

# Coverage Initiation Report

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## Intrasense

Alternext Paris: ALINS [FR0011179886]

15/02/2017

### Estimated price:

€1.01

### Intrasense: Myrian®, a powerful multi-modal medical imaging software

|                            |           |
|----------------------------|-----------|
| Share price (€)*           | 0.70      |
| Market Cap. (€M)*          | 7.1       |
| Estimated Market Cap. (€M) | 10.3      |
| Number of shares (M)       | 10.2      |
| YTD High/Low (€)           | 1.01/0.58 |
| 3-month average daily vol. | 450,000   |
| Free Float                 | 71%       |
| Estimated Net Cash (€M)    | -1.7      |

\* as of 15/02/2017

### Myrian, vendor-neutral multimodal viewing and analysis software

Intrasense has spent more than €15M in R&D to develop Myrian, an innovative software for advanced visualization and analysis of medical images. With Myrian, clinicians and radiologists can interpret images from different modalities (X-Ray, Ultrasound, Magnetic Resonance Imaging, etc.) on the same platform, regardless of the modality manufacturer (vendor-neutral). Myrian licenses are adapted to the needs, and budget of Intrasense's clients thanks to a portfolio of several organ-specific and pathology-specific modules. Intrasense's product also integrates intuitive work-flows for improved productivity in hospitals, and patient care.

### A market estimated to reach \$2.6 billion in 2020

The medical imaging market is complex, and limited by numerous factors such as budget constraints from healthcare systems and fierce competition. However, the market of advanced imaging software is expected to reach \$2.6 billion in 2020, driven by increased prevalence of chronic diseases, aging population, and the need for more medical images.

### Established partnerships with leaders in the medical imaging market

Intrasense chose to market Myrian through indirect sales, with modality manufacturers, Picture Archiving and Communication Systems vendors or Healthcare IT actors (RIS, HIS, EMR). The company has already established strong multi-annual deals with leaders of the market such as Merge Healthcare (IBM), Toshiba, or Cerner.

### Intrasense could be EBITDA-positive by 2018

The company suffered from difficult market conditions in 2013 and 2014, which negatively impacted sales. However, the company has taken the necessary actions to reduce operating expenses, and revenues have increased by 20% in 2015, and by 8% in the first half of 2016, compared to H1-2015. We believe that the company could be EBITDA-positive by 2018.

### Target price of €1.01/share

Our valuation model (DCF) includes an enterprise value of €12.0M and an estimated net cash of €-1.7M. Our target price is €1.01/share.

In partnership with



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## 1. Company Profile

Intrasense is a French company founded in 2004, developing and commercializing innovative medical imaging software. The company has already invested €15M in research and development and has successfully brought its lead product Myrian to the market. Myrian is a FDA-approved and CE-marked software package providing advanced post-processing analytics for medical images acquired with all types of modality: magnetic resonance imaging, computed tomography, X-ray, Positron Emission Tomography, or Ultrasounds. Intrasense decided to go public in 2012 on Alternext Paris (ISIN: FR0011179886), to accelerate its international development. However, difficult geopolitical events (Ukraine/Russia crisis, North African crisis) negatively impacted the company's business operations in 2013 and 2014.

Intrasense's management has since restructured the company and secured significant worldwide multi-annual deals bringing the company back on track. At the yearly Radiological Society of North America convention, Intrasense regularly secures license contracts, confirming that Myrian addresses the needs of the market, and that Intrasense's management has adequately positioned its product in a highly competitive environment.

### 1.1. Myrian, multimodal advanced post processing software

#### 1.1.1. Myrian 2.0

The last version of Intrasense's lead product, Myrian 2.0, is a vendor-neutral innovative software package providing advanced visualization and analysis tools for medical imaging. The company offers customizable licenses with different level of functionalities, tailored to the needs of its clients. The company successfully developed several organ-specific and pathology-specific modules, with in depth work-flow protocols following international diagnosis guidelines. Such modules, in addition to Myrian's user-friendly interface, could help radiologists and clinicians provide more accurate and reproducible patient diagnosis, and improve the productivity of those dealing with high volumes of analyses.

Figure 1. Myrian software



### 1.1.2. Myrian Studio

This version of Myrian was launched in the summer 2016 in order to provide engineers and scientists in the field of medical imaging, the necessary tools for product development. Myrian Studio can be downloaded and used free of charge for research purposes only. Therefore, any module developed using Myrian Studio will not be compatible with commercial version of Myrian. Intrasense's strategy is to promote its platform among academic teams and increase the visibility of its software. Intrasense could therefore capitalize on the development of new post-processing tools from academic labs or companies using Myrian Studio, to improve the Myrian platform, should both parties find adequate licensing terms.

### 1.2. Myrian, available worldwide through indirect sales

Users of the Myrian software are typically radiologists, and clinicians, whether they are in hospitals, imaging centers, or Contract Research Organizations. However, Intrasense decided to market Myrian through indirect sales, thus avoiding high investments required to develop its own sales force. Therefore, Intrasense's clients consist of OEM (Original Equipment Manufacturer) whether they are imaging modality manufacturers, Picture Archive and Communication Systems vendors, or Healthcare IT actors (RIS : Radiological Information System, HIS : Health Information system, EMR : Electronic Medical Record). After securing deals with companies like Toshiba (MRI systems), AllTech (MRI systems), or Merge Healthcare (Picture Archiving Communication Systems), Intrasense can rely on their marketing team to sell its product. Myrian is compatible with international medical imaging standards (DICOM), for better market adoption and integration in OEM products, and is available in several languages, including Chinese and Japanese.

### 1.3. The 3D Medical Imaging software market could be worth \$2.6B in 2020

Intrasense is facing strong competition in the field of advanced post-processing software. According to Global Industry Analytics, the market could be worth \$2.6B in 2020. The increased prevalence of chronic diseases (cancer, neurological disorders...) requiring imaging for efficient diagnosis and patient care is likely to contribute to the market. Although the modality and PACS markets are expected to increase in the coming years, they are dominated by large players (oligopolistic markets). There are numerous factors that could restrict the growth of the market, such as budget constraints on healthcare systems, and limitation of patient exposure to radiation.

However, modernization of hospital IT infrastructure, demand for efficient Electronic Health Record (EHR) solutions, and demand for cloud-based systems, represent growth opportunities for the sector. According to a 2016 Frost & Sullivan study, image- and cloud-enabled healthcare content management solutions, and imaging clinical decision support solutions are expected to grow at a 2015-2020 CAGR of 16%, and 20%, respectively.

Interestingly, Intrasense's Myrian software, by its design, is already positioned to follow these market trends, and can be easily adapted to new growth opportunities. Intrasense has developed a competitive advanced medical imaging software suite, and is now investing its resources to increase market adoption of Myrian. Moreover, the healthcare imaging IT market has also been consolidating in the past few years, and we believe that Intrasense could be a good M&A candidate.

### Company history

| Year | Event   |
|------|---|
| 2004 | <ul style="list-style-type: none"> <li>Intrasense is founded by Stéphane Chemouny</li> </ul>  |
| 2005 | <ul style="list-style-type: none"> <li>Marketing authorization in Europe with CE marking granted to Intrasense's software</li> </ul>  |
| 2006 | <ul style="list-style-type: none"> <li>Launch of the Myrian software</li> </ul>   |
| 2007 | <ul style="list-style-type: none"> <li>First sales and first OEM deal</li> <li>Myrian is approved by the FDA</li> </ul>   |
| 2008 | <ul style="list-style-type: none"> <li>€4.4M equity financing (A Plus Finance, Amundi Private Equity)</li> <li>Intrasense markets Myrian with organ-specific modules</li> </ul>   |
| 2009 | <ul style="list-style-type: none"> <li>OEM deal with Toshiba. Myrian is integrated in Toshiba's MRI machines (Tethys)</li> </ul>  |
| 2011 | <ul style="list-style-type: none"> <li>Myrian is approved in Brazil, China, and Russia</li> </ul>   |
| 2012 | <ul style="list-style-type: none"> <li>Initial Public Offering on Alternext Paris. Intrasense raises €4.2M</li> <li>First sales in the US</li> <li>Launch of the XP-Breast module</li> </ul>  |
| 2013 | <ul style="list-style-type: none"> <li>Intrasense opens a US subsidiary</li> <li>Launch of the XP-Prostate module</li> </ul>  |
| 2014 | <ul style="list-style-type: none"> <li>Follow-on offering of €4.0M</li> <li>Stephane Chemouny is appointed CEO of Intrasense</li> </ul>   |
| 2015 | <ul style="list-style-type: none"> <li>Intrasense secures a 10-year contract with a PACS leader, with minimum revenues of €250k/year</li> <li>Intrasense secures deal with American company Merge Healthcare (IBM)</li> <li>Intrasense participates in the HECAM (liver cancer) and HYPMED (breast cancer) consortiums, to develop new tools for cancer diagnosis</li> <li>€3M debt financing through convertible bonds with Atlas Alpha</li> </ul> |
| 2016 | <ul style="list-style-type: none"> <li>Intrasense is selected with its partner CFI by the UGAP (French national purchasing organization) to provide software solutions to French hospitals</li> <li>€5M debt financing through convertible bonds with Bracknor fund (renewable twice, to a total maximum amount of €15M)</li> </ul>   |

## 1.4. SWOT

| Strength  | Weaknesses  |
|---|---|
| <ul style="list-style-type: none"> <li>• Strong software expertise</li> <li>• Vendor-neutral, multimodal software</li> <li>• Real optimization of radiology clinical practice</li> <li>• International presence (Europe, US, Asia)</li> <li>• Business track record with leaders of modality and PACS OEM</li> </ul>                                      | <ul style="list-style-type: none"> <li>• Dependency on partners' sales force</li> <li>• Little visibility on company's news flow</li> <li>• Small market capitalization</li> </ul>  |
| Opportunities   | Threats   |
| <ul style="list-style-type: none"> <li>• Increased demand for medical imaging</li> <li>• Demand for increased IT capabilities in hospitals</li> <li>• Advanced post-processing tools are strong differentiating factors for modality and PACS OEM</li> <li>• Development of new modules</li> <li>• Consolidation in the medical imaging market</li> </ul> | <ul style="list-style-type: none"> <li>• Strong competition on the field of medical imaging software</li> <li>• Saturated modality and PACS OEM markets</li> <li>• Large OEM (modality and PACS) already have post-processing tools</li> <li>• Budget restrictions on healthcare expenses in developed countries</li> </ul> |

## 1.5. Management

### **Stéphane Chémouny, Founder, President, and Chief Executive Officer**

Stéphane is the President, and the founder of the company. Stéphane has a Ph.D. in Computer Science (CRLC Val d'Aurelle, CIRAD, LIRMM), and is a specialist in image processing. Intrasense's technology was based on Dr. Chemouny's research. He has accumulated more than 20 years of experience in the field of image processing, including 2 years spent in the Silicon Valley. As the scientific director, he determines the research priority of Intrasense and is in charge of the scientific and academic partnerships. He was appointed CEO of Intrasense in December 2014.

### **Christophe Lamboeuf, Deputy Chief Executive Officer**

Christophe Lamboeuf joined Intrasense in 2012 as Chief Financial Officer following Intrasense's listing on Alternext Paris. He actively participated in the launch of the American subsidiary, and in the structuring of the company's finances. He was appointed Deputy Chief Executive Officer in May 2016. Christophe kept his responsibilities as Chief Financial Officer, and also oversees Human resources and commercial activities of Intrasense. Before joining Intrasense, he was CFO of Toshiba and Ricoh subsidiaries, and CFO of CS Telecom. I was also General Electric's finance manager for Europe.

### **Philippe Michelin, Product Director**

Philippe graduated from the Hon Robert Gordon University of Aberdeen in Applied physics and brings more than 15 years of experience in the medical imaging and radiotherapy field. Before joining Intrasense, he was the Global Head of Clinical Applications of Kodak (now Carestream Health),

then PACS Integration and cardiac applications manager at Median Technologies. He is in charge of determining new clinical applications related to clinical partners.

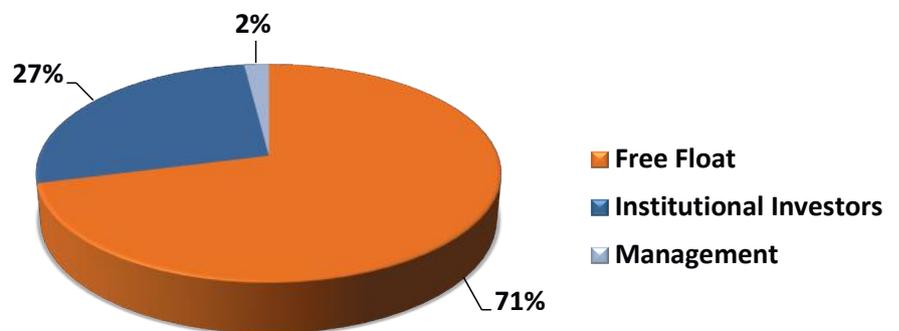
**Nicolas Reymond, Director of Business Development**

Prior to joining Philips Healthcare at the Dutch headquarter in 2007, Nicolas began his carrier in image processing research activities in the USA. At Philips International, he held various positions in R&D, Operations and Marketing. In 2011, he joined the French headquarter of Philips where he has led Market Intelligence, Innovation and New Business Development activities for the global healthcare portfolio of Philips France. Since 2016, Nicolas is Director of Business Development of Intrasense, being responsible for strategy, business development activities and strategic partnerships. Nicolas holds a Master of Science in Electronics and Signal Processing from the National Polytechnic Institute of Toulouse.

**1.6. Capital structure**

As of February 15<sup>th</sup>, 2017, there are 10,193,184 shares outstanding. The free float represents 71% of Intrasense’s capital, while institutional investors hold 27% of the shares. Trading volumes have significantly increased since Intrasense announced its participation in the HECAM consortium (July 2015), but dilution resulting from the conversion of Atlas Alpha and Bracknor convertible bonds have negatively affected the share price.

**Figure 2. Intrasense’s capital structure (Source: Intrasense)**



**2. Fundamental role of medical imaging for patient care**

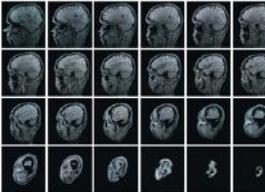
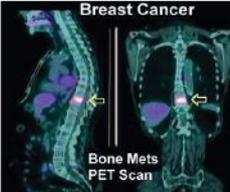
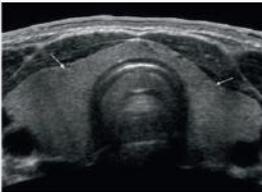
**2.1. Main modalities of medical imaging**

Since the first X-Ray photograph taken in 1895, medical imaging has greatly improved thanks to the development of numerous modalities relying on different physical phenomena (X-ray absorption, ultrasound reflection, and radioactivity). The main categories of medical imaging include ionizing procedures (X-Ray, nuclear imaging techniques, etc.), and non-ionizing modalities (Ultrasonography, Magnetic Resonance Imaging).

Depending on the difficulty of diagnosing a particular condition, or

the severity of the disease, clinicians may require one or more imaging modalities as they provide different anatomical and physiological information on the organs. This is particularly relevant for complex diseases such as neurological disorders, and cancer.

Each modality has advantages and disadvantages, and is chosen according to the information that clinicians need to obtain in order to make a diagnosis. Table 1 summarizes which indication is best suited for each modality (COCIR).

| X Ray   | CT Scan   | MRI   | PET   | Ultrasonography   |
|---|---|---|---|---|
|    |    |    |   |    |
| <p>Projection radiography is used to look at hard tissues such as bones (deformities, fractures, bone pathology), but can also be useful to look at tumors or infectious disorders in soft tissues like the lungs, and breast (mammography).</p>    | <p>Computed Tomography is a technique using scanners (CT scan) to create images of internal parts of the body, and relies on numerous X-Ray images taken from different angles.</p>   | <p>Magnetic Resonance Imaging uses strong magnetic fields instead of radiation to produce medical images of internal organs.</p>  | <p>Nuclear medicine modalities for medical imaging, as SPECT and PET, are based on the emission of gamma rays from radioactive substances administered to patients which are detected to produce images.</p>  | <p>Ultrasonography relies on the reflection of ultrasound (echoes) on internal structures of the body. Because ultrasounds travel at different speed depending on the tissue, the echoes detected by a probe can generate images of internal structures.</p>  |
| <p><u>Strengths:</u></p> <ul style="list-style-type: none"> <li>• Cost-effective</li> </ul> <p><u>Limitations:</u></p> <ul style="list-style-type: none"> <li>• 2D representations</li> <li>• Limited details for internal organ imaging</li> </ul> | <p><u>Strengths:</u></p> <ul style="list-style-type: none"> <li>• High definition</li> <li>• 3D representations</li> </ul> <p><u>Limitations:</u></p> <ul style="list-style-type: none"> <li>• Often requires contrast agents</li> </ul>  | <p><u>Strengths:</u></p> <ul style="list-style-type: none"> <li>• Non-ionizing</li> <li>• better resolution for soft tissues</li> </ul> <p><u>Limitations:</u></p> <ul style="list-style-type: none"> <li>• Patients can experience claustrophobia</li> </ul> | <p><u>Strengths:</u></p> <ul style="list-style-type: none"> <li>• Evaluates physiological functions of organs (not only anatomical imaging)</li> </ul> <p><u>Limitations:</u></p> <ul style="list-style-type: none"> <li>• Radioactive substances given to the patient</li> </ul> | <p><u>Strengths:</u></p> <ul style="list-style-type: none"> <li>• Non-ionizing</li> <li>• Real time pictures</li> <li>• Cost-effective</li> </ul> <p><u>Limitations:</u></p> <ul style="list-style-type: none"> <li>• Cannot image structures deep inside the body</li> <li>• Cannot penetrate bones</li> </ul> |
| <p><u>Applications:</u></p> <ul style="list-style-type: none"> <li>• Skeletal systems</li> <li>• Oral cavity</li> <li>• Ingested objects</li> <li>• Lungs</li> <li>• Breasts</li> <li>• Digestive system</li> <li>• Angiography</li> </ul>          | <p><u>Applications:</u></p> <ul style="list-style-type: none"> <li>• Organs in pelvis, chest and abdomen</li> <li>• Colon Health</li> <li>• Detection of tumors</li> <li>• Pulmonary embolism</li> <li>• Abdominal aortic aneurysms</li> <li>• Spinal injuries</li> <li>• Cardiology</li> </ul> | <p><u>Applications:</u></p> <ul style="list-style-type: none"> <li>• Blood vessels</li> <li>• Breasts</li> <li>• Major organs</li> <li>• Brain</li> </ul>   | <p><u>Applications:</u></p> <ul style="list-style-type: none"> <li>• Cancer detection, staging</li> <li>• Cancer follow-up</li> <li>• Cardiology</li> <li>• Neurology (Alzheimer's disease)</li> </ul>  | <p><u>Applications:</u></p> <ul style="list-style-type: none"> <li>• Soft tissue</li> <li>• Muscles, tendons, testes, breasts, thyroid imaging</li> <li>• Obstetrics</li> </ul>   |

Source: COCIR,

## 2.2. Medical imaging, at the center of multidisciplinary patient care

Medical imaging is widely used to obtain visual representations of internal organs, to measure organ physiology, or study bones, etc. Diagnosis is the obvious function for medical imaging, but the huge progress made in this field, has opened numerous applications, such as disease screening, patient follow-up, or improvement of treatments. Medical imaging has also shown its usefulness for surgery planning, particularly relevant for highly vascularized organs.

Because of sedentary behavior, and poor health habits in developed countries, the prevalence of chronic diseases such as cardiovascular disorders (myocardial infarction, coronary diseases) has progressed, while the aging population contributed to the increased incidence of neurological disorders (Alzheimer's disease, Parkinson's disease), and cancer. Diagnosis, patient follow-up, and efficacy of treatments against those diseases are heavily relying on medical imaging, which will contribute to an increase in imaging procedure volumes.

Moreover, medical imaging has played a major role in the management of complex chronic diseases for which many specialists are involved. A multidisciplinary approach has numerous advantages as all specialists share their respective knowledge to improve clinical decisions, and offer better treatment solutions for each patient, for disease diagnosis, treatment planning, treatment implementation, and follow-up. Therefore clinicians rely heavily on medical imaging, keeping in mind that different modalities provide different levels of relevant clinical information. Adequate use of medical imaging places radiologists at the center of multidisciplinary clinical approaches.

An example of the multidisciplinary aspect of medical imaging is the implementation of imaging standards in oncology. The increasing use of radiology for the management of cancer has led to the adoption of the BI-RADS (Breast Imaging-Reporting and Data System), and PI-RADS (Prostate Imaging-Reporting and Data System) standards. BI-RADS was created in the 80s because there was too much variability in the use and interpretation of mammographic images for breast cancer diagnosis. Therefore, the American College of Radiology, with the input of other societies and organizations such as the FDA, the National Cancer Institute, the American College of Surgeons, etc., established the BI-RADS guidelines for mammography in cancer <sup>1</sup>. This initiative was followed by the PI-RADS standards, for prostate imaging (2010).

## 2.3. International standards for medical imaging: DICOM

DICOM (Digital Imaging and Communications in Medicine) is a standard for medical imaging which determines what format medical imaging should

<sup>1</sup> J Am Coll Radiol. 2009 Dec; 6(12): 851–860.doi: 10.1016/j.jacr.2009.07.023, <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3099247/>

be in, how they should be handled, transmitted and stored. This standard has been established to improve usage of medical images, especially when acquired using modalities from different manufacturers. For instance, each manufacturer used to have its proprietary data format, incompatible from one another, which could lead to loss of information, increased costs, etc. With the increase of medical imaging in clinical practice, and the emergence of new modalities, a universal imaging standard became necessary. The vast majority of modality manufacturers, as well as PACS (Picture Archiving and Communication Software) manufacturers have adopted the DICOM standard, which has become essential for market adoption by hospitals and clinicians.

The DICOM format is particularly useful within healthcare institutions, where medical images are often shared between departments, and between radiologists and clinicians. Thanks to the DICOM format, patient follow-up has also been facilitated, especially to compare images taken over time.

## 2.4. Clinical Trials and research

Pharmaceutical laboratories have been counting on medical imaging for clinical trials, which have taken an important role in demonstrating clinical benefits of tested therapies. Imaging biomarkers serve as good surrogate endpoints in clinical trials, and have the advantage of being an easy, fast, and relatively cost-effective way of getting information about the efficacy of a drug. For example, PET scan or MRI imaging can provide important information about tumor shrinkage following treatment with anticancer drugs, about glucose metabolism in the brain for neurological disorders, or the reduction in amyloid beta plaques in Alzheimer's disease.

However, the utilization of medical imaging in clinical trials needs to be standardized to ensure the reproducibility, and reliability of the analyses, usually in an imaging center responsible for collecting, storing, and analyzing the data. Specific protocols also need to define how medical images need to be acquired, and with which modalities. An example of rules for medical imaging in oncology is RECIST (Response Evaluation Criteria in Solid Tumors), widely used in cancer clinical trials to measure objective response. According to a 2015 study from Markets & Markets, the clinical trial imaging market was estimated at \$725M in 2015 and could reach \$982M by 2020, at a CAGR of 6.2%.

### 3. The Medical Imaging Market

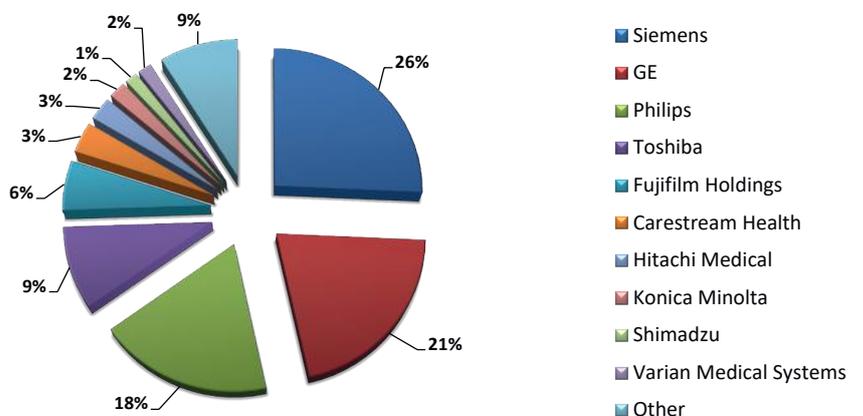
Intrasense targets two segments of the medical imaging market, modality manufacturers and medical imaging software. Modality manufacturers which design, develop devices for the acquisition of medical images, such as MRI, CT scans, etc., represent the largest segment of the market (\$30.3 B in 2015 according to Statistics MRC). The acquisition of huge amounts of images in hospitals, and radiology centers, in addition to the development of new information and communication technologies have led to an increased demand for solutions to store and share such images. As previously explained, the improvement in medical technologies for medical imaging, have also contributed to an increasing need for more analyses, especially since medical imaging has become a multidisciplinary tool. Intrasense is competing with numerous companies developing advanced post-processing solutions but intends to capture the market by selling its product to PACS vendors.

#### 3.1. Modality manufacturers

##### 3.1.1. Main actors of medical imaging modalities

According to Statistics MRC, the diagnostic imaging market is expected to grow at a CAGR of 7.1% between 2015 (\$30.3 B) and 2022 (\$48.9 B). A more conservative study (Markets and Markets) forecasts a 6.2% CAGR between 2015 (\$24.7 B) and 2020 (\$33.4 B). The global modality market is currently dominated by Siemens (Germany), General Electric (UK), Philips (Netherlands), and Toshiba (Japan), holding almost 75% of the market (see Figure 4). However, Evaluate Pharma indicates that the growth of the diagnostic imaging market at a 3.7% CAGR is the slowest growing Medtech segment over the 2015-2022 period. Siemens should also still lead the modality market in 2022 with an expected 24% market share.

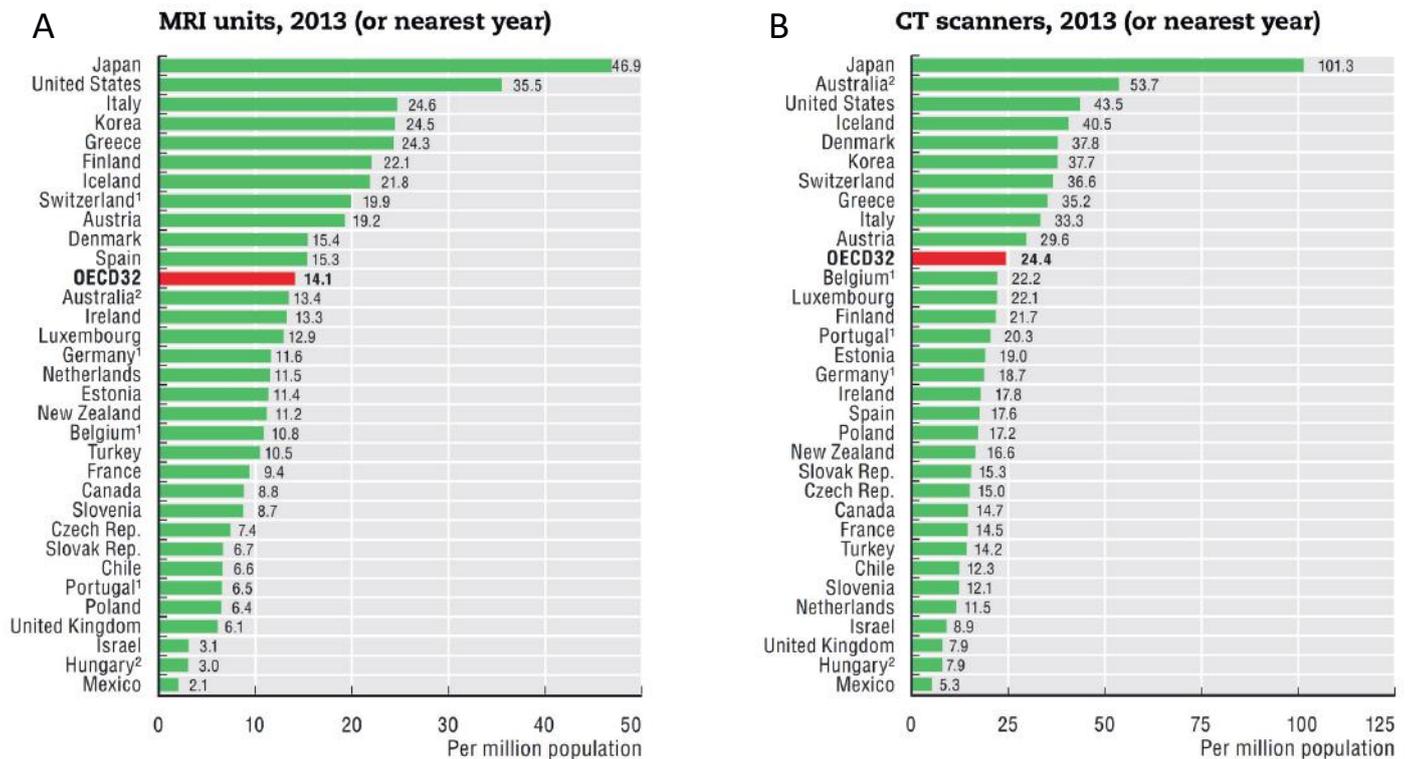
Figure 4. Modality market share by manufacturer in 2015 (source: Evaluate).



### 3.1.2. CT Scan and MRI availability, indicator of health access

Availability of advanced medical technology (CT scan and MRI) is an indicator for health access measured by the OECD (Organization for Economic Co-operation and Development). Their 2015 Health report show strong disparities among OECD countries, with Japan and the US having the highest number of MRI units per million population with 46.9 and 35.5, respectively (see Figure 5), whereas the average of OECD countries was 14.1. For CT scanners, Japan is by far the most equipped country with 101.3 units per million population, followed by Australia (53.7), and the US (43.5), compared to the OECD average of 24.4.

Figure 5. MRI and CT Scanner coverage by country (source: OECD, Healthcare at a glance 2015 report).



### 3.1.3. Increasing demand for medical imaging

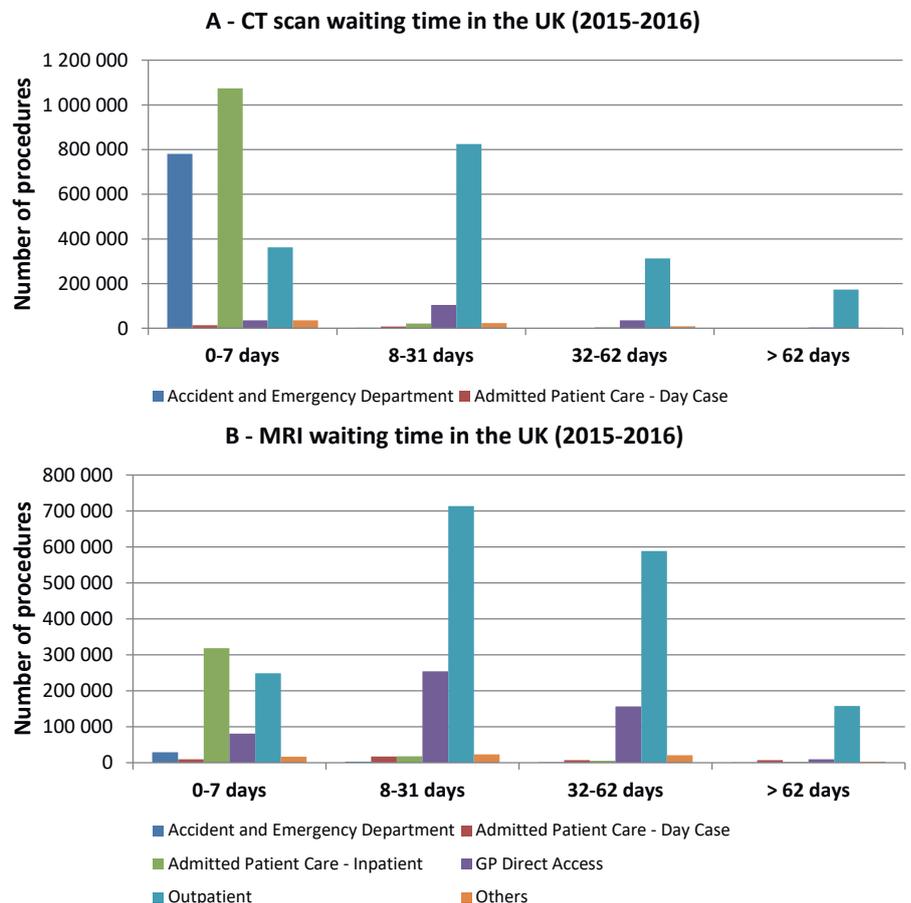
Although there is no ideal number of CT scan and MRI units, poor coverage can lead to longer waiting time to obtain appointments for medical imaging, which could ultimately deteriorate the quality of patient care. Access could also deteriorate by a growing demand in medical imaging. For instance, according to a 2015 Spearhead Acuity study, the global number of MRI scanning procedures was 71.9 million in 2013, and could increase to 116.6 million in 2019 at an 8.4% CAGR (see Table 1).

Table 1. Global number of MRI procedures by organ (source: Spearhead Acuity)

|                    | 2013        | 2014        | 2015        | 2016        | 2017        | 2018         | 2019         |
|--------------------|-------------|-------------|-------------|-------------|-------------|--------------|--------------|
| Brain              | 20.4        | 22.0        | 23.8        | 25.7        | 27.7        | 29.9         | 32.3         |
| Spine              | 16.1        | 17.2        | 18.4        | 19.6        | 20.9        | 22.3         | 23.8         |
| Extremities        | 14.8        | 16.2        | 17.8        | 19.5        | 21.3        | 23.4         | 25.7         |
| Cardiac & Vascular | 10.4        | 11.2        | 12.0        | 12.8        | 13.7        | 14.7         | 15.7         |
| Full Body          | 7.0         | 7.7         | 8.5         | 9.3         | 10.3        | 11.3         | 12.5         |
| Mammography        | 1.9         | 2.2         | 2.5         | 2.9         | 3.3         | 3.8          | 4.3          |
| Others             | 1.3         | 1.4         | 1.5         | 1.7         | 1.9         | 2.1          | 2.3          |
| <b>Total</b>       | <b>71.9</b> | <b>77.9</b> | <b>84.5</b> | <b>91.5</b> | <b>99.1</b> | <b>107.5</b> | <b>116.6</b> |

In countries like France, the average waiting time to obtain an appointment for MRI is 30.6 days, but can go up to 41.6 days in certain regions of France where demand is high<sup>2</sup>. According to the NHS England, in the UK, the median number of days between a request for MRI and the actual test is 22 days (Source Diagnostic Imaging Dataset Annual Statistical Release 2015/16, NHS England). However, waiting time also depends on the source of referral: for emergency departments and admitted patient care, the majority of analyses are performed within a week, while a significant number of outpatients need to wait more than 30 days for MRI or CT scans (Figure 6).

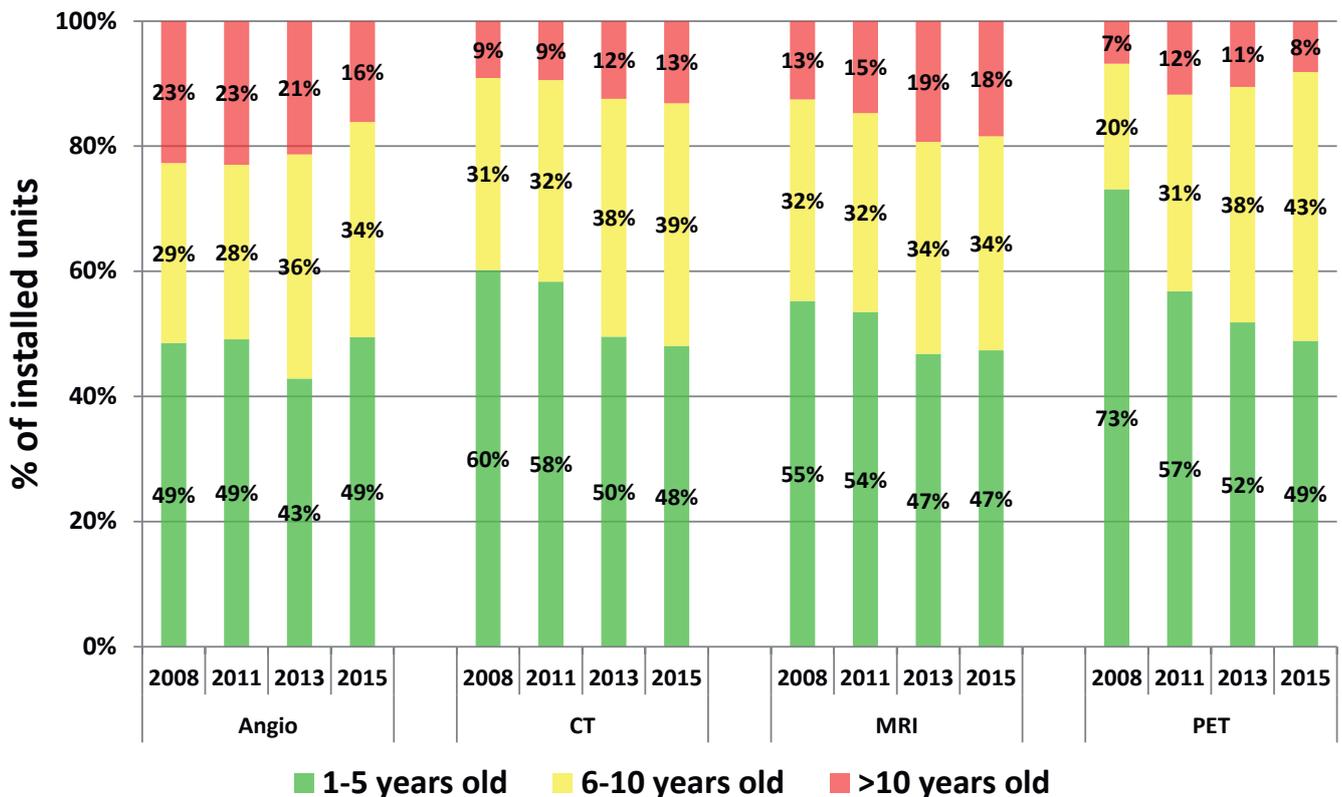
Figure 6. CT scan and MRI waiting time in the UK. Outpatient referrals experience the longest waiting time, with 29%, and 44% of patients waiting more than 32 days to get CT scan exams or MRI exams, respectively (source: NHS England).



Interestingly, when looking at the age profile of installed modalities in Europe, we can observe a decrease in the devices that are less than 5 years old (see Figure 7, COCIR). According to the COCIR (European Coordination Committee of the Radiological, Electromedical and Healthcare IT) at least 60% of imaging devices should be less than 5 years old as they reflect the current state of technology. On the other hand, no more than 10% should be above 10 years old, as the devices become more expensive, and difficult to maintain or repair.

Figure 8 shows that there are large differences between European countries, for CT scan and MRI age profiles, with Bulgaria and France having the most recent imaging device base in Europe. However, over the past few years, renewal of the existing imaging device base has declined as demonstrated in Figure 7. This could be explained by increasing financial pressure on European healthcare systems, thus limiting investment capabilities of health centers. A single MRI machine can cost between \$1 million to \$5 million depending on brands, functionalities, and performance<sup>3,4</sup>. CT scanners can be as expensive as MRI units, and cost up to \$2.5 million<sup>5</sup>.

**Figure 7. Age profile of imaging modalities in Europe between 2008 and 2015.** The COCIR recommends that no more than 10% of modalities should be older than 10 years old, and at least 60% should be less than 5 years. Figure shows that the installed base of modalities is aging in Europe (source, COCIR).

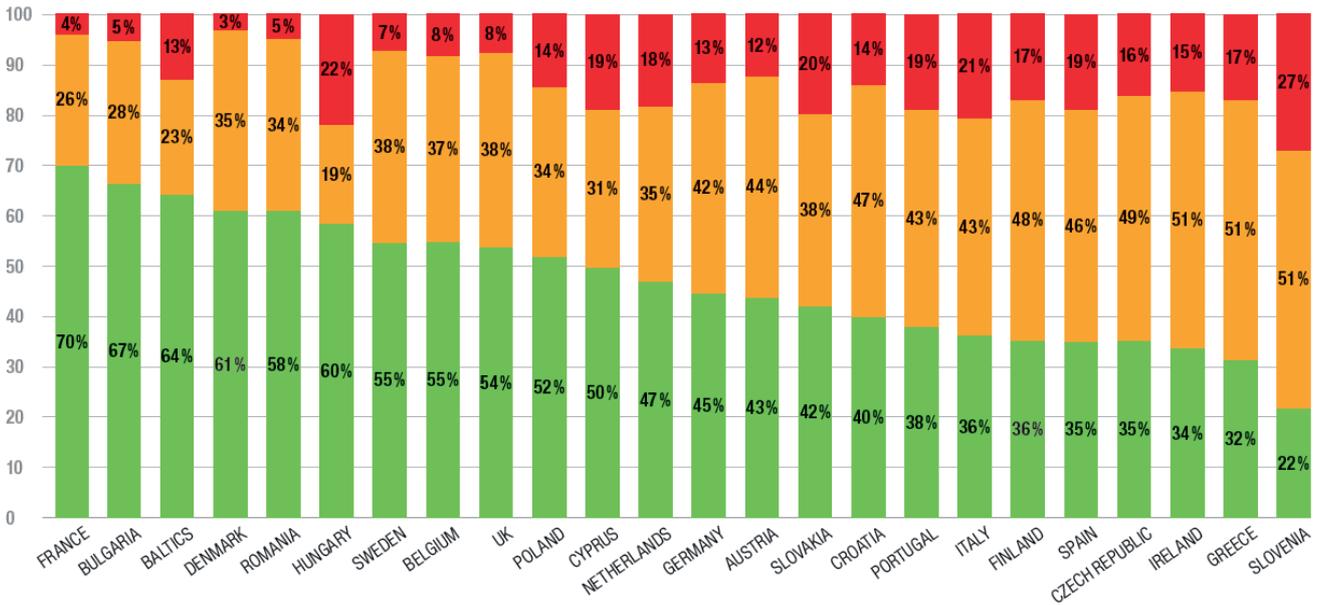


3 [thefiscaltimes.com/Articles/2014/07/21/Why-Your-MRI-or-CT-Scan-Costs-Arm-and-Leg](http://thefiscaltimes.com/Articles/2014/07/21/Why-Your-MRI-or-CT-Scan-Costs-Arm-and-Leg)  
 4 [time.com/money/2995166/why-does-mri-cost-so-much/](http://time.com/money/2995166/why-does-mri-cost-so-much/)  
 5 [www.dicardiology.com/article/costs-vs-benefits-comparing-64-slice-256-320-slice-ct](http://www.dicardiology.com/article/costs-vs-benefits-comparing-64-slice-256-320-slice-ct)

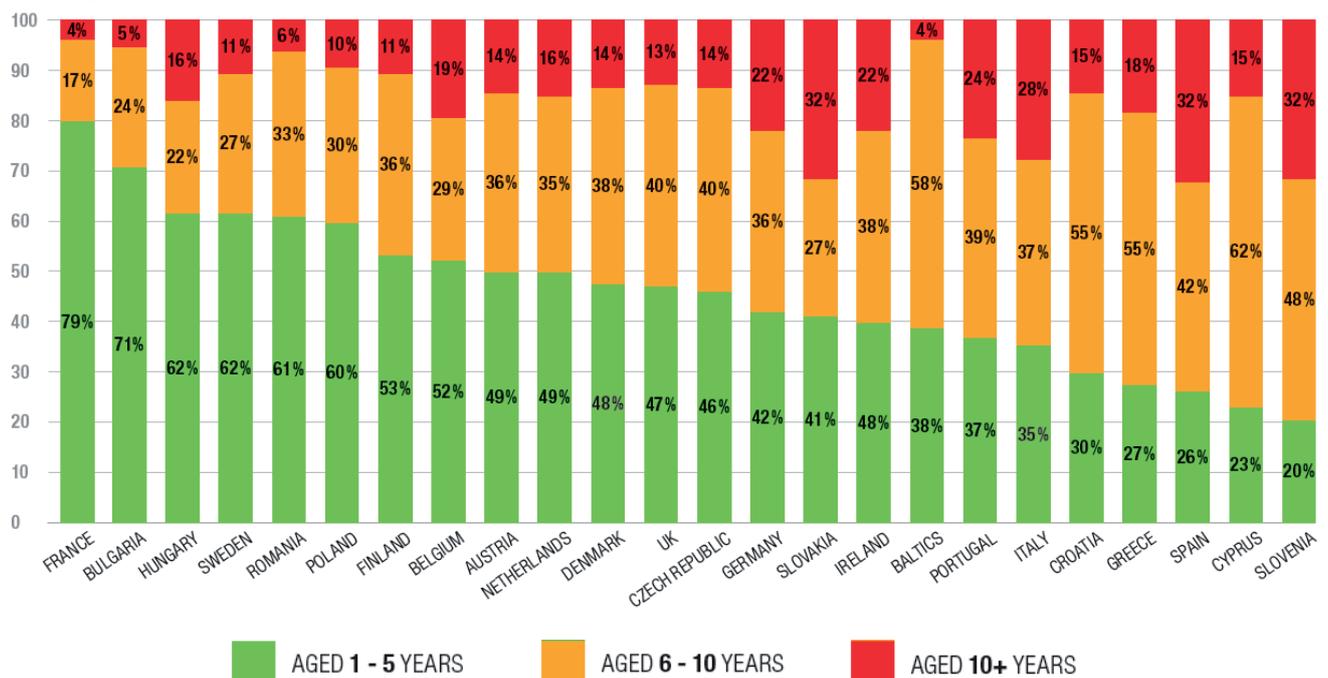
Taken together, these elements show that the medical imaging modality market could be driven by the increasing demand for medical imaging for patient care, especially with the aging population, and the increased prevalence of chronic diseases. New technologies are also strong contributors to the renewal of the existing base. There are also growth opportunities in countries where CT scan and MRI coverage is low. However, the high price of such devices, as well as budget restrictions on healthcare systems could limit the growth of this market.

**Figure 8. Comparison of age profile of CT scanners (A) and MRI units (B) in 2015 by country.** Figure shows large differences between countries (source, COCIR).

**A - Age profile of CT scanners in European countries**



**B - Age profile of MRI units in European countries**



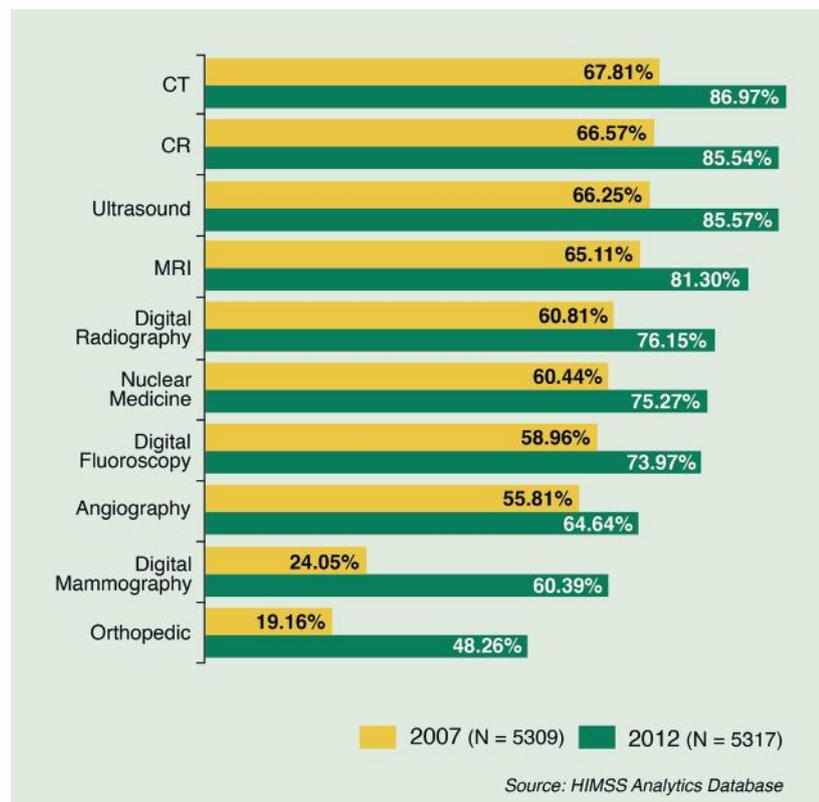
## 3.2. Medical Imaging Software market

### 3.2.1. PACS

Medical images were traditionally acquired on films, but their digitalization has led to an increasing need for IT solutions to centralize, store, share, and archive them. Picture Archiving Communication Systems (PACS) have emerged as a solution for that purpose. There are numerous actors present on this market that has been estimated at \$2.4 B by Frost & Sullivan in 2015, and is expected to grow at a CAGR of 2% to reach \$2.6 B in 2020.

An HIMSS Analytics study demonstrated the strong adoption of such IT solutions in US hospitals as shown in Figure 9. According to the study, PACS adoption in the surveyed hospitals was below 70% for the majority of imaging modalities in 2007. Digital mammography and orthopedic were the least equipped with PACS systems with adoption rate below 25%. Interestingly, 5 years later, the percentage of hospitals with radiology PACS increased above 80% for CT, CR, Ultrasound and MRI modalities, demonstrating strong adoption of PACS systems.

**Figure 9. Radiology PACS adoption by modality in 2007 and 2012** (source: HIMSS Analytics). CT: Computed Tomography, CR: Computed Radiography, MRI: Magnetic Resonance Imaging.



The PACS market is a saturated market, currently dominated by modality manufacturers which also offer PACS products in order to bring all-inclusive medical imaging solutions to their clients. Interestingly, companies which used to be leaders in argentic and film photography, have transitioned to the digital area, and have developed strong expertise in the medical imaging solutions (Fujifilm, Kodak now Carestream Health). According to Transparency Market Research, the top 5 companies currently hold 61%

of the PACS market (GE Healthcare, Philips Healthcare, McKesson, Fujifilm Holdings, and Siemens Healthineers).

Another HIMSS Analytics study showed that more than 90% of US hospitals surveyed were equipped with PACS, further demonstrating that the market is saturated. However, a 2016 peer60 market analysis showed that technological superiority came second as a reason for switching PACS vendors. Other studies (Transparency Market Research) indicated that the market will thrive thanks to advanced analytics functionalities, and cloud-based systems.

According to Transparency Market Research (2016), North America was the largest market in 2015, with a 47% market share, although the Asia-Pacific market is expected to grow at a CAGR of 8.4% between 2016 and 2024, thus representing an important market for PACS vendors.

Taken together, these elements show that archiving solutions will thrive thanks to increasing volumes of imaging procedures, demand for improved patient diagnosis, and the need for hospitals to improve their productivity in managing high volumes of analyses. However, the PACS market is saturated in countries like the US, there are still growth opportunities in the developing world, especially in the Asia-Pacific region.

### **3.2.2. Advanced Analytics Software**

Advanced post-processing tools are becoming important features for medical imaging analyses, in order to improve patient diagnosis. Numerous small to medium size companies like Intrasense have developed strong expertise in developing such software. Large modality manufacturers also provide post-processing tools, either with proprietary technologies, or through acquisition of SMEs.

According to a 2015 report from Global Industry Analysts Inc., the 3D medical imaging market is expected to reach \$2.6 B in 2020. The market will be driven by increasing demand in certain areas such as oncology, orthopedics, or cardiology, in addition to integration in PACS systems. Major players include large groups such as GE Healthcare, Hitachi, Philips, Samsung, Siemens, and Toshiba, but also SMEs like Intrasense, Materialise, or Esaote.

Therefore, Intrasense faces strong competition from numerous players which offer similar analytics for medical imaging. For example, Fujifilm with its Synapse 3D software has a liver resection simulation tool, a key feature that Intrasense also included in Myrian (see section 4.1). Other players include Terarecon (US), iCAD, Precision Image Analysis (US), which have similar business model. Companies like 3DM Laboratories, or Everest Digital Medicine, have chosen to provide medical imaging services whereby clinicians send them digital images which are processed by the company. However, with such services, clinicians would lose control on the analyses they wish to perform.



Interestingly, large players (including modality manufacturers) offering post-processing software usually have acquisition, and picture archiving capabilities. There are few pure players in the field of advanced medical imaging like Intrasense. Therefore, it is important to note that large players who wish to increase the analytical capabilities of their existing offer will need to work with companies like Intrasense, or acquire them.

For instance, in the past 2 years, there have been several M&A transactions further demonstrating the relevance of advanced analytics in the medical imaging field. Modality manufacturer Toshiba recently acquired Olea Medical (France) in 2015, which has similar post-processing solutions to those of Intrasense, and Karos Health (Canada) in 2016. Sectra, a Swedish company providing PACS solutions acquired it-mark ApS (online service analytics) in 2015, and Merge Healthcare (now part of IBM), acquired DR Systems (PACS, advanced analytics) for \$83.6M the same year. We believe that companies like Intrasense are strong M&A candidates for larger groups that wish to improve their medical imaging solution offer, whether they are modality manufacturers or PACS vendors.

## 4. Intrasense Technology and post-processing solution

### 4.1. Myrian, a multimodal platform

Intrasense has developed innovative software solutions for the management and analysis of medical images from different modalities. The software is vendor neutral, as it can be used with images acquired from any modality manufacturer, providing a significant advantage for increased adoption by clinicians and radiologists. Intrasense has invested more than €15M in R&D, for the development of very specialized modules for analyses of particular organs and pathologies. The company's Myrian offer is tailored to the needs of its clients, who often require specific modules in their clinical practice.

The main advantages of the company's product are:

- Vendor neutral: Myrian is compatible with images regardless of modality manufacturers. Moreover Myrian has a high level of interoperability and can integrate any kind of Healthcare IT Infrastructure.
- DICOM compatible: Myrian follows the international DICOM standards, facilitating adoption by clinicians and radiologists
- Multimodality: medical images from any modality can be visualized using Myrian (MRI, PET scan, CT scan, etc.)
- Dedicated modules for specific organs or pathologies, with predefined workflows facilitating image analyses
- Standardization for good practices within hospitals
- Easy to use (user experience)
- Improved productivity, especially for clinicians and hospitals dealing with high volume of analyses
- Approved by the FDA and other healthcare authorities

The company's Myrian 2.0 provides 2D and 3D visualization capabilities and limited post-processing analyses of images from all modalities (MRI, CT scan, Ultrasound, etc.) on a single platform. Myrian's competitive advantage does not however, reside in the Myrian Expert entry-level solution, but on the numerous analytical capabilities provided by specific optional modules declined in three categories:

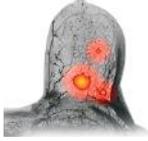
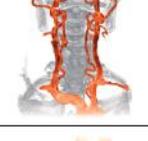
- XL modules offer advanced post-processing capabilities such as merger of images acquired from different modalities, elastic image registration, or specialized analyses tools for cancer patient monitoring
- XP modules provide tools for automatic detection of anatomical tissue or pathological tissue. XP modules have sets of analytical functions specific to each organ or pathology.
- XT modules are external modules provided by third party developers for highly specific analyses that Intrasense chose not to develop. They are integrated in the Myrian platform for improved user-experience.

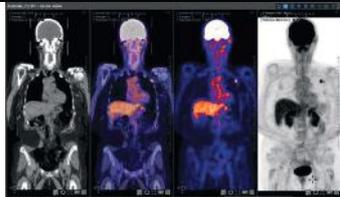
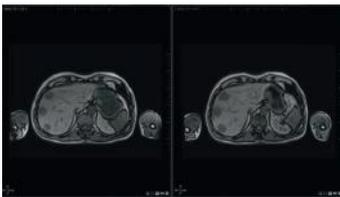
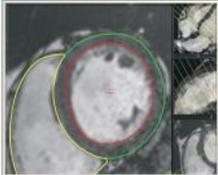
Intrasense developed intuitive workflows with predefined protocols, in order to optimize patient care, guide radiologists and clinicians in the

analyses of medical imaging, and improve their productivity, especially for those dealing with high volumes of analyses. Moreover, Myrian has been approved by more than 40 countries for diagnostic use, including the US (FDA), Europe, and large markets such as China, and Russia.

As seen on Figure 10, Intrasense’s Myrian platform offers several modules dedicated to specific organs. The company’s clients can choose which module to include in their license, tailored to their specific needs and budget.

**Figure 10. Modules included in Intrasense's software Myrian**

|    |                      |  |  |
|----|----------------------|--|--|
| XP | <b>Breast</b>        |    | Visualization, multiparametric Oncology analysis for MRI                               |
|    | <b>Female Pelvis</b> |    | Measurement, visualization, oncology analysis for MRI                                  |
|    | <b>Prostate</b>      |   | Visualization, multiparametric analysis for MRI  |
|    | <b>Liver</b>         |  | Liver analyses, surgery planning   |
|    | <b>Lung</b>          |  | Lung disease analyses, virtual bronchoscopy, surgery planning                          |
|    | <b>Lung Nodule</b>   |  | Lung nodule analyses   |
|    | <b>Colon</b>         |  | Virtual colonoscopy, virtual endoscopy,  |
|    | <b>Vessel</b>        |  | Analyses of blood vessels, surgery planning (stent)                                    |
|    | <b>Ortho</b>         |  | Bone 3D reconstructions for orthopedic applications, prosthetic joint surgery planning |

|    |          |   |  |
|----|----------|---|--|
| XL | Onco     |   | Advanced follow-up analyses for oncology patients  |
|    | Fusion   |   | 3D visualization of merged images from different modalities (CT scan images with PET scan for example) |
|    | Matching |   | Automatic elastic registration of images for comparability between modalities                          |
| XT | Cardiac  |   | Analyses of cardiac tissue from MRI images (developed by Medis)  |
|    | Brain    |  | Analyses of Brain MRI (developed by Nordic NeuroLab, or Imagilys)                                      |

Numerous medical imaging software companies offer similar tools for analyses, but Intrasense has developed a strong expertise in key therapeutic areas, with extensive functionalities for liver surgery, and oncology.

### XP-Liver

XP-Liver is probably Intrasense’s most advanced and accomplished module, indicated for medical imaging of the liver. Medical imaging is commonly used for the diagnosis of liver disorders including cancer, and XP-Liver is particularly relevant for this purpose. For instance, the automatic functions of the module can detect diseased tissue as well as its volume. Numerous therapeutic solutions for liver disorders are surgical procedures, such as liver transplants, chemo-embolization, tissue resection, etc. The liver is a highly vascularized organ that has the particularity to regenerate to its full size when resected, provided that at least 25% of the original organ still remains. Therefore, adequate planning for surgery is necessary to ensure that diseased tissue is properly removed without compromising the regenerative ability of the liver. XP-Liver has elastic registration functionalities, automatic features to detect liver tissue and vasculature, and 3D rendering for surgery planning. This module has

already been adopted by prestigious hospitals such as the Centre Hepatobiliaire Paul Brousse (France) , Georges Pompidou European Hospital (France), Toronto University Hospital (Canada), Massachusetts General Hospital (USA) or the Shinshu University Hospital (Japan).

### **XL-Onco**

Intrasense spent 7 years to develop this module, in collaboration with institutions like the Curie Institute, or the Pitié Salpêtrière, and is indicated for oncology imaging analyses. Medical imaging has been an important diagnostic tool useful for the detection of tumors, for cancer staging, and to measure tumor response to treatment. Adequate archiving solutions and analytical capabilities are particularly necessary for efficient patient follow up, who often require regular medical imaging analyses. With the XL-Onco module, comparison of medical images taken at different time is possible with the 3D elastic registration functionalities. Moreover, all medical images and lesion analyses for a given patient are automatically retrieved and stored in the PACS, which facilitates radiologists' and clinicians' work.

In addition, XL-Onco includes specific workflow protocols following the oncology standards used to measure the efficacy of anti-cancer drugs. As previously mentioned in section 2.4, the RECIST protocol is widely used in cancer trials to verify tumor response following treatment, and is included in XL-Onco. The company also added the Cheson protocol, for lymphomas, or the Choi protocol for gastrointestinal stromal Tumors (GIST).

## **4.2. Continuous development of Myrian through international consortium**

Intrasense has already collaborated to develop its Myrian platform with renowned international specialists. Intrasense is continuously improving and updating Myrian in order to provide the best post-processing software, which is constantly in compliance with international standards for medical imaging. The company has recently announced its participation in two international consortiums, for the development of innovative solutions for breast and liver cancers. Thanks to these consortiums, Intrasense will be able to increment Myrian with new modules for these conditions.

### **4.2.1. HECAM consortium for liver cancer**

The HECAM (Hepatocellular Carcinoma Multitechnological) was initiated in 2015 to develop innovative technologies for the early diagnosis and management of hepatocellular carcinoma. Intrasense's XP-Liver module is particularly suited for this research effort which not only involves small to medium size enterprises (SME) like Intrasense, but also large players in the modality field, and renowned public institutions.

There are 12 partners for the HECAM project:

- Seven SMEs: Intrasense, BioPredictive, CarThera, IntegraGen, BioSIMS, EDAP-TMS, Fluoptics
- Two large industrial companies: GE Healthcare, Guerbet
- Three academic partners: AP-HP (Assistance Publique, Hôpitaux de Paris), Inserm, the Gustave Roussy Institute

The consortium has a total budget of €34.6M, and Bpifrance is to finance €18M of the HECAM project. Intrasense will receive a total of €1.6M. In collaboration with GE Healthcare, Inserm, and AP-HP, Intrasense will participate in the multipara-metric characterization of hepatocellular carcinoma with MRI and CT scan imaging modalities.

#### **4.2.2. HYPMED consortium for breast cancer**

Intrasense also participates in the HYPMED consortium, funded by the European Union (H2020 program). The consortium will receive €5.8 M over 4 years to develop a hybrid PET/MRI system for improved diagnosis and management of breast cancer. Three SMEs, including Intrasense, Dutch company Philips (third diagnostic imaging manufacturer according to Evaluate), and Dutch, German, and Austrian Universities participate in this consortium. Intrasense will develop a dedicated PET/MRI module for breast cancer post-processing analyses, which will be integrated into Myrian.

#### **4.2.3. Myrian Studio**

Last summer, the company launched Myrian Studio, an initiative whereby Intrasense gives academic institutions or companies, access to its software to facilitate the development of new functionalities for medical imaging. Intrasense already installed Myrian Studio at the Beaujon Hospital (France), and the Georges Pompidou European Hospital (France), and the company intends to sign new agreements in the near future. Development of analytics with Myrian Studio is free of charge for research use only. However, Intrasense could capitalize on the research efforts of academic partners and benefit from early access to innovative tools for medical imaging, which could be integrated in the commercial version of Myrian, provided that both parties agree on licensing terms. This initiative could reinforce the visibility of Intrasense's technology, and improve the companies offer to OEMs.

### **4.3. Intrasense's Business model**

Intrasense's software has been developed to improve medical imaging analyses, in order to help clinicians and radiologists in their clinical practice. This is particularly relevant for patients suffering from chronic diseases who need adequate follow-up, usually supported by medical imaging.

### 4.3.1. Myrian Licenses

The company's business model consists in selling its non-exclusive Myrian licenses, mainly by indirect sales, through its agreements with modality or PACS OEM. According to Intrasense, the average basket for its client is around €30,000 per license. The majority of the company's revenue is derived from these one-time payment licenses but the company also offers other subscription possibilities, thus diversifying its revenue model. Intrasense recently secured a multi-annual contract with a Japanese PACS distributor, and markets the Myrian platform with the SaaS (Software as a Service) model. As a cloud- and SaaS-ready solution, Intrasense could increase the adoption of its software towards clients who favors such solutions, better suited for data sharing among stakeholders.

### 4.3.2. Maintenance contracts

The company regularly releases updates of its software which are implemented to all existing clients who subscribed to the maintenance service. Although the majority of the company's revenue is generated from the commercialization of licenses, Intrasense expects its maintenance contract revenues to grow as the number of installed Myrian licenses increases. It is also in the interest of Intrasense's clients to subscribe to the maintenance contracts as they would benefit from any upgrade developed by the company during their subscription period, thus guaranteeing recurrent long term revenue to Intrasense. At the end of November 2016, the company released a new version of Myrian (2.0) which already includes innovative tools developed in the HECAM and HYPMED consortiums.

### 4.3.3. Tailor-made software to best fit clients' needs

Licenses are tailored to the specific needs of each client that can choose which module to be included in the Myrian platform, whether the software is installed as a workstation, or accessible in the client's network.

Interestingly, the versatility and performance of Myrian can convince existing clients to purchase supplemental modules after adopting a first set of Myrian functionalities. The Matsumoto university hospital in Japan already selected Myrian in 2012 because of the XP-Liver module, and was later convinced to purchase supplemental functionalities with several XL-Onco licenses.

Myrian is also available in many languages (French, English, Spanish, Italian, Polish, Russian, traditional Chinese, simplified Chinese, Japanese, Turkish, etc.), which facilitates market penetration in many countries, especially in Asia.

**Figure 11. Myrian, tailored to the specific needs of its clients.** Myrian users can choose which modules to include in their licenses, providing different levels of functionalities. Thanks to the modularity of the Myrian platform, clients can further upgrade their software with supplemental modules.



#### 4.3.4. Intrasense's clients

Thanks to the modularity of the Myrian software, Intrasense can target hospitals, imaging core labs, but also modality manufacturers and PACS providers (OEM-based strategy).

##### **Hospitals, radiology centers, and CRO**

Myrian can be particularly useful to radiology centers and hospitals that deal with high volumes of analyses. Because Myrian is a vendor neutral imaging software, it can be easily implemented in the existing IT systems, and be compatible with any imaging modality, regardless of their brand. Contract Research Organization (CRO), involved in clinical trials could also benefit from the analytical capabilities of the Myrian platforms but also from the intuitive workflow protocols, particularly suited for high throughput analyses.

The company has already installed Myrian in several international prestigious centers, some of which have even collaborated with Intrasense to develop Myrian. Those include:

- CHU de Toronto (Canada)
- Massachusetts General Hospital (USA)
- Shinshu University Hospital (Japon)
- Eastern Hepatobiliary Surgery Hospital (Chine)
- Pitie Salpetriere (AP-HP)
- Hopital Europeen Georges Pompidou (AP-HP)
- CHU de Zurich (Suisse)
- Shanghai Chest Hospital (Chine)
- Zhongshan Hospital Fudan University (Chine)
- CHU de Lausanne
- Tokyo Cancer Center (Japon)

## Modality OEM

Thanks to its multimodality and modularity, Intrasense's software is particularly suited for modality manufacturers which can integrate Myrian directly in the imaging device interface. Intrasense is easily implemented Myrian in its client's system without additional development, and the level of functionalities are tailored to the manufacturer's marketing strategy. Myrian's interface can also be adapted to the corporate identity of Intrasense's clients.

The company has already secured such agreements with key players in the modality market. At the end of 2009, Myrian signed an agreement with Toshiba, for the integration of Myrian in Tethys MRI machines. More recently, the company secured a multiannual deal with American MRI manufacturer AllTech, guaranteeing at least \$140k per year.

## PACS OEM

With increasing demand for medical imaging, Picture Archiving Communication Systems are extremely useful for handling patient data and proper follow-up. PACS manufacturers can differentiate themselves from competitors by integrating advanced analytical capabilities. PACS manufacturers are therefore potential clients for Intrasense. In the past few years, the company has successfully signed agreements with leaders of the PACS market, such as the American company Merge Healthcare (acquired in 2015 by IBM).

### 4.3.5. Opportunities and limiting factors

Intrasense's indirect sales strategy has numerous advantages as the company does not require investing in its own sales force. Because Myrian is compatible with DICOM standards, the integration in the PACS OEM and modality OEM is therefore facilitated. The main drawback of such strategy is that the company becomes dependent on its partner's ability to penetrate the market, prompting Intrasense to secure agreements either with leaders on the market, or with companies with aggressive sales strategy.

For modality OEM, machines are extremely expensive, and market adoption of Myrian through such distributors could therefore be hindered by the budget constraints of hospitals and imaging centers. As previously explained, the market is currently dominated by large companies such as Siemens, or GE Healthcare, which already integrated advanced post-processing and PACS software, with proprietary technologies or that obtained through acquisition of companies like Intrasense. Such strategy gives large modality manufacturers an all-inclusive offer when marketing imaging devices. Toshiba has been extremely active in M&A transactions for software companies with the acquisition of Voxar in 2008, Vital Images in 2011, Olea Medical in 2015, and more recently Karos Health.

Therefore, this could limit Intrasense's ability to secure agreements with large players, and prevent the company from taking advantage of their

marketing power. However, as previously indicated, Intrasense announced its participation in two international consortiums, with close collaboration with leaders GE Healthcare (HECAM), and Philips (HYPMED), which could trigger strong partnerships. On the other hand, smaller modality manufacturers would probably benefit from technologies like Myrian to differentiate themselves from larger players, and increase sales of their imaging device. Intrasense already signed such agreements with for example, American MRI manufacturer AllTech Medical Systems, although volumes of Myrian licenses sold via this partner are probably limited, as AllTech remains a small player. For instance, in December 2015, AllTech indicated there were 200 AllTech MRI installed in 13 countries, over the past 10 years.

Similarly to modality OEM, PACS companies can differentiate themselves from competitors by offering advanced post-processing tools such as Myrian. As indicated in section 3.2, the larger demand for medical imaging, and its multidisciplinary aspects have led to an increased demand for sharing capabilities within hospitals for improved productivity and patient care. Securing agreements with companies marketing PACS solutions is therefore, a strong growth opportunity for Intrasense. The Merge Healthcare (US PACS) deal and the 10-year contract signed with another leader of the PACS market (undisclosed partner) are strong partnerships that could increase Intrasense's visibility, and secure recurrent revenues.

Although there are numerous challenges that can impact Intrasense's business operations, there are also opportunities for which the company's software is particularly relevant. According to a 2016 Frost & Sullivan study, the healthcare IT market is currently transitioning to a market where interoperability, and cloud-based systems are becoming essential components that need to be implemented by healthcare IT vendors. Intrasense designed a software suite that can be easily adapted to such market dynamics. More specifically, two fast growing segments of the healthcare IT markets are:

- Imaging clinical decision support solutions, expected to grow at a CAGR of 20% between 2015 and 2020
- Image- and Cloud-enabled Healthcare Content Management solutions, expected to grow at a CAGR of 16% over the same period

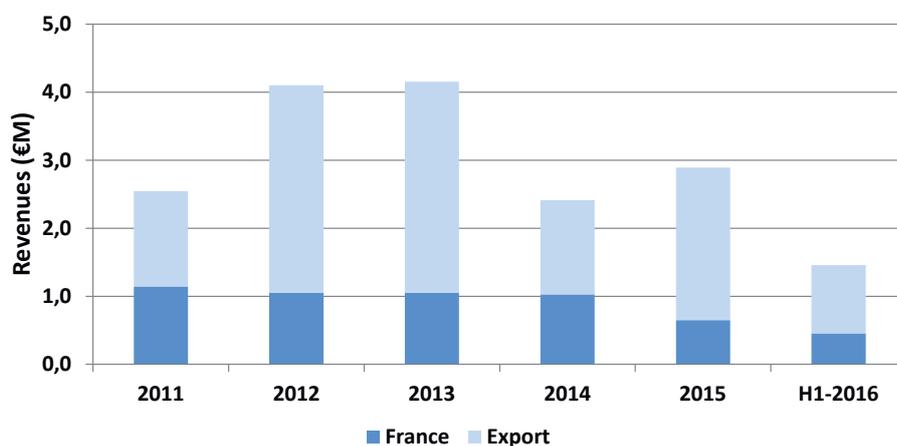
Such solutions would facilitate cross-enterprise data sharing and collaboration in multi-disciplinary settings. Myrian is a vendor-neutral software, cloud/SaaS-ready, offering strong analytical capabilities for improved clinical care, and is therefore well-positioned to capture this market. As a vendor-neutral pure player in advanced post-processing software developer, Intrasense is a good M&A candidate for larger groups, seeking to drive innovative solutions for improved patient care.

## 5. Sales performance and Valuation

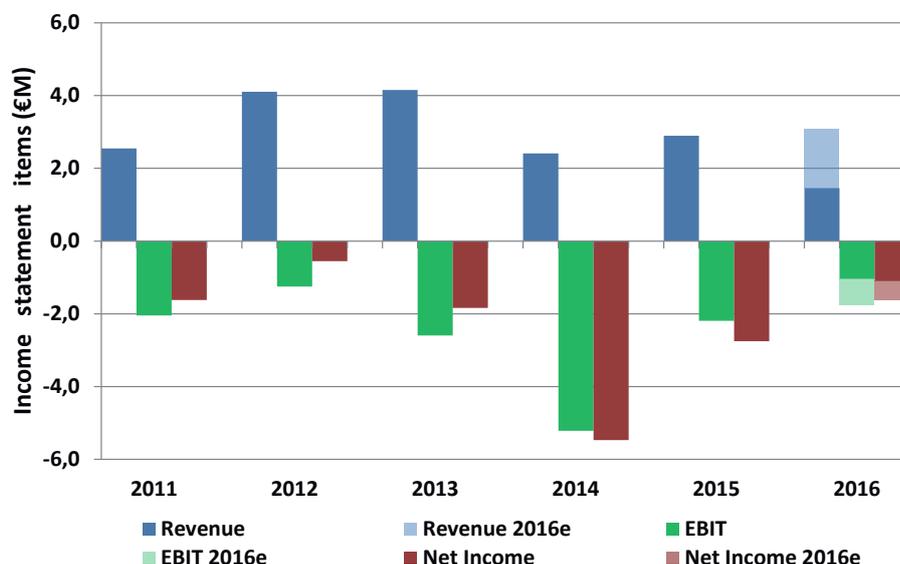
### 5.1. Historical sales performance

Intrasense has been marketing its Myrian Platform since 2007. Figure 12 shows Intrasense’s historical sales for the past 5 years, and interim results of 2016. The company experienced strong growth of its sales in 2012, largely due to revenues generated outside of France. Export revenues represented almost 75% of Intrasense’s revenues. In 2013, sales only increased by 1.2%, because of difficult macroeconomic events, especially in northern Africa. Intrasense increased operating expenses (+30%) was attributed to new employees hired to develop US operations and sales efforts. However, the financial situation of Intrasense worsened in 2014. Although the company maintained its operating expenses, the operating result (-€5.2M in 2014 compared to -€2.6M in 2013) was greatly affected by a sharp decrease in the company’s sales (-42%). This was particularly the case in Russia (-76%) because of geopolitical conflicts, in India and Malaysia, where revenues decreased by €300k. Thanks to a restructuring plan, the company’s financial situation was greatly improved in 2015. Sales increased by 20% while operating expenses decreased by €2.6M. International sales performance was particularly strong, with revenues increasing by 62%. In its 2016 interim results, the company confirmed this encouraging trend, and reported an 8.4% increase in revenues compared to H1-2015. Operating expenses were also reduced by 13% (Figure 13).

**Figure 12. Intrasense’s historical sales in France, and other countries (source Intrasense).** Intrasense generated almost €3M of revenues in 2015, with strong increase of international sales. 2016 figure is revenues for the first half of the year.



**Figure 13. Intrasense's historical financial performance (source Intrasense and Aurgalys estimates).** After Intrasense's management restructured the company, the net loss improved in 2015. Full effect of this restructuring is visible in 2016. For the year 2016, figure shows interim results as communicated by the company (dark blue, green, red), and Aurgalys estimates for 2016 (light blue, green, and red).



## 5.2. Intrasense's revenue model

As already shown in section 1, Intrasense has suffered a market downturn in 2014. Since then, the company has implemented a restructuring plan to limit its operating expenses while maintaining marketing effort to support sales growth. Intrasense has already shown its ability to sign multi-annual agreements with leading modality and PACS OEM, such as Toshiba, Cerner, or Merge (now IBM). Historically, Intrasense succeeded in signing modality OEM deals every 2 to 3 years, while signing one to two PACS OEM deals per year (see Table 2). We anticipate that Intrasense would continue to generate such deals in the near future. Moreover, securing multi-annual deals will help the company generate recurring revenues.

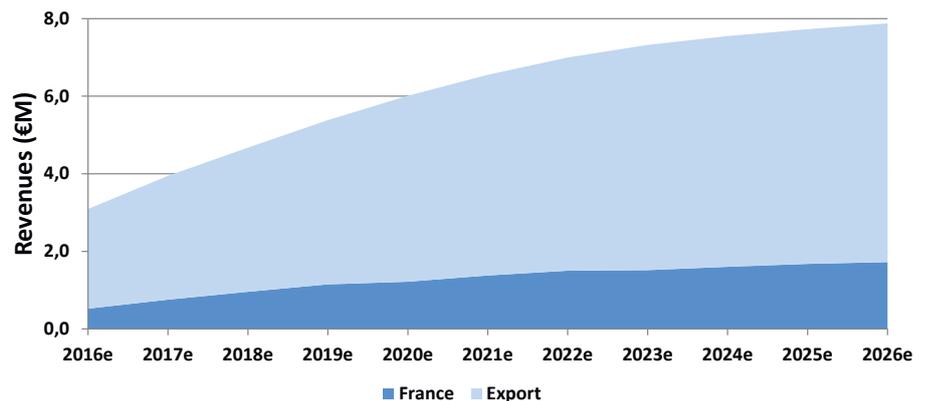
**Table 2. Selected deals Intrasense secured with OEM leaders (source Intrasense)**

| Company               | Year of deal | Comments   |
|-----------------------|--------------|--|
| Toshiba (Japan)       | 2009         | Modality OEM   |
| PSP (Japan)           | 2012         | PACS OEM   |
| Cerner (US)           | 2013         | PACS OEM   |
| PACS leader (Japan)   | 2013         | PACS OEM: minimum of €1.1M over the 5-year contract                      |
| AllTech (US)          | 2014         | Modality OEM: 5-year contract, with minimum of \$140k/year               |
| Merge Healthcare (US) | 2015         | PACS OEM: >\$400k contract, including \$180k in 2015, and \$320k in 2016 |

| Company       | Year of deal | Comments   |
|---------------|--------------|--|
| PACS leader   | 2015         | PACS OEM: 10-year contract, with minimum of €250k/year   |
| UGAP (France) | 2016         | French National Purchasing Organization: 3-year contract |

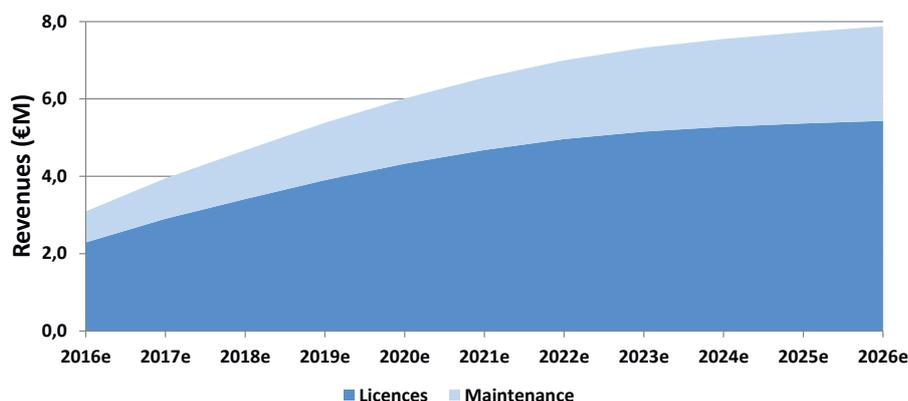
Also, Intrasense regularly announces the adoption of the Myrian platform in several hospitals throughout the world, thanks to its local distributors, which generate significant revenues through licenses. Also, the participation of Intrasense in the HECAM and HYPMED will increase the company’s functionalities thanks to the new imaging tools that the company develops. This should also contribute to attract new clients, and consolidate its existing base, thanks to these supplemental analytics that will be included in future updates of Myrian. In our revenue model, we believe that total revenues (licenses and maintenance contracts) would reach €8M by 2026, and that France would account for 20% of these revenues (Figure 14).

**Figure 14. Intrasense revenue model by territory (source: Aurgalys estimates)**



Intrasense also generates revenues from maintenance contracts, necessary for the company’s clients not only to benefit from customer service, but also to get any Myrian updates that Intrasense releases. In 2015, such revenues represented 23.5% of total sales. As Myrian adoption consolidates, maintenance contract revenues should increase and provide significant recurrent revenues to Intrasense. In our forecasting model, we hypothesized that by 2026, maintenance contract revenues would represent 30% of total sales (Figure 15).

**Figure 15. Intrasense revenue model by type (source Aurgalys estimates)**



### 5.3. Company valuation: €10.3M

#### 5.3.1. Hypotheses

For the valuation of Intrasense, we used a Discounted Cash Flow model, with a discount rate of 10%. We included a terminal value with a 0.5% growth rate. Sales were projected over the next 10 years, and gross margin were maintained at 10% of sales during the forecasting period.

The company already initiated a restructuring plan and significantly reduced its operating charges. Personnel costs represent the largest part of these expenses, and we hypothesized that they would represent 40% of the company’s revenues. In our model, EBIT margin would reach 17% by 2026.

#### 5.3.2. DCF model

According to our DCF model (Table 3), the value of Intrasense is €12.0M. Including an estimated net cash of €-1.7M, our target price for Intrasense’s stock is €1.01/share (10,193,184 shares outstanding).

**Table 3. Intrasense's Discounted Cash Flow model (source: Aurgalys estimates)**

|                   | 2016e       | 2017e       | 2018e       | 2019e      | 2020e      | 2021e      | 2022e      | 2023e      | 2024e      | 2025e      | 2026e      |
|-------------------|-------------|-------------|-------------|------------|------------|------------|------------|------------|------------|------------|------------|
| EBIT              | -1.8        | -0.9        | -0.2        | 0.4        | 0.7        | 1.0        | 1.3        | 1.5        | 1.6        | 1.6        | 1.6        |
| (+) DA            | 0.9         | 0.8         | 0.7         | 0.7        | 0.9        | 1.0        | 1.0        | 1.1        | 1.1        | 1.2        | 1.2        |
| (-) Taxes         | 0.4         | 0.4         | 0.4         | 0.4        | 0.4        | 0.5        | 0.4        | 0.4        | 0.4        | 0.4        | 0.4        |
| (-) Investment    | -0.8        | -0.9        | -0.9        | -1.0       | -1.0       | -1.1       | -1.1       | -1.2       | -1.2       | -1.3       | -1.4       |
| (-) Change in WCN | 0.2         | -0.5        | -0.3        | -0.4       | -0.4       | -0.3       | -0.2       | -0.2       | -0.1       | -0.0       | -0.1       |
| <b>FCF</b>        | <b>-1.1</b> | <b>-1.0</b> | <b>-0.3</b> | <b>0.1</b> | <b>0.6</b> | <b>1.1</b> | <b>1.4</b> | <b>1.6</b> | <b>1.7</b> | <b>1.8</b> | <b>1.8</b> |

Euronext since Jan. 1<sup>st</sup>, 2016

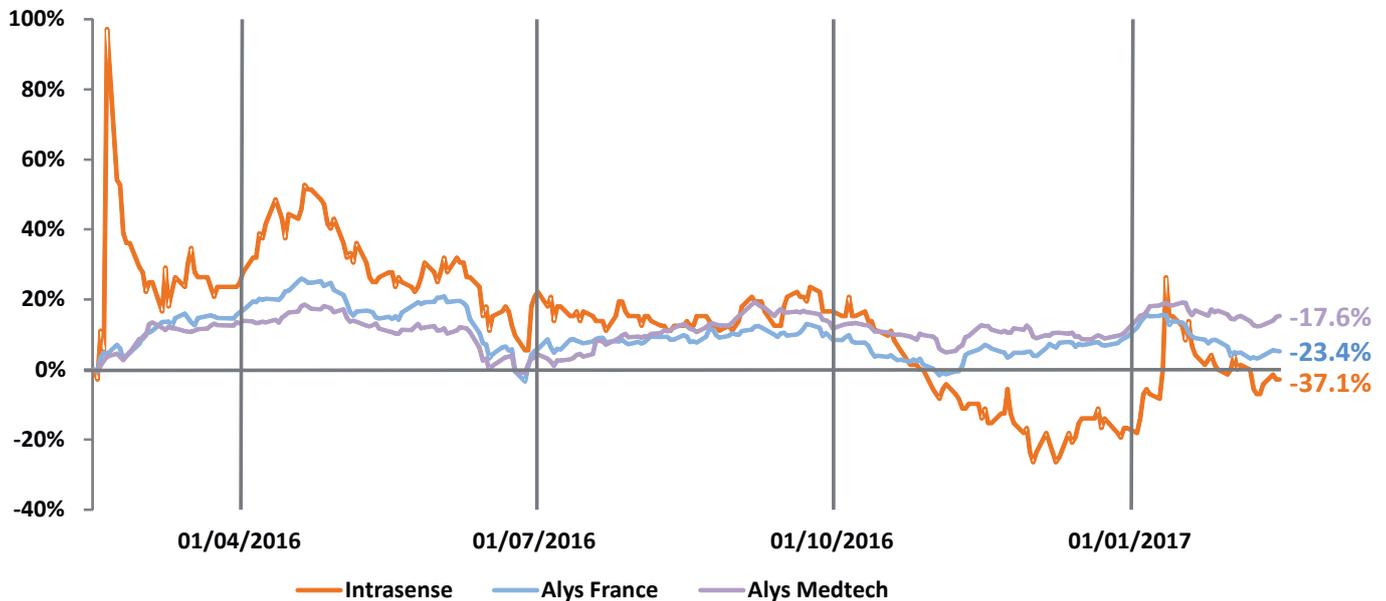
|                        |               |
|------------------------|---------------|
| <b>Intrasense</b>      | <b>+16.7%</b> |
| <i>Alys France*</i>    | <i>-3.8%</i>  |
| <i>Next Biotech*</i>   | <i>-0.2%</i>  |
| <i>CAC Healthcare.</i> | <i>+3.7%</i>  |
| <i>CAC 40</i>          | <i>+1.3%</i>  |
| <i>CAC Small</i>       | <i>+4.8%</i>  |

\* Index of French smallcaps (less than €1B market capitalization at time of inclusion) in the healthcare and life sciences sector, listed on Euronext Paris. See <http://www.aurgalys.com/aurgalys-indices>

## 6. Stock performance

As other French medtechs smallcaps, Intrasense’s stock was negatively impacted in 2016 by difficult macroeconomic events such as the oil crisis, the Chinese economy, Brexit referendum, etc. However, trading volumes on Intrasense are quite high (3-month average is 450,000 shares exchanged daily), and the share price reacted positively to the February 18<sup>th</sup> press release announcing the €5M convertible bond financing with Bracknor (+87%), renewable twice for a maximum of €15M. These convertible bonds were associated with share subscription rights. Should Bracknor decide to exercise them, it could bring another €15M to the company. As of February 15<sup>th</sup>, 2017, Intrasense stock has a +16.7% YTD performance.

Figure 16. Intrasense one-year stock performance as of February 15<sup>th</sup>, 2017



## 7. Financials

| <b>EARNINGS PER SHARE (€)</b> | <b>2013</b> | <b>2014</b> | <b>2015</b> | <b>2016e</b> | <b>2017e</b> | <b>2018e</b> |
|-------------------------------|-------------|-------------|-------------|--------------|--------------|--------------|
| EPS                           | -0.59       | -1.29       | -0.44       | -0.16        | -0.05        | 0.02         |

| <b>Income Statement (€M)</b> | <b>2013</b> | <b>2014</b> | <b>2015</b> | <b>2016e</b> | <b>2017e</b> | <b>2018e</b> |
|------------------------------|-------------|-------------|-------------|--------------|--------------|--------------|
| Revenue                      | 4.2         | 2.4         | 2.9         | 3.1          | 3.9          | 4.7          |
| EBIT                         | -2.6        | -5.2        | -2.2        | -1.8         | -0.9         | -0.2         |
| <b>Net Income</b>            | <b>-1.8</b> | <b>-5.5</b> | <b>-2.8</b> | <b>-1.6</b>  | <b>-0.5</b>  | <b>0.2</b>   |

| <b>BALANCE SHEET (€M)</b>                   | <b>2013</b> | <b>2014</b> | <b>2015</b> | <b>2016e</b> | <b>2017e</b> | <b>2018e</b> |
|---|-------------|-------------|-------------|--------------|--------------|--------------|
| Non Current Assets                          | 2.8         | 1.8         | 1.5         | 1.5          | 1.5          | 1.7          |
| Current Assets                              | 4.9         | 5.0         | 4.7         | 4.2          | 5.5          | 5.5          |
| <i>Including cash &amp; cash equivalent</i> | <i>1.4</i>  | <i>1.0</i>  | <i>1.2</i>  | <i>1.6</i>   | <i>2.4</i>   | <i>2.1</i>   |
| <b>Total Assets</b>                         | <b>7.7</b>  | <b>6.9</b>  | <b>6.2</b>  | <b>5.7</b>   | <b>7.0</b>   | <b>7.3</b>   |

| <b>LIABILITIES AND SHAREHOLDER'S EQUITY</b>       | <b>2013</b> | <b>2014</b> | <b>2015</b> | <b>2016e</b> | <b>2017e</b> | <b>2018e</b> |
|---|-------------|-------------|-------------|--------------|--------------|--------------|
| <b>Total Equity</b>                               | <b>3.6</b>  | <b>1.9</b>  | <b>1.2</b>  | <b>1.1</b>   | <b>2.6</b>   | <b>3.8</b>   |
| Financial Debt                                    | 2.5         | 3.2         | 3.0         | 3.4          | 3.2          | 2.2          |
| Other Debt  | 1.6         | 1.7         | 1.9         | 1.2          | 1.2          | 1.3          |
| <b>Total Liabilities and Shareholder's equity</b> | <b>7.7</b>  | <b>6.9</b>  | <b>6.2</b>  | <b>5.7</b>   | <b>7.0</b>   | <b>7.3</b>   |

| <b>CASH FLOW STATEMENT (€M)</b>      | <b>2013</b> | <b>2014</b> | <b>2015</b> | <b>2016e</b> | <b>2017e</b> | <b>2018e</b> |
|--------------------------------------|-------------|-------------|-------------|--------------|--------------|--------------|
| Cash flow from operating activities  | -1.5        | -3.2        | -0.4        | -0.6         | -0.1         | 0.6          |
| Cash flow from investment activities | -1.3        | -1.7        | -1.3        | -0.8         | -0.9         | -0.9         |
| Cash flow from financing activities  | 0.2         | 4.5         | 1.9         | 1.8          | 1.8          | 0.0          |
| <b>Net change in Cash</b>            | <b>-2.6</b> | <b>-0.4</b> | <b>0.2</b>  | <b>0.4</b>   | <b>0.8</b>   | <b>-0.4</b>  |



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