Technology Trends and Business Opportunities in the Brazilian PACS Market
Executive Summary

N4A5-48
June, 2010

FROST & SULLIVAN

Market Profile

- Brazil is one of the fastest growing **emerging economies** in the world. The country's 2008 **GDP** surpassed 1,6 trillion dollars, and represented 2.60 percent of the world economy, according to the World Bank.
- Several indicators have shown economy recovery after the global economic crisis. The Federal Government has injected money in the economy to avoid higher crisis contamination and the local currency is slowly revaluating against the dollar, which tends to decrease **cost pressures** from imports.
- According to the Financial Ministry, the Brazilian Economy is expected to grow 5.20 percent in 2010, and the expansion should be buoyed by high **investment** rates.
- Government expenditure in Healthcare corresponds to approximately 8 percent of the GDP, and the **public sector** represents around 65% of total **investment in healthcare**.
- **Internal demand** is also likely to increase due to the middle class expansion, which corroborates to the recovery, detaching the Brazilian economic results from global turmoil release.
- Specialists estimate that the **industry** will expand approximately 9.6 percent in 2010, reaching the pre-crisis level in the second half of 2010.
- The upcoming **elections** are not likely to bring significant uncertainty of the politics and economy course.

Market Profile (Contd…)

- The Brazilian PACS **market** has been developing at a fast pace, though it is still in a **emerging stage**. Such trend is in accordance to the objective of **efficiency maximization** and the entry of the healthcare sector in the **information technology** (IT) era.
- One of the last sector to adopt more vigorously the use of IT technologies, due to lack of professionalism and familiarity with its usage, the healthcare institutions are increasing **awareness** on the need to enhance **productivity** by adopting IT solutions.
- The market is very segmented between **public** the **private**, and the competition is very fierce, with 8 important players. Companies are already established, and new entrants would face relative difficulties to enter in this market.
- Government's investments in Healthcare area is increasing, although the **prices** are getting at a lower level, due to the elevated number of players in the market.
- In the medium to long term, the **differences** between **prices** and **quality** of local and global PACS solutions tend to diminish, although there is no expectation that they will achieve the same level, as local players will continue to have advantages over costs due to logistics and tax easiness and global players will remain in a upfront of technology innovation, due to higher investment capacity.

Product Measurements

- PACS is hereby defined as a system used in the **digital management of medical images**, which is a rapidly evolving **technology** being adopted by healthcare facilities.
- Such systems store images in a **database**, enabling the **sharing of medical images** over different platforms. The advantages are related to **time saving** and **cost reduction**, by reducing image hard copies, favoring **diagnoses** and enabling **future consultations** of patients' exams.
- Integrated PACS systems can be classified into various categories according to its connectivity and scale of operations. Nevertheless, due to the early stage the Brazilian market finds itself, **classification** is not absolutely clear among end users.
- Broadly, small-scale systems that handle images from a single type of medical imaging modality, such as computed tomography (CT) or magnetic resonance imaging (MRI) are classified as **mini-PACS**. These solutions are in general **more affordable** and may be the best choice for small clinics that focus on one type of medical exam.
- **Mid-end PACS** are systems which connect small hospitals and diagnostic imaging centers, with multimodalities medical imaging types.
- **Enterprise PACS** are defined as a single multi-specialty platform that connects various departments within large hospitals and hospital chains, encompassing at least three complex modalities such as magnetic resonance, computed tomography, nuclear medicine or positron emission tomography.

Product Measurements

World-class solutions considered in the report will have:

1. At least 3 modalities integrated, one must be high complexity (CT, MR, NM)
2. HL7 and DICOM protocols
3. Backup policies (remote storage) and redundant hardware (architecture)
4. RIS/PACS/HIS brokerless integration
5. Single sign-on and desktop integration
6. Remote integration (via text, chat or voice)

	Mini PACS	Middle PACS	Enterprise PACS
Storage capacity	up to 2TB	up to 4TB	larger than 4 TB
Workstation	up to 4	from 5 to 8	more than 8
Web distribution	yes	yes	yes
RIS integration	no	yes	yes

Table 1-1; Source: Frost & Sullivan

Industry Challenges

PACS Market: Impact of Top Four Industry Challenges (Brazil), 2010-2015

Rank	Challenge	2010	2011-2012	2013-2015
1	Affordability of a Fully Integrated PACS Challenges Providers	**High**	**High**	**Medium**
2	Solutions Offered by Local Vendors Establish a Price Rivalry among Competitors	**High**	**High**	**Medium**
3	Limited Customer Awareness of PACS Benefits Creates Barriers to Market Growth	**High**	**High**	**Medium**
4	Long Project Sign-off Time Puts Vendors under Pressure	**High**	**High**	**Medium**

Table 2-1; Source: Frost & Sullivan

Market Drivers

PACS Market: Market Drivers Ranked in Order of Impact (Brazil), 2010-2015

Rank	Driver	2010	2011-2012	2013-2015
1	Increasing use of Information Technologies in the Healthcare Sector	**Medium**	**High**	**High**
2	Efficiency and workflow improvements Drives PACS Market Expansion	**Medium**	**Medium**	**High**
3	Advances in digital imaging penetration increases PACS adoption	**Medium**	**Medium**	**High**
4	Exponential growth curb: the more systems adopted with sucess, the higher PACS market growth rates	**Medium**	**Medium**	**High**

Table 2-2; Source: Frost & Sullivan

Market Restraints

PACS Market: Market Restraints Ranked in Order of Impact (Brazil), 2010-2015

Rank	Restraint	2010	2011-2012	2013-2015
1	High upfront investment and Running costs discourage end users	**High**	**High**	**Medium**
2	PACS are not always among end users´top purchasing priorities	**High**	**High**	**Medium**
3	Lack of Basic IT Infrastructure prevents PACS adoption	**High**	**High**	**Medium**
4	Lower penetration of digital image equipements limits PACS market expansion	**High**	**High**	**Medium**

Table 2-3; Source: Frost & Sullivan

Market Size and Forecasts

PACS Market: Revenue Forecasts (Brazil), 2005-2015

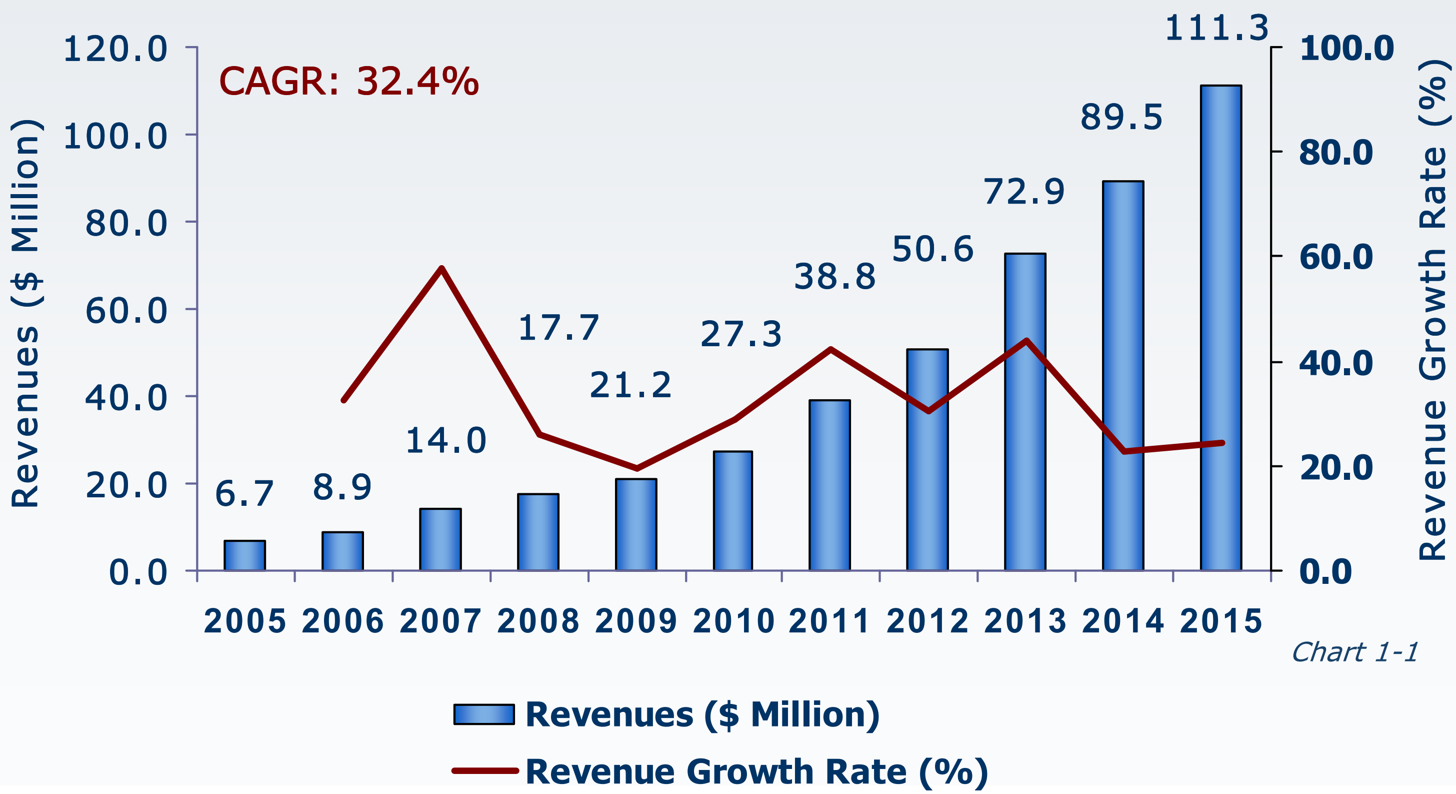
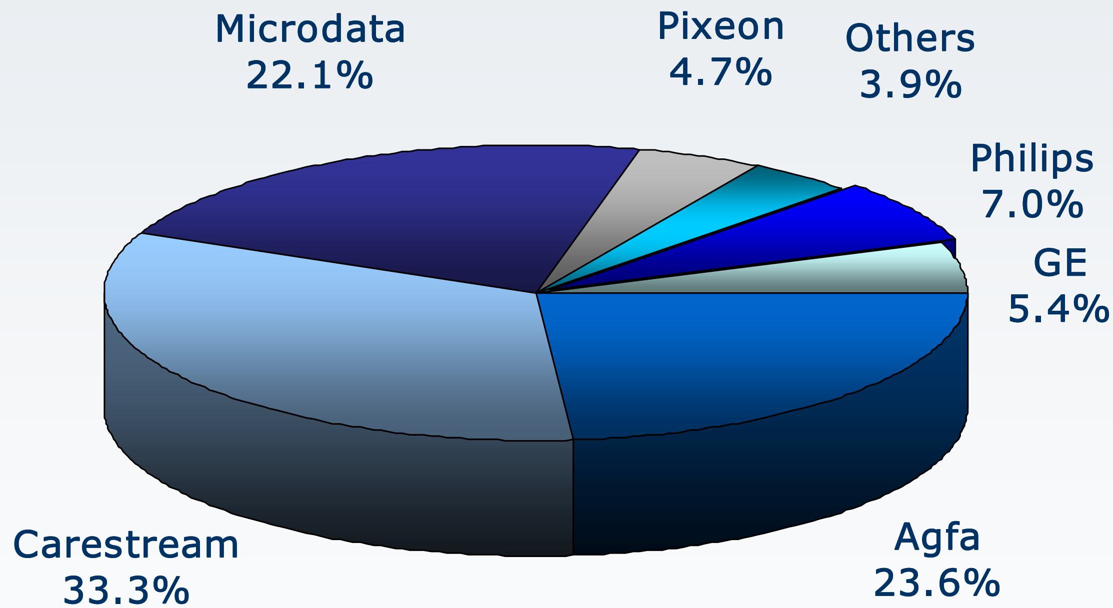


Chart 1-1

Note: All figures are rounded; the base year is 2008. Source: Frost & Sullivan

Competitive Analysis (Contd...)

PACS Market: Company Market Share by Revenues (Brazil), 2008



Source: Frost & Sullivan