



# MEDICAL IMAGING IN FRANCE

BY THE FRENCH HEALTHCARE ASSOCIATION – MEDICAL TECHNOLOGY GROUP

## Historical background

Initiated at the end of the 19th century with the discovery of X-rays by the German physician Wilhelm Röntgen, medical imaging started in France with Professor Antoine Béclère, who performed the first X-rays on a patient in Tenon hospital (Paris) in 1897. Pioneer of medical imaging and first created in France, radiography was majorly developed by Marie Curie during the First World War. She developed mobile X-ray cars sent to the front lines to detect foreign bodies and bone breaking before surgery.

After the war, the technique spread very quickly all around the world and innovations came one after another. These improvements led to a major diversification of medical imaging during the 20th century, with the appearance of the gamma scan, scanner, ultrasound, magnetic resonance imaging, and then positron-emission tomography.

Medical imaging is now key in the care of patients and is used in all stages of the care pathway. It is improving continuously and shows, more and more accurately, the reality of the human body. With this historical situation, France is now one of the most competitive countries in the world.



## Medical imaging sector

Medical imaging gathers different technologies intended to acquire or reproduce human body images. There are imaging solutions, strictly speaking, such as radiography (with all its application sectors), scanners, magnetic resonance imaging (MRI), gamma scan, PET scan, ultrasound and bone densitometry. Added to this area are software imaging solutions (PACS-RIS-SIH), post-treatment solutions and, most recently, artificial intelligence, with many companies and booming startups.

## Key figures in France

The global market of medical imaging is one of the most dynamic segments of medical material. It accounted for €35 billion in 2015, with a high increase due in the next decade (Xerfi, Evaluate 2015). The French market was estimated to be worth €1 billion in 2014 (Court of Auditors) and is among the largest in the world: 200 remote-controlled radiology tables were sold in 2018. France boasts internationally renowned companies and is a global reference in imaging with French expertise (French-Touch) recognized around the globe. In 2018, France was the world's sixth largest exporter (GTA/IHS Markit) and exported €2 billion of medical, electromedical and electrotherapeutic irradiation equipment. Its main customers are the Netherlands, the United States and Germany (French Customs Authorities). France is considered the showcase of medical imaging, with 8,885 radiologists who also specialize in medical imaging and nearly 33,500 electroradiology specialists. (INSEE)



**8,885** radiologists specializing in medical imaging (INSEE, 2019)



**33,500** electroradiology specialists (INSEE, 2019)



The French market is estimated to be worth **€1 billion** (Court of Auditors, 2014)



**World renowned expertise**



The world's **sixth** largest exporter (GTA/IHS Markit, 2019)



**€2 billion** of medical, electromedical and electrotherapeutic irradiation equipment in exports (French Customs Authorities, 2019)



The global market of medical imaging accounts for **€35 billion**, with a high increase predicted for the next decade (Xerfi, Evaluate 2015)

## Main players in France

Today, France bears many advantages for new global champions to develop in medical imaging, a sector in which the country has been excelling historically. Many French companies, considered as references at the world level, will continue to bring their expertise to the international market:

**\_DMS Imaging, Stephanix, EOS Imaging** (2D and 3D conventional imaging)

**\_Carestream Dental, Acteon** (Dental imaging)

**\_Supersonic Imagine, Sonoscanner, Quantel Medical** (Ultrasound)

**\_DMS Imaging** (Bone densitometry)

**\_Mauna Kea Technologies** (In vivo digital endomicroscopy)

**\_Echosens** (Diagnosis and monitoring of chronic liver diseases)

**\_Trixiell - Thales** (Detectors – imaging intensifiers)

#### **\_Guerbet**

(Pharmaceuticals, medical devices for diagnostic and interventional imaging)

**\_Therenva** (Cardiovascular imaging solutions)

**\_GE Healthcare** (Buc, France) (Mammography / cardiovascular imaging)

**The trend is also positive for those involved in image archiving, processing, communication and analysis, as well as for the management of the medical imaging profession. They take advantage of the increasing power of customized medicine and the applications linked to telemedicine issues:**

**\_Evolucare Technologies Group, ACETIAM (MNH Group-ACCELISS), NGI, X Medical Picture, Softway Medical, Actibase, System X, Nicesoft** (Picture archiving and communication systems (PACS) – radiological information systems (RIS) – hospital information system (HIS))

**\_Intrasense, Medecom, Olea Medical, Digisens, CASIS** (Post-treatment software solutions)

**\_Télémedecine company, Deeplink Medical** (Teleradiology)

**With the massive introduction of artificial intelligence (AI), we are entering a new era. In comparison with conventional systems, AI allows for faster, more accurate and more reliable diagnoses to be made. Growing strongly, AI will be widely marketed in the coming years. The €1.5 billion unblocked over five years to develop AI in France, with health as the number one priority, will enable some companies to finalize new projects:**

**\_Evolucare Technologies Group / ADCIS / APHP** (Detection of anomalies on dilated fundus examination images as part of diabetic retinopathy screening)

**\_Milvue, Gleamer** (Detection of anomalies on standard X-rays)

**\_Therapixel** (Detection of breast lesions, winner of the Mammography International Championship in 2017)

**\_Guerbet** (Co-development with IBM Watson Health of a diagnostic assistance tool to automate the detection, characterization, monitoring, surveillance and prediction of the therapeutic response of primary and secondary liver cancer)



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