Chapter 6.8
Outsourcing in the Healthcare Industry:
Information Technology, Intellectual Property, and Allied Aspects

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ABSTRACT

The healthcare industry is being impacted by advances in information technology in four major ways: first, a broad spectrum of tasks that were previously done manually can now be performed by computers; second, some tasks can be outsourced to other countries using inexpensive communications technology; third, longitudinal and societal healthcare data can now be analyzed in acceptable periods of time; and fourth, the best medical expertise can sometimes be made available without the need to transport the patient to the doctor or vice versa. The healthcare industry will increasingly use a portfolio approach comprised of three closely-coordinated components seamlessly interwoven together: healthcare tasks performed by humans on-site; healthcare tasks performed by humans off-site, including tasks performed in other countries; and healthcare tasks performed by computers without direct human involvement. Finally, this paper deals with intellectual property and legal aspects related to the three-pronged healthcare services paradigm.

INTRODUCTION

Advances in computing and communications technologies are dramatically altering the health-

care landscape around the world in a number of ways such as:

- enabling detailed analysis of healthcare data to elicit underlying trends and interrelationships;
- facilitating storage, transmission, integration, and retrieval of healthcare records;
- enabling healthcare professionals to render assistance to patients separated by significant geographic distance from each other;
- monitoring the safety of medical procedures and pharmaceutical drugs; and
- bringing the latest healthcare information to the attention of healthcare professionals and others.

In this article, we take five operational scenarios, one from each of the five illustrative categories delineated above. In each operational scenario, at least one of the co-authors of this article played a significant role and therefore possesses first-hand knowledge of that healthcare application. The operational scenario is analyzed, post-facto, from the viewpoint of diagnosing what subset of tasks can be handled by evolving information technologies without significant human intervention, what subset needs to be performed on-site by humans, both now and in the foreseeable future, and what subset can be potentially performed by humans located at a significant distance from the patient.

Based on the above analysis, we postulate that the future healthcare industry is unlikely to adopt a mono-operational scenario in which all the tasks occur on-site (as happened in the past), off-site, or by machines alone. Instead, the healthcare industry will gradually adopt an operational model in which there is a seamless and symbiotic combination of all three modes of operation.

After examining the future healthcare industry model from multiple perspectives, we conclude that we need a new approach to intellectual property in order to adequately safeguard the interests of the relevant constituencies. Based on the forces that will motivate the change, we further assert that healthcare organizations that are unwilling to adapt and embrace the evolving three-faceted work paradigm will be at a competitive disadvantage to their peers. National, state, and local medical regulatory agencies will need to respond to market pressures in order to support the long-term interests of both medical professionals and patients in their respective jurisdictions.

COMPREHENSIVE ANALYSIS OF HEALTHCARE DATA

One out of eight women in the United States will develop breast cancer during her lifetime. Early detection is a woman's best defense against breast cancer, which is 97% curable when detected and treated at an early stage. Mammography is the gold standard for screening for breast cancer. With the trend towards people living longer lives and taking proactive measures on their health, the demand for mammography is increasing at a significant pace. Unfortunately, 10-20% of the cancers currently detectable by a screening mammogram are missed by the human radiologist, allowing the disease another year to progress. In addition, there is a high degree of liability on radiologists due to missed diagnoses. To mitigate this problem, some radiology screening centers employ two radiologists to read each case. This approach involves significant cost to support an additional radiologist, reduces the number of total mammograms that can be performed within a center, and is problematic due to the shrinking numbers of radiologists in the field of mammography, especially in the United States.

Based on the latest information available on the FDA Web site (October 2006), there were 8,832 FDA-certified mammography centers and 13,511 accredited units in the United States. In the year 2006, there were 34.6 million mammograms performed in the United States alone, which