience of the Covid-19 crisis led many Arab countries and worldwide to reform their healthcare systems. Strengthening the healthcare system as a whole has become a long-term priority.

Despite the challenges the Arab-German business relations flourished and the Arab-German trade exchange increased from €41.1 billion in 2021 to €50.8 billion in 2022. This significant development can also be observed in the healthcare sector, where Arab and German collaboration has expanded to encompass hospital planning and equipment, pharmaceuticals, finance, digital transformation, political involvement and lessons learnt from the Covid-19 crisis.

The Ghorfa Arab-German Chamber of Commerce and Industry has a powerful network consisting of both institutional and entrepreneurial decision-makers from Arab countries and Germany. As the competence centre for business relations between Germany and the Arab world, Ghorfa promotes and strengthens business relations in the fields of trade, industry, finance, and investment.

The eighth edition of the "Healthcare Guide" highlights the great interest in the healthcare industry from both German and Arab perspectives and pinpoints outstanding Arab-German projects. We would like to thank the numerous German companies for their valuable contributions, Ms. Swana Gerriets for her commitment and dedication to the publication, as well as Mr. Fadhl Al-Romaima for layout and design. We hope you enjoy reading this book and wish you inspiration for further reference projects.



Dr. Peter Ramsauer



Abdulaziz Al-Mikhlaifi

Dr. Peter Ramsauer
President
Federal Minister ret.

Abdulaziz Al-Mikhlaifi
Secretary General



COMPANY PRESENTATION

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You deserve to live pain free

New minimally invasive treatments by back pain

Since its establishment, the Avicenna Klinik in Berlin provides patients from all over the world advanced options by the diagnosis and treatment of back pain and spinal disorders. The experienced consultants in Neurosurgery and orthopaedics at the Avicenna Klinik have more than 30 years international experience in treatment of spinal pain conditions.

Thanks to the advanced diagnostic techniques, now a day it is possible to determine the main reason for spinal complains exactly. According to this, we perform that treatment's procedure, which have the highest evidence and highest success rate, taking under consideration the general condition of the patient, his traditions, religion as well as his sport and professional activities.

© Avicenna Klinik



© Avicenna Klinik



So, patients with back pain, disc hernia, arthrosis, degenerative changes and other conditions of spine will be treated as usual conservatively, with injections or with different surgical approaches. In the Avicenna Klinik we offer beside that, new minimally invasive options with special LASER. Beside that we apply the new advanced method for biological renewal of spinal disc with own disc cells (BRD).

In the Avicenna Klinik, patients are in the middle point. All of these services will be provided in a first-class ambience in the heart of Berlin-West. For more Info please check www.avicenna-klinik.de.



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Biotech & Capital Consulting GmbH

Short CV:

- Dr. Dr. Gerald Heigis, MD, DDS, dipl. ges. oec (BI)
- Studied medicine and dental medicine in Tübingen
 - Founding partner and managing director of "Carpe Diem Management GmbH, Medizinisches Versorgungszentrum (MVZ)
 - Clinical experiences in private clinic for plastic surgery and in military hospital Ulm, completed with a degree as oral-maxillo-facial surgeon
 - 2009-2022 owner of dental clinic at the Olympic Park Munich
 - CEO and Founder of Biotech & Capital Consulting GmbH

Products

Digital solutions in healthcare, Telemedicine, Software engineering, Web development, Artificial Intelligence

Description of the company:

Biotech and Capital Consulting GmbH, located near Stuttgart, a hub for medical innovation in Germany, has been at the forefront of digital healthcare since 2020. Founded by Dr. Dr. Gerald Heigis, a pioneer in healthcare digitization, the company is dedicated to revolutionizing the medical landscape.

Our primary focus lies in the realms of telemedicine and digital healthcare applications. We are also engaged in cutting-edge developments in artificial intelligence (AI), software engineering, and web development. Our current flagship project centers around the creation of a comprehensive platform that digitally connects various healthcare facilities, medical professionals, and patients. This transformative initiative harnesses the power of telemedicine and leverages AI to enhance the quality of healthcare delivery.

Gerald Heigis has a remarkable history in healthcare digitization. Nearly three decades ago, he developed one of the first fully digital billing software systems for medical practices. In 2009, he pioneered the full digitalization of his own oral and maxillofacial surgical practice. These early endeavors laid the foundation for our commitment to advancing healthcare through digital innovation.

At Biotech and Capital Consulting GmbH, we are driven by a vision of a healthcare landscape where technology bridges



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the gap between patients and healthcare providers. Our mission is to continue pushing the boundaries of what's possible in digital healthcare, ultimately improving patient outcomes and the overall healthcare experience.



Dr. Dr. Gerald Heigis
Head of Company

Biotech & Capital
Consulting GmbH © Dr. Dr.
Gerald Heigis

We lead the way to make more of every life

At Boehringer Ingelheim, we are driven by the desire to serve humankind by improving human and animal health. Our passion comes from believing in the value of our work beyond its commercial potential. As a long-standing, successful, family-owned company we plan in generations.

Aiming to make significant contributions to healthcare, we focus on diseases which have so far not been satisfactorily treated. We innovate to make breakthrough therapies and life-enhancing improvements available to patients and to provide advanced, preventive animal healthcare.

For over 130 years, our focus has always been on long-term performance rather than being limited by short-term profits. Looking ahead, we aspire to grow above benchmark, allowing us to remain independent champions of human and animal healthcare.

While we strive to achieve our objectives primarily by organic growth, we also seek partnerships and alliances for success. It is vital for us to complement our internal expertise by collaborating with academic institutions and other companies with whom we are jointly developing the next wave of scientific innovation.

We feel responsible for our communities and are respectful of our resources. We are committed to sustainable development and work closely with our stakeholders to understand their needs.

Day by day, our employees create value through innovation with a clear goal: to provide more health and improve the lives of both humans and animals.

Our eyes are to the future. Our optimism is unwavering.
Life forward



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Medicine of the highest international standard - World-renowned physicians at one of the World's Best Hospitals

Heidelberg University Hospital

Heidelberg University Hospital with its 43 specialized clinical departments is one of the leading medical centres in Europe and ranks 13th in the global "World's Best Hospitals 2023" awards.

Innovative and effective diagnosis and therapy for all complex diseases is guaranteed by world-renowned physicians, state-of-the-art equipment, as well as the interlinking of the specialist departments. Patients from all over Germany and over 100 countries worldwide travel to Heidelberg for treatment.

Focus on Cancer Treatment

The National Center for Tumor Diseases (NCT) in Heidelberg is a national pioneer in the diagnosis and therapy of cancer. Patients with cancer are treated jointly by qualified experts from different disciplines. As a joint institution of Heidelberg University Hospital and the German Cancer Research Center, it is ensured that new therapeutic approaches are developed and quickly put into practice. Help for children with cancer is offered by the affiliated KiTZ (Hopp Children's Tumor Center Heidelberg).

The Heidelberg Ion Beam Therapy Center (HIT) is the first radiation facility in Europe that works with both protons and carbon ions. This form of radiation can for the first time benefit a larger number of patients with previously incurable tumours.

Surgical oncology as well as radio-oncology are integral parts in cancer treatment as well. Heidelberg physicians

work with state-of-the-art equipment (including robot-assisted surgery) and are highly experienced. For example, the European Pancreas Center at Heidelberg University Hospital is one of the world's leading centres for pancreatic cancer.

Outstanding areas of expertise

- Oncology (all disciplines): surgical oncology (including robot-assisted surgery (DaVinci System)), chemotherapy, stem cell transplantation, innovative radiation therapy including latest technologies, such as proton-/heavy ion, comprehensive care in the National Center for Tumor Diseases, pain center
- Heart and vascular medicine
- Neurology | Neurosurgery
- Metabolism and hormonal disorders
- Gynecology and perinatal medicine
- Orthopedics
- Pediatrics



Surgery Center © Heidelberg University Hospital

2022 - At a glance

- 1,100,000 outpatient visits
- 62,000 cases of inpatient treatment
- 43 clinical specialist departments
- 11,600 employees, including 1,900 physicians and 3,200 nurses
- 2,000 beds

Services for international patients and Arab patients

- Multilingual team of the International Office
- Certified interpreters
- Support to foreign patients in obtaining a medical visa
- Service is provided by friendly, English-speaking nursing personal
- All doctors speak fluent English, medical reports in English, if desired
- Special requests regarding meals are taken into consideration
- Prayer room available for Muslim patients

Special service for patients who cannot travel to Germany

Written second opinion and video consultation, based on patients up-to-date medical reports



Stereotaxy at the Cyberknife © Heidelberg University Hospital



Campus of Heidelberg University Hospital and Heidelberg University
© Heidelberg University Hospital



Education & Staff Training



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Empowering Healthcare Education: AI-Enabled Adaptive Learning Transforms Capability Development, Training and Certification

Area9 Lyceum

Adaptive learning is increasingly used in health care education as a way to improve competence, reduce knowledge gaps, expose and address unconscious incompetence, and enable safer and more effective care provision and delivery. Overall, millions of learners used Area9 Rhapsode as their basis for healthcare education – including physicians, nurses, laboratory technicians, and others, and at all levels from students to experienced practitioners. As this project report will show, there is evidence of the efficiencies and effectiveness to be gained from a personalized approach that meets learners where they are, establishes what they've learned already and what they need to master, and engages learners as they build competence.

As global healthcare continuously transforms, with an outcomes-based approach that seeks to measure the value of healthcare delivered, advanced adaptive learning platforms will play a crucial role. Adaptive learning provides a personalized, teacher-like approach to support the building

of key competencies at all levels, from medical school and other clinical training to lifelong learning and maintenance of certification for practicing clinicians. Adaptive learning is particularly useful in identifying knowledge gaps and areas of “unconscious incompetence,” which is a source of seri-

ous and sometimes even fatal medical errors. It zeroes in on areas where misconception must be addressed and new, more accurate knowledge acquired.

Area9 has found in our research and work across the education spectrum that adaptive learning allows for personalization to make the learning process more engaging, digestible, and relevant. It can also eliminate the information overload that occurs when learners are faced with an overwhelming amount of content in traditional “static” courses.

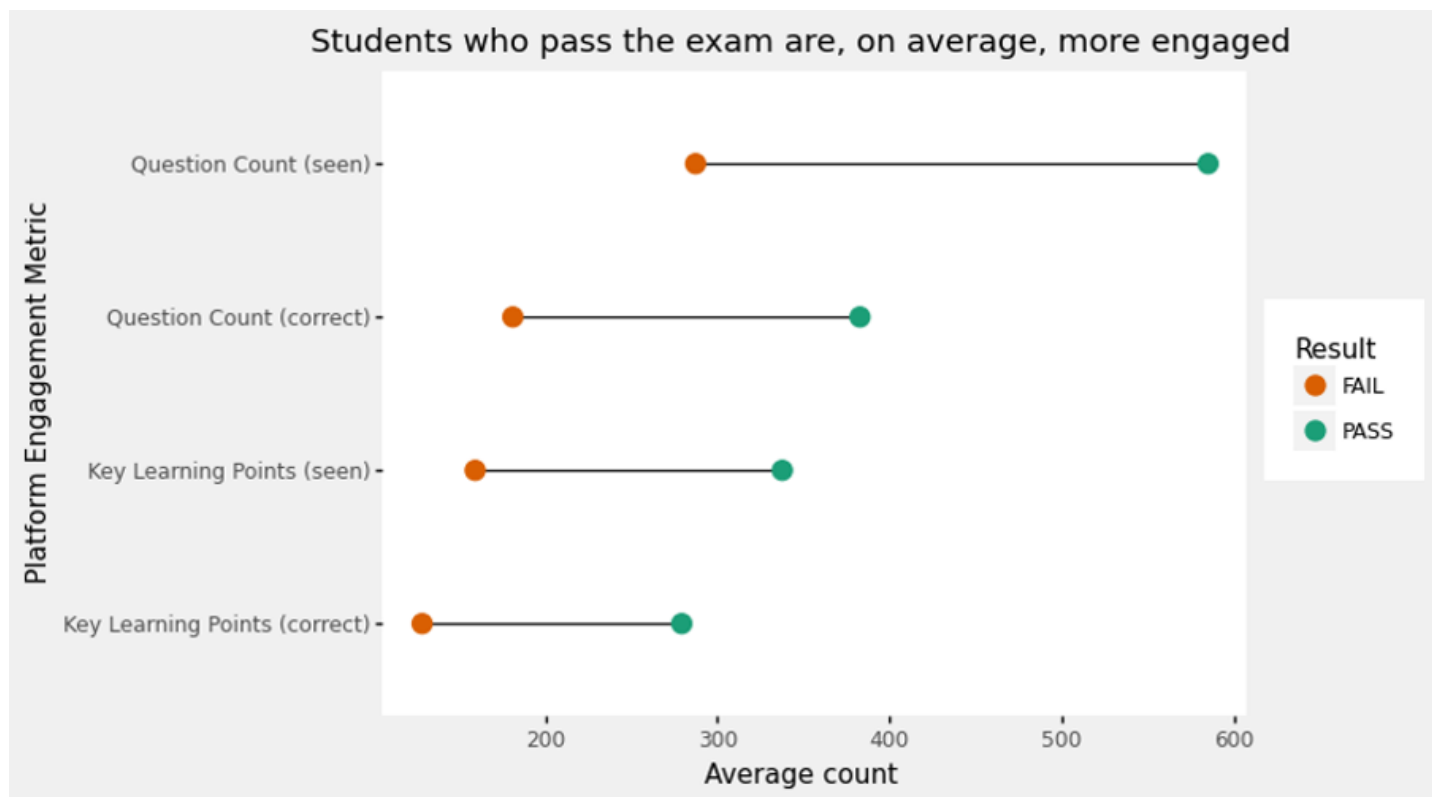
Adaptive learning systems have demonstrated their effectiveness in delivering complex training. Specifically, adaptive learning provides metacognitive support, which improves learning outcomes for a variety of learners. Metacognition is an awareness of one's own thinking and learning, it provides the learner with critical insight into the confidence they have in understanding the topic and it informs Area9's adaptive learning software. Specific to medical education, Healy et al (2018) studied the effectiveness of adaptive e-learning for board-certification examination preparation

and concluded that the resulting metacognitive benefits supported learners in preparing for such examinations.

Incorporating NEJM Knowledge+ in the curriculum for Internal Medicine in the Kingdom of Saudi Arabia; Trial of core knowledge base enhancement

The Saudi Commission for Health Specialties (SCFHS) is a governmental organization that regulates postgraduate training for all healthcare disciplines. Over the past few years, results of board examinations in Internal Medicine have been unsatisfactory. Root cause analysis revealed defects in formative assessment of medical Residents throughout their residency (post-graduate) training. There was no unified source for core knowledge learning and no system in place to ensure continuous progress of Residents' core knowledge. Traditional approaches to exam preparation are time consuming and do not adapt to the unique needs of residents. It typically involves repetitive practice using non-peer reviewed test questions that may or may not reflect the content evaluated by the certification examination.

Students who pass the final exam (green dots) are, on average, more engaged on the platform than those who fail (orange dots). © Area9 Lyceum



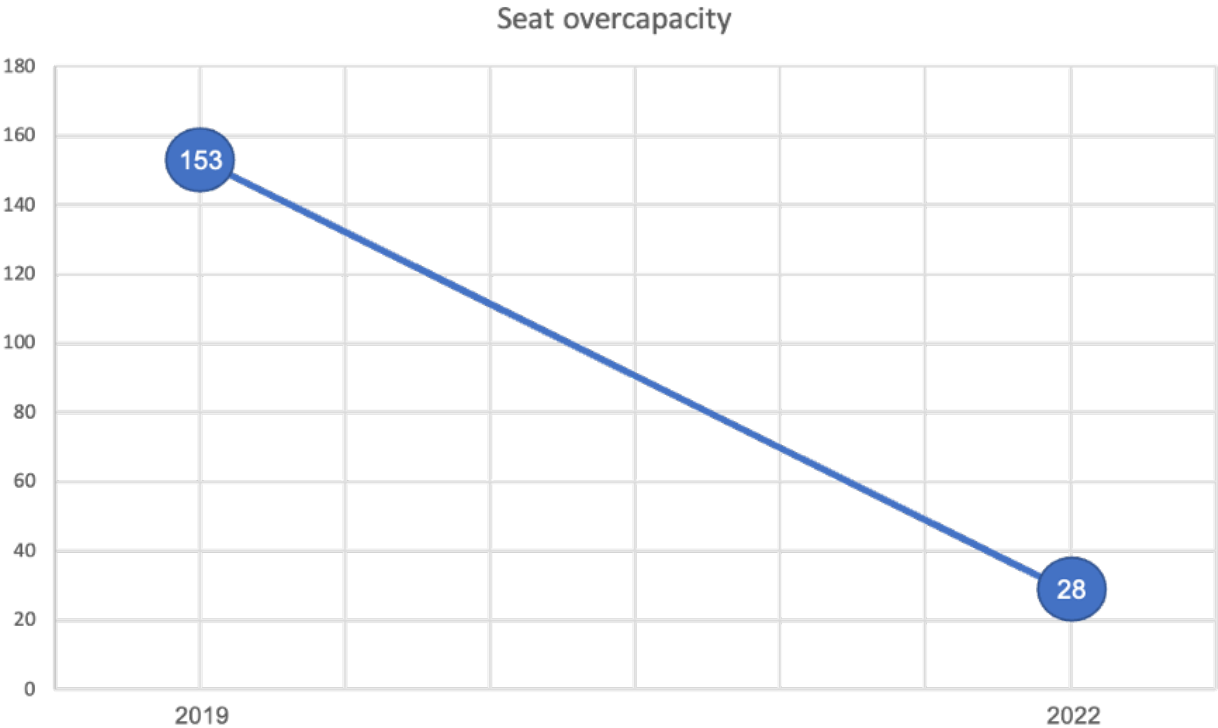
The Saudi Commission for Health Specialties, NEJM Group and Area9 partnered to use an adaptive learning program, the NEJM Knowledge+ platform, tailored to the needs of the Saudi national commission. The program started in January 2020 and continues for four years. The rationale for considering such a solution is to provide residents with a validated educational tool that can assist them in their continuous learning. To gain insight into the impact on the performance of Residents using NEJM Knowledge+ for their core knowledge enhancement, the Saudi Commission for Health Specialties analyzed data from the Internal Medicine program.

Linking the performance of Residents using NEJM Knowledge+ with their Part One board exam, revealed that there was a direct correlation between Residents' performance on NEJM knowledge+ and their performance on the exam. Part One board exam is a high-stake exam targeting residents in their first two years of the program. Second-year Residents are the main target group but first-year Residents are also permitted to take the exam. This exam is of critical importance because it determines residents' eligibility to the advanced stages of the program.

- Analysis of Part One exam results over the past 4 years showed a significant increase in the pass rate since the launch of the adaptive learning platform NEJM Knowledge+
- As pass rate improved, more Residents were able to advance their training to higher stages which resulted in significant reduction in "overcapacity rate" between 2019 and 2022
- Students who progressed further on the platform were more likely to pass the exam.
- The high pass rate of residents reduced the overcapacity rate by 83% over 4 years (from 153 residents in 2019 to 28 residents in 2022).

Figure 1 shows that students who pass the final exam (green dots) are, on average, more engaged on the platform than those who fail (orange dots). On average, a student who passes the exam sees 585 questions compared to 287 for a student who fails the exam. Similarly, students who pass the exam get more questions correct (383 vs 181), see more Key Learning Points (338 vs 159) and get more Key Learning Points correct (279 vs 129).

As pass rate improved, more residents were able to advance their training to higher stages which resulted in significant reduction in "overcapacity rate" between 2019 and 2022. © Area9 Lyceum





Analysis of Part One exam results over the past 4 years showed a significant increase in the pass rate (in 2022 86% up from 48% in 2019) since the launch of the adaptive learning platform NEJM Knowledge+. © Area9 Lyceum

As research and practical experience show, improving healthcare outcomes is directly linked to increasing the overall competence of clinical professionals and at every level, from academia through residency and into practice and continuing education. The current system of medical and clinical education, however, lacks personalization that can truly advance what clinicians know – and their confidence in that knowledge. Needed is a 21st century approach that puts a focus on building mastery for each individual by targeting their knowledge gaps while assuring efficient full mastery of the subject material. Thanks to advanced technology, adaptive learning systems can raise the bar on clinical education and provide to make a critical difference for each learner and the lives of their patients.



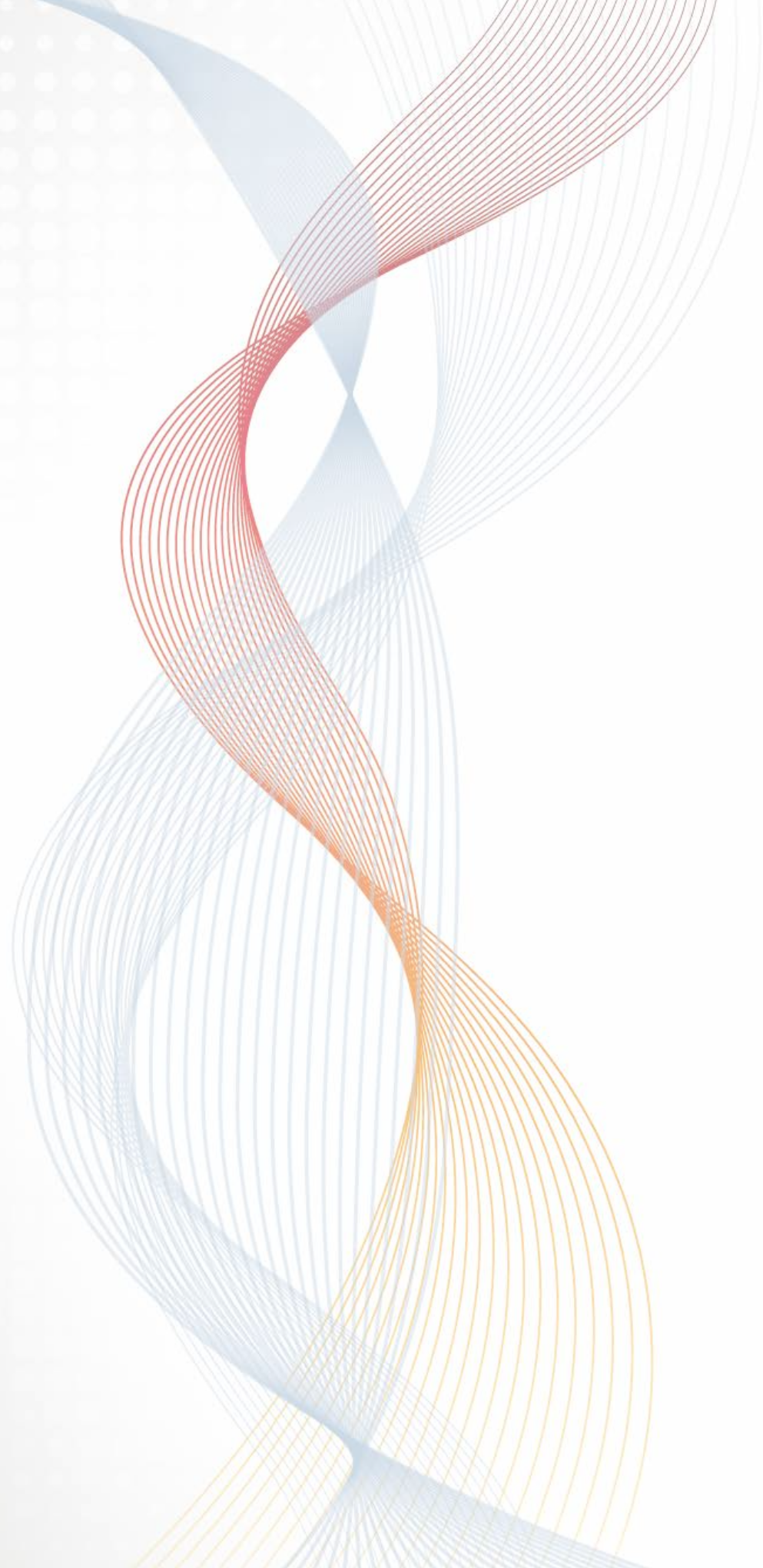
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Area9 Lyceum





Health Insurance



© Kliniken Schmieder

Traumatic brain injury: an event that can change lives

Kliniken Schmieder

As early as in 1950, family-operated Kliniken Schmieder have taken the lead in high-quality neurology and neurological rehabilitation in Germany. A total of 14,000 patients are treated each year at the six hospital sites. Kliniken Schmieder offer an integrated, interdisciplinary and innovative treatment concept to patients with neurological disorders of all kinds, which includes neurological rehabilitation across all treatment phases. The interdisciplinary team consisting of physicians, therapists, nurses and other staff provides face-to-face care to each patient. The various severities of the different neurological disorders may shake patients sometimes greatly and change their lives all of a sudden.

Traumatic brain injury is one of the most severe neurological disorders which is caused by a severe head trauma. All over the world, approx. 69 million people are estimated to sustain a traumatic brain injury and approx. 8% are moderately to severely affected. Taken as a whole, traumatic brain injury is the most common cause of death among people aged less than 45 years.

A traumatic brain injury (TBI) is defined as an injury of the cranium and the brain, which occurred due to a violent external impact. For example, it is caused by a serious motorbike or car accident or a sports injury or it occurs when children or older people fall or when someone sustains a hit on his/her head. As a consequence, brain tissue is physically damaged which might result in a temporary

or permanent reduction of the brain function. The extent of the damage can depend on multiple factors such as the type of injury or its severity. In order to prevent drastic long-term sequelae for the patient, starting intensive neurological early rehabilitation as early as possible after the event, is of utmost importance.

Traumatic brain injury: what comes next?

The quality of the primary medical care provided to the patient after the traumatic brain injury is excellent in Germany and in many of the Arab countries. In the hospitals, international teams of physicians provide decisive and important acute treatment at the highest level using state-of-the-art medical equipment. However, most large hospitals focus on providing acute primary medical care to e.g. patients who have suffered a TBI, but lack the expertise and experience in early rehabilitation. Kliniken Schmieder collaborate with many large German hospitals and university medical centres

on treating these patients. In addition to national collaborations, the Kliniken Schmieder have close contact to international centres and particularly to hospitals in the Gulf States. The on-going exchange regarding possible collaboration in the field of early rehabilitation not only includes the professional exchange but also the joint treatment of patients.

Why do Kliniken Schmieder stand out in neurological early rehabilitation?

The Kliniken Schmieder have pioneered the implementation of neurological rehabilitation and have been at the forefront of establishing the concept of early neurological rehabilitation.

State-of-the-art medical equipment, i.e. a ventilation ward, intensive medical treatment options and a specialized therapeutic concept and activating care, enables Kliniken Schmieder to admit patients very early on after they

© Kliniken Schmieder



received acute primary care, one of the main criteria for successful rehabilitation. Admission of the patient starts with the assessment which takes approx. two weeks and goes along with the treatment. Considering various testing and measuring procedures and their results, the interdisciplinary team consisting of physicians, therapists and nurses jointly decides on the individual and customised treatment plan for the rehabilitation of the patient. The many years of experience of each of the team members and the differentiated view on each patient are decisive factors to give even very severely affected patients a chance to recover and lead an active life.

Intensive medical treatment options:

Patients receiving neurological early rehabilitation frequently suffer from disorders of consciousness, require intensive medical monitoring and possibly have a tracheostomy tube, feeding tube and/or bladder catheter in place. In addition to their health restrictions, these patients often suffer from severe paraplegia and impaired speech and swallowing. In neurological early rehabilitation, the interdisciplinary team works closely together with the patient and his/her relatives in order to restore vital functions, sensorimotor skills and coordination as well as mental, cognitive and psychological functions.

Patients with a disorder of consciousness, e.g. coma may also be suitable for brain stimulation. The Kliniken Schmieder offers non-invasive diagnostic and therapeutic options to these patients. Using non-invasive treatment, activity of the neurons in the patient's brain can be enhanced by pharmacological, electrical or magnetic stimulation.

Individual therapeutic measures:

The severity of each traumatic brain injury caused by a head trauma differs from patient to patient and requires individual and customised therapy. Treatment in neurological early rehabilitation is therefore of particularly great importance and the different therapists need to proceed with a high degree of sensitivity in view of the severe impairments of the patients. The integrated therapeutic approach of Kliniken Schmieder covers a variety of therapeutic options such as physiotherapy as active motor exercise therapy, occupational therapy which is ADL- and action-oriented, speech/language therapy to treat deficiencies regarding speech, language and swallowing as well as neuropsychology.

Our in-house Lurija Institute for Rehabilitation Sciences and Health Research maintains numerous collaborations with national and international universities and partners to ensure a close alliance of science and research regarding

© Kliniken Schmieder





© Kliniken Schmieder

innovative therapeutic approaches. The newest findings are applied to the treatment of patients in the clinical routine – also with the aim of optimising the individual treatment plans of the rehab patients on an on-going basis.

At Kliniken Schmieder, special attention is paid to activating nursing which is also considered part of the treatment. The professional nursing staff helps to activate and support the patients to enable them to gradually increase and, at best, regain their independence. This includes encouraging the rehab patients to perform as many activities as possible independently, depending on their capabilities and resilience.

Goals of neurological early rehabilitation:

Above all, the interdisciplinary team focusses on stabilising and improving the patient's health status and to help the patient regain capabilities of daily living such as speaking, swallowing and moving independently and, at the same time, reducing the level of care required.

A large portion of patients achieve physical stability and independence after individual neurological early rehabilitation and goes on to the next phase of rehabilitation.

At the Allensbach and Heidelberg sites of Kliniken Schmieder, the interdisciplinary Englishspeaking team consisting of physicians, therapists and nursing staff welcomes international patients and their relatives on a ward specifically fitted for international patients, supplemented by a multilingual team that is available to respond to any questions, desires or issues.



Stefan Boeckle
*Director International
Relations*

Kliniken Schmieder





Medical IT & Communication Solutions

Development & digitalization in healthcare

Digital Future in Health Care – Milestone in Digital Communication

AI APPLICATIONS

SOFTWARE & INTERNET

WEB DEVELOPMENT

TELEMEDICINE

Digital Future in Health Care © Biotech & Capital Consulting GmbH

Revolutionizing Healthcare: A Leap into the Digital Future

Biotech & Capital Consulting GmbH

The article "Revolutionizing Healthcare: A Leap into the Digital Future" explores the transformative impact of digital technology in healthcare, emphasizing a groundbreaking telemedicine tool that integrates artificial intelligence (AI) and medical device compatibility. This digital shift is revolutionizing patient care and diagnostic services, making them accessible universally, irrespective of geographical barriers. The telemedicine tool not only facilitates real-time consultations and diagnoses but also excels in versatility, covering a range of medical disciplines and enabling everyday devices to function as diagnostic tools. It marks a significant step towards the digital integration of healthcare facilities nationwide, aiming to streamline services, enhance patient outcomes, and improve healthcare resource allocation. This tool promotes a more coordinated healthcare delivery, reduces unnecessary travel and wait times, and empowers patients by providing access to their health records and enabling active participation in their healthcare decisions. Additionally, the article underscores the importance of data privacy and security in this digital transition. This innovation heralds a new era where digital healthcare transcends traditional limitations and reshapes the future of global patient care.

Introduction

In an era defined by rapid technological advancement, the integration of digital solutions into healthcare facilities has

emerged as a transformative trend. This digital transformation encompasses a platform-based approach and the seamless integration of telemedicine applications, bringing about a new era of patient care and diagnostic capabilities. Today,

we are excited to introduce a groundbreaking telemedicine tool that leverages the power of artificial intelligence (AI) while harnessing the potential of medical devices. This versatile tool spans across diverse medical disciplines, offering user-friendly accessibility via laptops or mobile devices. It marks the imminent frontier of diagnostic practices, extending its reach to individuals worldwide. Our mission is to make diagnostic capabilities universally accessible, transcending geographical boundaries. Furthermore, we'll delve into how this innovative tool is laying the foundation for the digital integration of all medical centers within a country.

Empowering Healthcare with AI and Telemedicine Integration

Imagine a healthcare system where medical expertise knows no bounds, where patients can access top-tier diagnostic ser-

vices from the comfort of their homes or local clinics. Such a vision is now becoming a reality thanks to the fusion of telemedicine and AI. Our revolutionary telemedicine tool is at the forefront of this digital transformation.

This tool is more than just a platform; it's a catalyst for change. It seamlessly connects patients with healthcare providers and medical specialists, offering real-time consultations and diagnostic insights. With its AI capabilities, the tool can analyze vast amounts of medical data, helping physicians make accurate diagnoses and treatment recommendations swiftly.

Versatility Across Medical Disciplines

One of the key strengths of our telemedicine tool is its versatility. It caters to a wide range of medical disciplines, from general medicine to specialized fields such as cardi-

Digital Integration of Medical Centers and Patients © Biotech & Capital Consulting GmbH



ology, dermatology, and radiology. This versatility ensures that patients can access the right expertise for their specific health needs, regardless of their location.

Moreover, the tool supports the integration of various medical devices, transforming everyday gadgets like smartphones and tablets into powerful diagnostic tools. Patients can monitor vital signs and share this data with their healthcare providers in real-time, facilitating proactive and preventive healthcare.

Accessibility for All

Universal access to healthcare is a fundamental goal, and our telemedicine tool takes a giant stride toward achieving it. By enabling consultations through laptops or mobile devices, it breaks down geographical barriers and provides healthcare access to remote and underserved regions. Patients no longer need to travel long distances to see a specialist; instead, the specialist can reach them with a simple click.

Digital Integration of Medical Centers

Beyond individual consultations, our tool sets the stage for a more profound transformation—the digital integration of all medical centers within a country. This ambitious plan

aims to streamline healthcare services, enhance patient outcomes, and improve resource allocation. With every healthcare facility connected through a unified platform, patient data can be securely shared, facilitating collaborative care and reducing duplication of tests and treatments.

Improved Healthcare Delivery

The digital integration of healthcare facilities brings numerous benefits. Medical professionals can access a patient's complete medical history, making informed decisions about their care. Patients benefit from more coordinated and efficient care, with reduced wait times and unnecessary travel. Moreover, the centralized platform enables real-time data analysis, supporting public health initiatives and early disease detection.

Enhanced Patient Engagement

Our telemedicine tool also enhances patient engagement and empowerment. Patients have secure access to their health records, allowing them to actively participate in their care decisions. Telehealth consultations enable ongoing communication with healthcare providers, making it easier to manage chronic conditions and receive timely interventions.

The New Tool in Telemedicine © Biotech & Capital Consulting GmbH



THE SOLUTION

Remote medical care is an application that combines all the necessary digital and analog processes.



Accessible

Easy access online via Patient Portal

Easy

Diagnostics with the appropriate device provided

Professional

Laboratory diagnostics at home of blood, urine, stool, smear



Simple

Video consultation with preliminary diagnosis with the help of dynamic questionnaire (multilingual)

Specific

Using AI for pre-diagnosis, using all data (questionnaire, Lab-diagnostics, measurements from device, etc.)

The Solution: Remote Medical Care © Biotech & Capital Consulting GmbH

Data Privacy and Security

We understand that privacy and security are paramount in healthcare. Our telemedicine tool employs robust encryption and data protection measures to ensure patient information remains confidential and secure. Compliance with healthcare data regulations is at the core of our platform's design.

The Future of Healthcare is Digital

As we embark on this journey toward a digital healthcare future, we remain committed to our mission of making diagnostic capabilities universally accessible. With our innovative telemedicine tool at the helm, the possibilities for improving healthcare outcomes and expanding access to quality care are limitless. The future of healthcare is digital, and we are at the forefront of this transformative wave.

In conclusion, the full digital integration of healthcare facilities represents a paradigm shift in the healthcare industry. Our telemedicine tool, driven by AI and medical device

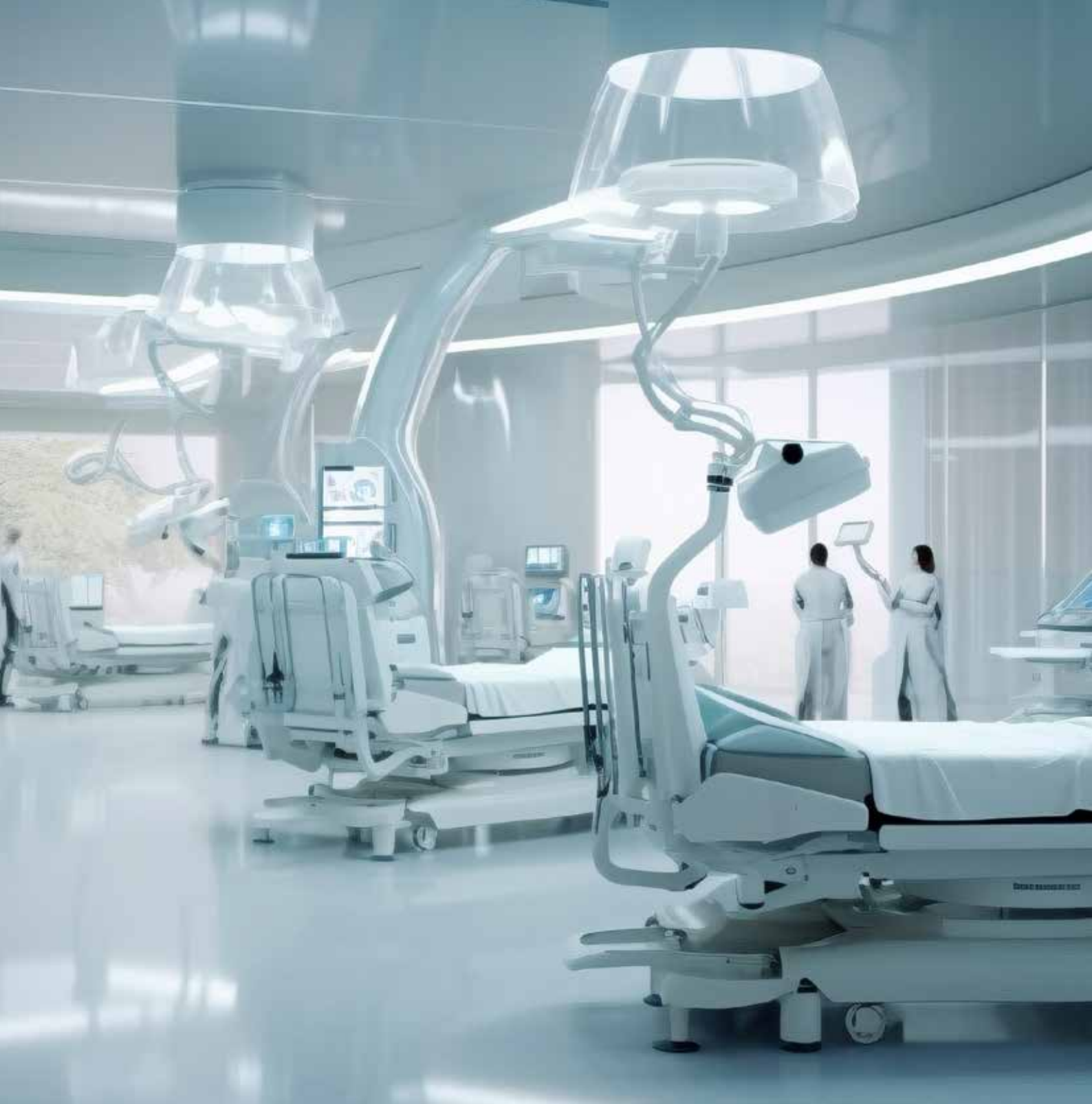
integration, not only empowers patients but also streamlines healthcare delivery and enhances patient outcomes. With the continued evolution of digital healthcare, we are shaping a future where high-quality healthcare knows no boundaries, transcending geographical limitations and revolutionizing patient care on a global scale.



Dr. Dr. Gerald Heigis
Head of Company

Biotech & Capital
Consulting GmbH © Dr. Dr.
Gerald Heigis





Planning, Building & Managing Healthcare Facilities



© Siemens AG

Creating a positive impact in healthcare by addressing the evolving complexities of markets in the Middle East

Unlocking value through strategic investments by partnering with Siemens Healthineers Consulting

The healthcare sector in the Arab world is undergoing a transformation, driven by demographic changes and technological advancements. Institutional investors are increasingly entering this high-growth market but face challenges evaluating investment opportunities due to a lack of data and the complexities of this unique healthcare landscape. Siemens Healthineers Consulting offers strategic support in M&A and greenfield projects, leveraging benchmark data and interdisciplinary experts to develop realistic assumptions, assess regulatory implications, and create sustainable business models. By ensuring all necessary elements are in place, our team helps clients adapt to industry changes to build the future of healthcare in the region.

Unleashing the Arab healthcare market

In the Arab world, the healthcare sector is influenced by various growth opportunities fueled by demographic

trends and advances in medical technology. These include the rapid adoption of digital health technologies like telemedicine and health apps, the increasing emphasis on preventive healthcare and wellness programs to address



"Our consulting team enables clients to navigate healthcare infrastructure and M&A projects by aligning individual aspirations with the broader goals of a country's healthcare system. Our tailored strategies contribute to the well-being of communities while ensuring a sustainable business model – every client, every approach, is unique."

Jalal Awad, Project Lead Value Creation, Siemens Healthineers Consulting

the region's rising noncommunicable disease burden, and concerted efforts to improve medical education and training for qualified healthcare professionals. Moreover, initiatives to improve healthcare infrastructure and healthcare accessibility are gaining momentum. Overall, these trends reflect a general shift towards more patient-centric, technology-driven, and comprehensive healthcare in the Arab world.

As a result of these market trends, many institutional investors have started to increase their focus on healthcare. However, investors and project initiators in these high-growth

markets often face challenges when it comes to evaluating investment opportunities. Lack of both data and skillset or difficulty in comparison when using standard Western benchmark data often results in projects being halted at the ideation stage or healthcare facilities being built that do not operate optimally. Assessing the feasibility of a healthcare business model requires a deep understanding of market opportunities, risks, and the competitive situation. Obtaining a realistic assessment of local conditions for complex investment environments which include on-site visits is often needed.

"By harnessing the diverse talents of our interdisciplinary team, we incorporate financial, technical, and medical knowledge. Our core competency lies in integrating strategic planning, implementation, and technology consulting to shape the future of healthcare, redefining innovation, sustainability, and human advancement to enable healthier lifestyles and flourishing communities."

Max Grenz, Global Head of Value Creation, Siemens Healthineers Consulting





© Getty Images - Katarina Premfors

Developing realistic assumptions

In healthcare business cases, a strong awareness of clinical implications is not only beneficial but essential to making realistic and viable forecasts and ultimately ensuring the delivery of high-quality care by answering questions such as: How many surgeries can be realistically performed per day? How high is the share of consumables in the process costs? And how long is the average lifecycle time of medical devices?

Healthcare business cases are inherently diverse and demand a deep knowledge of medical issues and practical expertise in clinical processes. Unlike many other industries, healthcare is subject to the complexities of patient care, treatment

protocols, and regulatory nuances. Required assumptions are based on medical knowledge and consider factors such as disease prevalence, patient demographics, and treatment effectiveness. Realistically, predicting clinical processes that lie at the core of healthcare requires a deep understanding to accurately anticipate patient volumes, staffing needs, and resource allocation. Furthermore, it is crucial that such assumptions consider the ever-evolving medical technology landscape, including advances in pharmaceuticals, and treatment modalities.

Understanding the impact of an evolving regulatory environment

High-growth markets are also frequently affected by a transformation of their regulatory frameworks to provide more cost-efficient care while enhancing the quality of healthcare services and promoting patient safety. Affordability and accessibility of healthcare are increasingly coming into focus. Governments and regulatory bodies are working to expand coverage and reduce disparities in health service delivery. These changes also have significant implications for healthcare business models and how products and services can be placed on the market. To assess these impacts and develop a sustainable business model, interdisciplinary experts with local knowledge are required to address the following questions:

- How will the delivery of healthcare services be organized in the future?

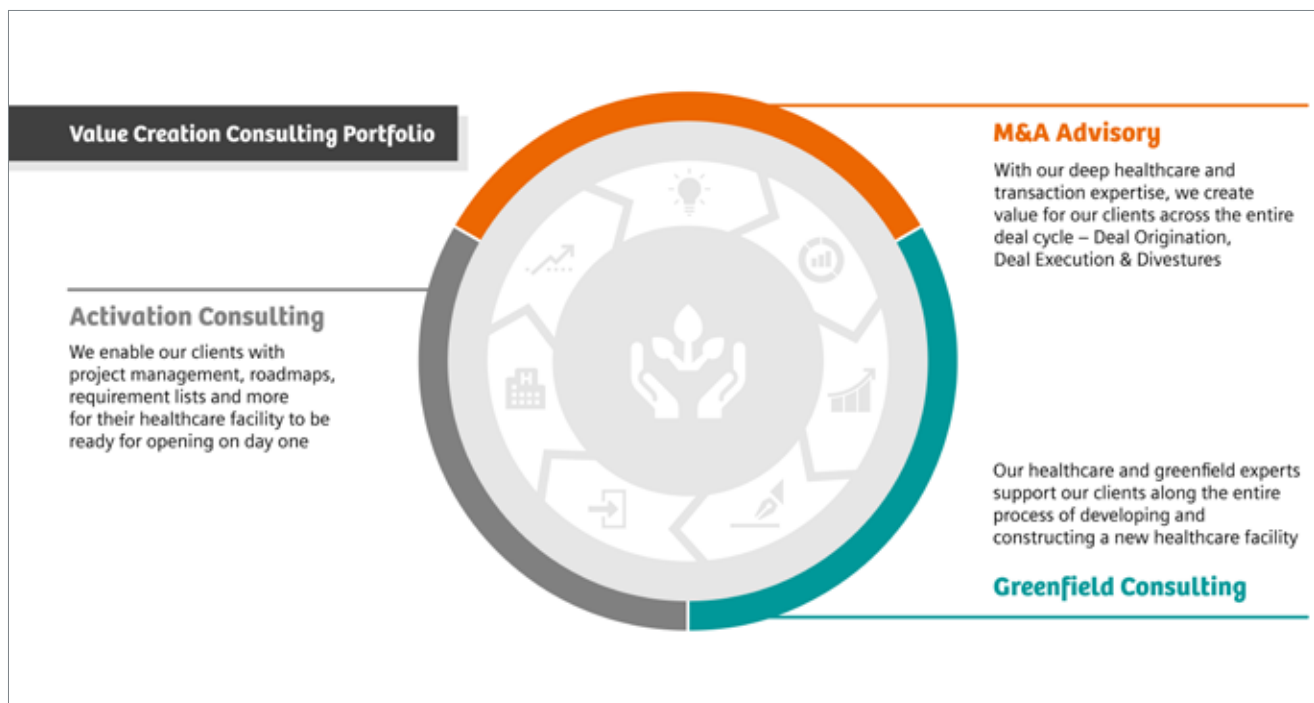
- Who are the relevant healthcare professionals along the patient pathway?

- What will be the incentive and reimbursement structure for healthcare providers?

Building strong partnerships with our customers

Given that markets often miss opportunities to improve community well-being and create successful businesses, the demand for strong partners with a clear sector focus for transaction support is rising. With our Siemens Healthineers benchmark data from past projects around the world, we gain valuable insights into markets with generally low data availability. We ensure our business plan is based on the right parameters by reviewing regulatory, market and competitive assessment, leveraging our local network, and conducting on-the-ground research.

© Siemens Healthineers Consulting





“Our colleagues from Siemens Healthineers Consulting contribute to our Value Partnerships by combining clinical and medical insights with a strategic vision and implementation expertise.

Together with our customers, we formulate strategic goals to ensure they get the most value from their investments and will provide economic and operational efficiency once their facilities are in operation.”

Sergio Visci, Head of Enterprise Services Middle East and Africa, Siemens Healthineers

To make realistic assumptions, we have a team of experts in finance, medicine, and health economics who work closely together to assess the feasibility of the project and develop the financial model. Through ongoing communication and effective project management, streamlining the expertise of our in-house specialists, and collaborating with our partner network, we translate the strategy into a solid implementation plan that ensures all necessary elements are in place when the first patient walks through the door.

Our goal at Siemens Healthineers Consulting is to build this strategic partnership with our customers and support them through our activation support throughout their journey from assessing their business case with our strategic consulting and M&A advisory services to the first day of operations. Ultimately, we help our clients strategically transform their healthcare business so that they and their team are prepared for evolving healthcare needs, supported by our long-term, performance-oriented Siemens Healthineers Value Partnerships. By partnering with us, we can adapt to industry changes together and build for the future of healthcare.



HEIDELBERG
UNIVERSITY
HOSPITAL

MEDICAL SCIENCE FOR YOUR HEALTH

Heidelberg University Hospital is one of the leading medical centers in Europe. The highest standards of medical care are guaranteed by world-renowned professors and distinguished physicians, who are constantly developing new methods of diagnosis and treatment at the forefront of biomedical science for the benefit of all patients.



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Other Topics



الإمارات العربية المتحدة
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ABU DHABI PUBLIC
HEALTH CENTRE



HE Dr. Hussain Abdul Rahman Al Rand, Assistant Undersecretary for the Public Health Sector, delivering an impactful opening speech at the press conference. © Merck

The Impact of Private Public Partnerships on Fighting Non-Communicable Diseases

Merck

Merck Gulf has partnered with the Ministry of Health and Prevention in the UAE to launch a nationwide screening programme for prediabetes and diabetes. As an integral component of the esteemed Government Accelerator program, this initiative aims to conduct 5000 screenings within 100 days. The screening campaign is aligned with UAE's National Wellbeing Strategy 2031 and is designed to help MOHAP and Merck Gulf gather data that is critical to our understanding of diabetes and prediabetes in the UAE. The outcome will enhance early detection rates, prevent the incidence of diabetes as well as support the development of post-diagnosis treatment and care.

In the challenging landscape of global healthcare, the road to innovation often thrives on collaborative efforts. At Merck Gulf, the science and technology company, we're firm believers in this ethos.

We believe that the public and private sectors working together – each playing to their respective strengths – is the best route to addressing many of today's pressing health problems. And this is particularly true with regards to Non-Communicable Diseases (NCDs).

Our recent groundbreaking partnership with the Ministry of Health and Prevention (MoHAP) in the UAE underscores Merck Gulf's commitment to championing transformative healthcare solutions in partnership with government entities, private sector partners and healthcare authorities.

Our newly launched collaborative campaign, “Give Type 2 Diabetes the Red Card”, is a pioneering initiative that includes the UAE's first National Screening Programme for Prediabetes and Diabetes. As one of the four leading NCDs in the UAE, diabetes is of strategic importance. Today, it represents approximately 25% of the NCD burden on the nation's healthcare economy - with expenditure expected to grow.

Our innovative collaboration – which will see mobile screening rolled out across all seven emirates at public and

private sector places of work - aims to prevent and reduce the incidence of diabetes in the UAE, bridging the gap between diagnosis and treatment by providing immediate post-screening access to physician consultations, lifestyle coaching, and treatment options.

This streamlined approach, coupled with meticulous data tracking and follow-up consultations at three months and six months, aims to empower individuals with both awareness and support, with the aim of reversing prediabetes and preventing diabetes in those being screened.

Fully supported by health authorities across each of the emirates, the importance of the programme has been recognised at the highest levels. It is now part of Government Accelerators, a UAE Government initiative launched by His Highness Sheikh Mohammed bin Rashid Al Maktoum,

A momentous launch event for 'The National Screening Programme for Prediabetes and Diabetes' marks a significant step in healthcare. © Merck



Vice President and Prime Minister of the UAE and Ruler of Dubai, which provides a platform for cross-sectoral government teams to address challenges and achieve ambitious goals in short periods.

One of the distinguishing features of our campaign is a commitment to nationwide data collection. Participants in the screening programme will be encouraged to participate in genetic and epidemiological studies in line with the UAE's National Genome Strategy. This long-term approach will help further valuable research into the identification of genetic predispositions and the benefits of early intervention to mitigate diabetes risk factors.

The valuable data generated by the National Screening Programme will be documented in a medical research paper, in what is set to become a groundbreaking publication on the impact of tracked prediabetes screening programmes. These

findings are anticipated to have a global impact, influencing global screening programme guidelines, and enhancing post-diagnosis guidance, treatment, and care.

Our ambitions don't stop at screening. Merck Gulf, in continued collaboration with MoHAP, is venturing into the dynamic realm of Artificial Intelligence with an AI tool designed to revolutionise early detection and prevention of prediabetes. By using AI's capabilities, we aspire to predict and address potential diabetes cases, ensuring improved outcomes for patients and a healthier UAE population.

Creating impact on this scale is never a solo endeavour. This campaign is a result of joint efforts, not just between MoHAP and Merck Gulf, but together with health professionals, the UAE's health authorities, BinSina Pharmacies, Al Manzil Healthcare, Barakat Group, Fitness First Middle East, and more.

The campaign logo stands as a powerful symbol in the fight against diabetes. © Merck





Ahmed Abo Al Fadl, General Manager at Merck Gulf, spearheading the 'Show the Red Card to Diabetes' campaign, emphasizing the importance of public-private partnerships. © Merck

As Merck Gulf navigates the intricate web of healthcare challenges, we remain committed to our belief that collaboration is key. Our partnership with UAE MoHAP stands as testament to our vision of a healthier future, one shaped by innovation, dedication, and a shared commitment to the wellbeing of all. We encourage business and healthcare authorities across the region and globally to stand together as one to fight NCDs and make a positive impact on the health and wellbeing of our local communities.

For more information:

<https://mohap.gov.ae/en/media-center/news/5/10/2023/mohap-first-nationwide-diabetes-screening-campaign>



Ahmed Abo El Fadl
General Manager at Merck
Gulf

Merck Healthcare KGaA

Ghorfa

BUILDING BRIDGES
BETWEEN GERMANY
AND THE ARAB WORLD



Ghorfa Arab-German Chamber of Commerce and Industry

Building Bridges between Germany and the Arab World

Germany and the Arab World maintain outstanding business relationships. The trade balance between them reached the brink of EUR 51 billion in 2022, recording an increase of 23.3% compared to the year 2021. These excellent relations are exemplified by the fact that the Arab private sector and sovereign funds have invested more than EUR 100 billion into the German economy, while more than 10,000 German companies are active in the Arab world.



About us

The Ghorfa Arab-German Chamber of Commerce and Industry is the competence centre for business relations between Germany and the Arab world. For over 45 years, we have been successfully promoting business cooperation between German and Arab companies. We advise and support German and Arab companies in the development and expansion of their respective business.

Our mission

The Ghorfa pursues non-profit goals to enhance and strengthen business relations between Germany and the Arab world in the fields of trade, industry, finance and investment. Strategic partnerships based on mutual benefit and understanding, create new business opportunities that facilitate economic benefits for both sides. The Ghorfa, therefore, mainly focuses on networking, consulting and on providing information about relevant economic and industrial developments.

Our network

Based on its invaluable heritage and its ambitious commitment, the Chamber has a powerful network consisting of both institutional and entrepreneurial decision makers from Arab countries and from Germany. Under the umbrella of the Arab League and the Union of Arab Chambers, the Chamber operates and acts as the representative of all Arab Chambers of Commerce and Industry in Germany. The Ghorfa works closely with the Arab Chambers of Commerce and Industry, related governmental bodies and relevant business associations in the Arab states, as well as with Arab embassies in Germany. It is part of the worldwide organisation of Joint Arab-Foreign Chambers of Commerce and Industry. The Ghorfa cooperates with German governmental bodies on federal and regional levels and with German industrial associations. The close connections and effective collaborations with decision-makers and policy shapers enable the Chamber to deliver a broad portfolio of high-quality services to meet its members' interests.



Activities, Conferences and Events

The Arab-German Business Forum has become the most important platform for the initiation and promotion of promising business opportunities between German and Arab business partners. More than 600 high-ranking business leaders and political decision-makers from the Arab world, Germany and Europe participate in this annual conference. The Ghorfa has been organising this distinguished event since 1998 in cooperation with the Union of Arab Chambers and the Association of German Chambers of Commerce and Industry under the auspices of the Federal Ministry for Economic Affairs and Energy.



Moreover, the Ghorfa hosts conferences on different industry sectors such as health, energy, education, and sports to bring together Arab and German professionals from respective branches. These events provide a professional setting for analysing and discussing possibilities for business expansion and serve as a place to debate future trends in the Arab world and Germany. The Ghorfa also runs numerous country-specific events, ad-hoc conferences on arising topics, as well as B2B meetings and working groups.

Networking

- Quick access to economic and political decision-makers
- Connecting with matching business partners
- Forwarding business enquiries to relevant recipients from our database of 15,000 contacts
- Participating in high-ranking events, conferences and further networking platforms (e. g. Arab-German Business, Energy, Health, Education and Vocational Training Forum)
- B2B meetings with high-ranking business people through events, delegation visits and upon special request
- Exclusive member events such as roundtables and working groups
- Professional all-round assistance for trade fair participation

Consulting

- General and business-related intercultural consulting
- Specifying possible business cooperation and evaluation of potential business partners
- Country and branch-specific analysis

- Comprehensive and detailed market information
- Competent market entry assistance
- Mediation and arbitration in cases of business disputes
- Advice and guidance through the multitude of offers and competing products in the German and Arab market
- Raising the presence and visibility of Ghorfa member companies in the competitive market
- Visa and commercial documents support

Information

- Regular reports with relevant information about economic and business trends
- Information on the latest economic developments, promising markets and sectors; legal and political background
- Quarterly bilingual business magazine SOUQ, providing an overview on cooperation possibilities and activities within the Arab-German business community
- Complimentary copy of our Business Guides, Sector Specific Books (e. g. health, education, energy or infrastructure) as well as the Arab-German Business Directory



We welcome you to become part of the high-level network that we provide for professionals and business leaders from the Arab world and Germany. Join us and share our vision of prospering Arab-German business relations. For further information concerning membership in our chamber please contact us:

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Contributing Companies and Institutions



Area9 Lyceum brings together more than two decades of learning research and advanced computer science in its next-generation learning platforms for K-12, higher education, and corporate education. As a leader in personalized and adaptive learning, as well as comprehensive infrastructure for learning engineering, design, delivery and analytics at scale, Area9 Lyceum enables clients to realize the future of personalized, multidimensional learning: mastery-based learning. A mastery-based approach enables learners to become proficient in the knowledge and skills that are highly relevant to them, their teams, and organizations. The technologies developed by Area9 are used by millions of learners of all ages and by leading organizations and companies around the world.

Project: Incorporating NEJM Knowledge+ in the curriculum for Internal Medicine in the Kingdom of Saudi Arabia; Trial of core knowledge base enhancement

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Biotech & Capital Consulting GmbH

Biotech & Capital Consulting GmbH, based near Stuttgart, is a pioneer in digital healthcare. Founded by Dr. Dr. Gerald Heigis, the company focuses on telemedicine, digital healthcare applications, AI, software development, and web solutions. Their flagship project aims to digitally connect healthcare facilities, doctors, and patients using telemedicine and AI. Dr. Gerald Heigis has a rich history in healthcare digitization, dating back to the development of one of the first digital billing software systems for medical practices. Today, the company continues to lead the way in transforming healthcare through technology, improving patient outcomes and experiences.

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HEIDELBERG UNIVERSITY HOSPITAL

Heidelberg University Hospital

Heidelberg University Hospital is one of the leading medical centers in Europe. State-of-the-art equipment as well as world-renowned professors and highly experienced physicians enable patients to receive medical care that meets the highest international standards, even for complex diseases. The proximity and networking of the 43 clinical departments ensures interdisciplinary cooperation for optimal treatment. Hundreds of physicians and scientists at Heidelberg University Hospital and its partner research institutions, such as the world-renowned German Cancer Research Center, pursue a common goal: the development of new forms of therapy and their rapid implementation for the benefit of the patient.

The team of the International Office takes on the administrative support of international patients before, during and after their stay at Heidelberg University Hospital.

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KLINIEN SCHMIEDER

Clinic for Neurology and
Neurological Rehabilitation

Kliniken Schmieder

Kliniken Schmieder are a specialist hospital group with six locations in the south of Germany offering neurological acute care treatment and neurological rehabilitation. As a neurological competence center, the Kliniken Schmieder treat all neurological diseases of all degrees and severities. The family-operated company is regarded throughout Europe as a leader in quality and stands out for its combination of professional medical treatment, as well as the personal care it provides to both patients and relatives. For international patients, the hospitals in Allensbach and Heidelberg offer designated international wards and services both for patients and relatives.

Project: Traumatic brain injury: an event that can change lives

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Merck KGaA

We are Merck, a science and technology company. We are curious minds dedicated to human progress. We are pushing the boundaries of possibility to improve the lives of millions of people and to create sustainable value. Science is at the heart of everything we do. It drives the discoveries we make and the technologies we create – and it forms the basis of our future growth. Our set-up is unique, thanks to our three diverse and distinct sectors, with leading positions in fast-growing science and technology markets.

Project: The Impact of Private Public Partnerships on Fighting Non-Communicable Diseases

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Siemens Healthineers AG

Siemens Healthineers pioneers breakthroughs in healthcare. For everyone. Everywhere. Sustainably. The company is a global provider of healthcare equipment, solutions and services, with activities in more than 180 countries and direct representation in more than 70. The group comprises Siemens Healthineers AG, listed as SHL in Frankfurt, Germany, and its subsidiaries. As a leading medical technology company, Siemens Healthineers is committed to improving access to healthcare for underserved communities worldwide and is striving to overcome the most threatening diseases. The company is principally active in the areas of imaging, diagnostics, cancer care and minimally invasive therapies, augmented by digital technology and artificial intelligence. In fiscal 2023, which ended on September 30, 2023, Siemens Healthineers had approximately 71,000 employees worldwide and generated revenue of around €21.7 billion. Further information is available at www.siemens-healthineers.com.

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Partnerships and Perspectives of
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