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What you need to know about low cost and portable MRI systems, Democratization of MedTech equipment and career pathway as an ICT expert in healthcare.



## Democratization of Healthcare

We all know that the technology has the potential to reduce the inequality and obstacles, which prevent access to healthcare for all. The developing economies, usually face a hard workload. This includes many people in Southeast Asia, Latin America, Middle East and Africa. Sometimes they practically need to work twice or more than central European peers to earn the same money. And still they don't get the desired health care they deserve. But who is responsible for the lack of access to healthcare? Is this due to disparities in the provision of resources? How we can empower the people to be able to afford the most basic healthcare?

Technology Innovation in the area of healthcare is a dream for many individuals and nations. It includes the breaking the walls of cost, time, location and accessibility. Embracing technology, and how it democratizes access, will make universal health care a reality. That is a major milestone for a better future. Because we are now moving further into the [Fourth Industrial Revolution \(Industry 4.0\)](#), an era of rapid prototyping and Artificial intelligence, the technical resources in healthcare are now more accessible.



Health care is democratizing. It means that the technology and its benefits will be soon more accessible to people. The democratization includes three main elements. First, the availability of the technology and

practical solutions. Second, the awareness of the society and dissemination of information, which also includes the availability of practical education. And third, the coherence with local policies to embrace the new technologies, and making the required decisions. Eventually all these together provide the patients the ability to use their knowledge, application and access to expertise, to ensure and manage their personal health.

## **Europe, Americas, & Africa in a comparison**

The quality and accessibility of the healthcare systems in Europe and the United States are almost the same. Of course, we know that American health care companies and hospitals cost more. Also, they provide less “value for that money” compared to European systems. It means less benefits for the amount of money spent. It’s not the focus of the article. Therefore we [cite a paper](#) from [David Squires](#) explaining the High Health Care cost in the United States. When it comes to developing countries, the higher price immediately literally equals to having no access to essential healthcare facilities. Of course, it also depends on the population density and GDP of the developing countries.

The population of Europe was 549 million in 1950. This is now 743 million, and expected to decline to 709 million by 2050. Africa’s population has grown from 230 million in 1950 to 1.2 billion today and is likely to be 2.4 billion by 2050, when the population of Nigeria alone may be larger than that of Europe. Today, Europe has 11 percent of the world’s population, but by the end of this century it would have just six per cent. In the absence of immigration, the population of many European countries could decline by as much as 50% by the end of this century. Health care is therefore a global issue and by far no longer a pure national priority.



## Benefits of normal & portable MRI Systems

We use MRI scanner (Magneto-resistant imaging) to take pictures of any part of the body (e.g. head, joints, legs, etc.) in any image direction. MRI provides greater soft tissue contrast than CT (computer tomography) and can make a better distinction between fat, water, muscle and other soft tissue than CT (CT is typically best for imaging of bones). Such MRI photos which is also possible using a low cost and Portable MRI Systems, provide various information to practitioners. They are very helpful in the diagnosis of a wide range of diseases and conditions. The portable systems are usually smaller, and we can only use them for smaller body parts like head and hand.

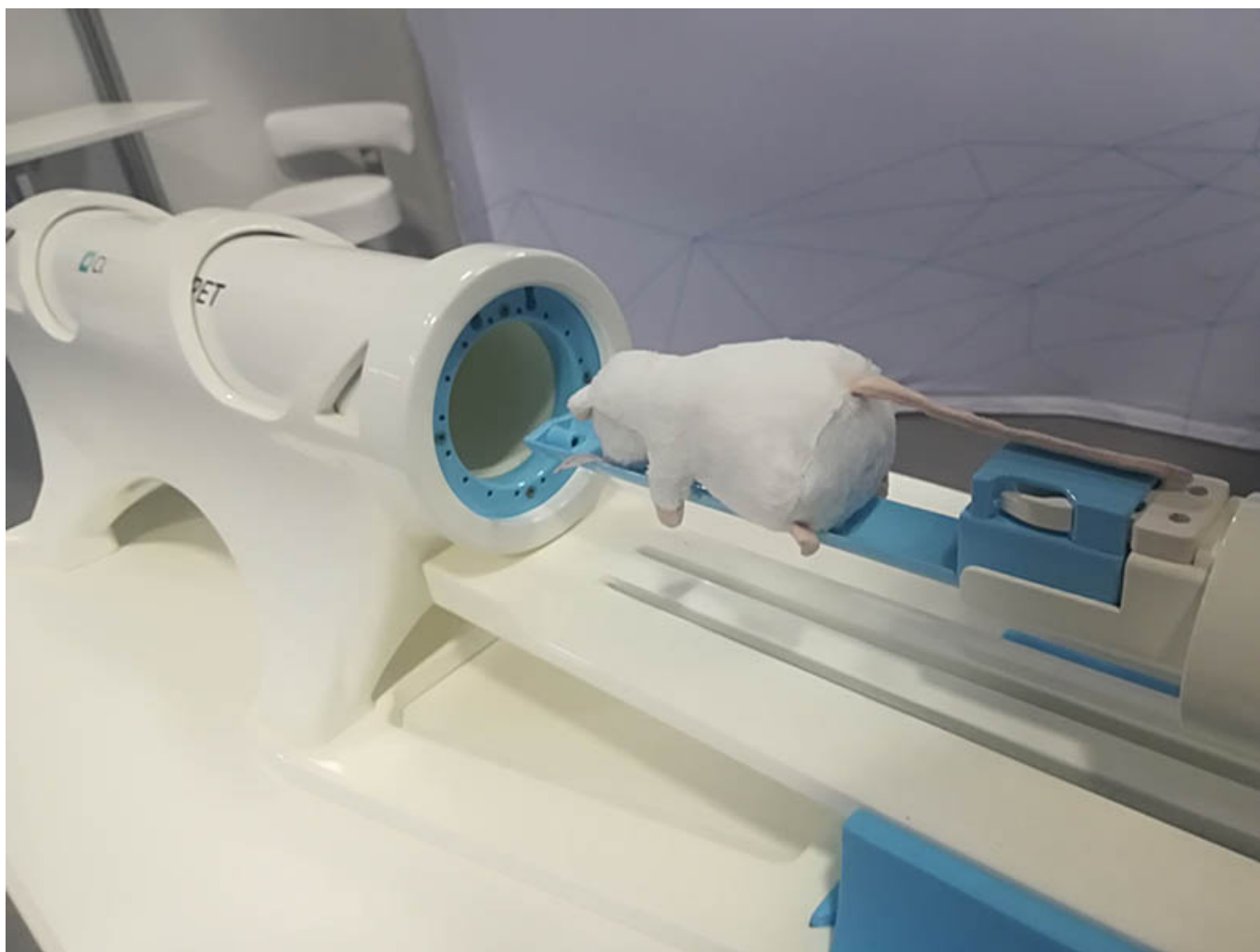
MR Systems offer images without the use of any ionizing radiation. Therefore, they do not expose the patients with dangerous effects of ionizing radiation. While there are no known health risks from transient exposure to the MR environment, the MR environment contains a strong, magnetic field that affects magnetic materials. There are known safety issues related to thermally and mechanically induced effects. Therefore, the use of the MRI system may not be permitted if the patient has a metal implant. There are institutes such as [Cademix Institute of Technology](https://www.cademix.org) in Austria and partner organization such as [MRcomp](https://www.mrcomp.org) and the MRI-STAR Institute in Germany that offer relevant services. They assist the patients, hospitals and implant manufacturers in the design and study of MR-Safety and optimization of the medical implants.

## Portable MRI Systems Application beyond the human healthcare

Applications for MR imaging in the industry are common and include both inorganic and organic compounds. Routine chemical analysis is possibly the most common application, but the NMR technique is flexible to calculate the water-fat ratio in food, to track the flow of corrosive fluids in pipes, or to analyze the complex material structures of molecules, including catalysts.

Magnetic resonance imaging is no longer limited to human radiology services. The European TÜV (Technischer Überwachungsverein; German / Austrian Organizations providing product certification services) and the US counterpart FDA (Food and Drug Administration) offer certificates and clearance to portable and small MRI systems.

It's the ultimate Game changer. According to Connecticut-based Hyperfine, a portable MRI Systems would cost \$50,000. This is about 20 times cheaper than conventional devices, which makes it totally affordable. Also it runs on 35 times less power and 10 times less weight than standard 1.5 T MRI machines, therefore it's a totally portable device.



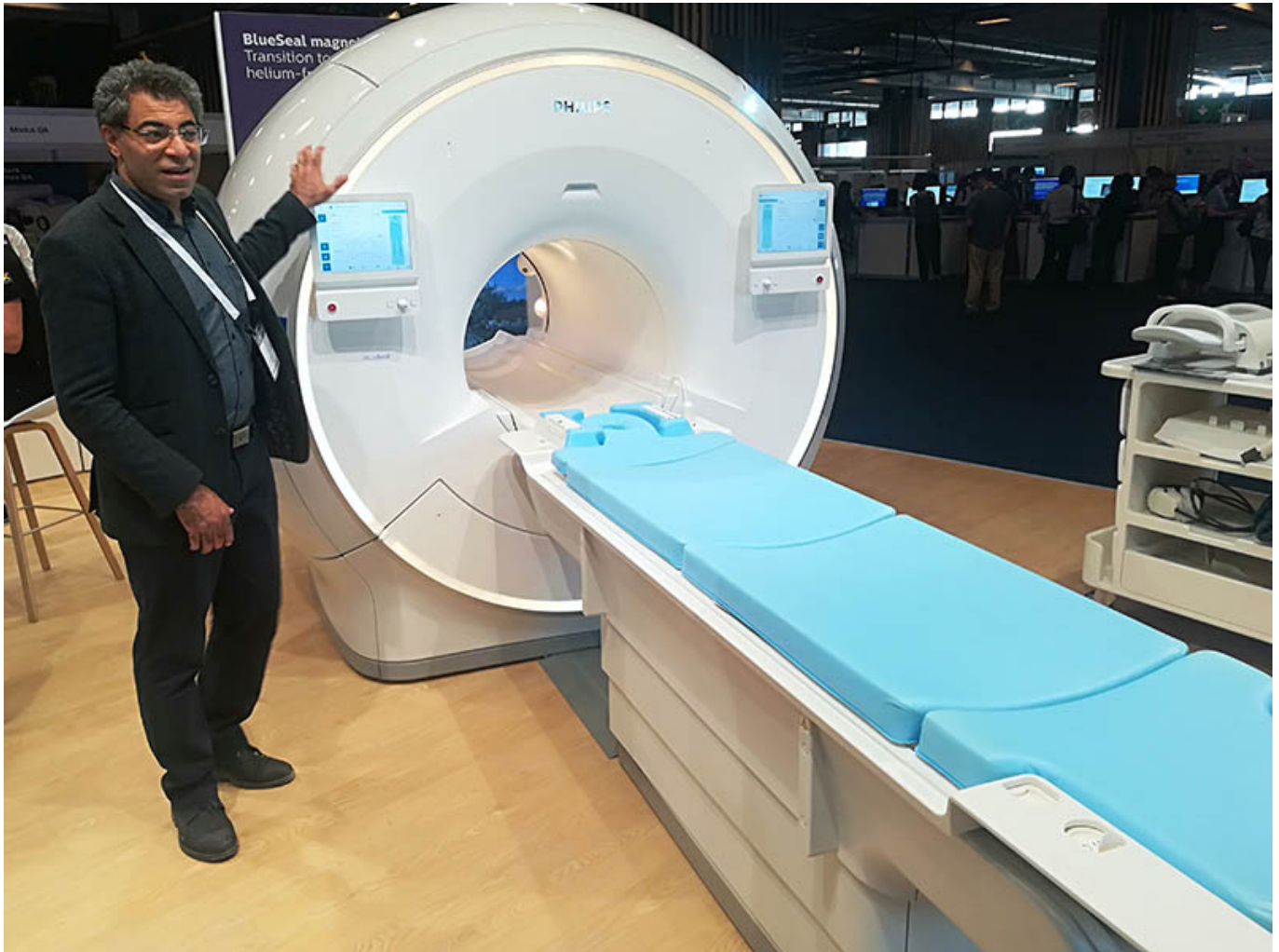


## Why do you need to become an MRI Tech Expert?

It doesn't matter if you have a medical or engineering background. If you're a tech nerd or tech-lover, you'll certainly enjoy working with advanced medical equipment and computers. You'll always have a few things to say about applied science, medical facts, healthcare advice, when you sit down with your engineer friends. While you develop your skills, you will also become more tech-savvy. It is also very important to become an expert in human anatomy.

MRI Tech wages are really competitive, compared to traditional engineering jobs. Also you're never going to miss a career because of a technological crisis. And finally you probably guess the main advantage is that it's always nice to have access to Hospital Workflows and valuable networks in both the engineering and medical world.

The [Postgraduate Program on ICT in Healthcare](#) gives you an overview of the transdisciplinary system and state-of-the-art information and communication technologies, that revolutionizing healthcare and medical engineering sectors. One target group is the medical and health practitioners who wish to expand their ICT skills to a higher level. The engineers may also be interested in developing their multidisciplinary expertise in the program.



The [ICT industry in HealthCare and Medical Technology](#) and its [job market](#) are booming at least over the next decade. There is a great need for multidisciplinary talents with knowledge of existing Portable MRI Systems and interest and experience in different fields. Particularly those with fresh ideas for R&D and creative projects should join the field. The program covers topics such as Modern Data Acquisition Techniques and Communication Tools, which will bring the Electronic Health Monitoring Systems to real-time mode.

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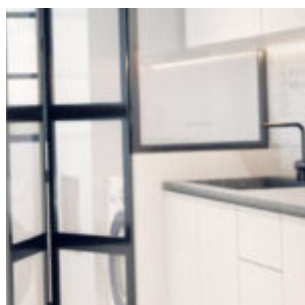
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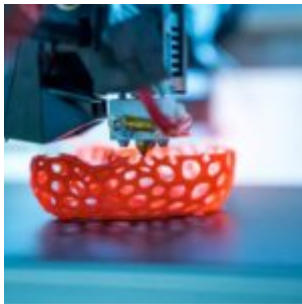
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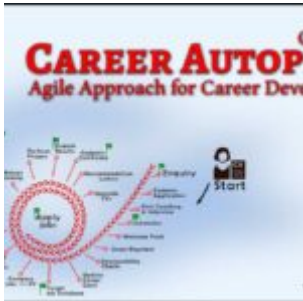
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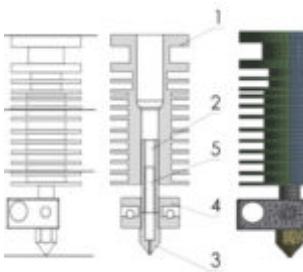
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