TELECOM, IT AND HEALTHCARE: WIRELESS NETWORKS, DIGITAL HEALTHCARE, AND THE TRANSFORMATION OF US HEALTHCARE

2012-2017

MAY 2012

THE INSIGHT RESEARCH CORPORATION

Pricing Information:

**Hard Copy Price**
$ 3995

**Electronic Copy Price**
$ 4695 Single-User Printable PDF
$ 6995 6-Seat Printable PDF
$ 10,000 Unlimited Corporate-Wide Distribution

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CHAPTER I
EXECUTIVE SUMMARY

1.1 US Healthcare and Telecommunications

INSIGHT has been tracking the unique requirements of the Healthcare IT and Telecom market since 2000. We recognize the importance of the healthcare sector in the US economy and the attractiveness of this market for service providers and equipment vendors. Many of the predictions made in our previous report, *Telecommunications, IT and Healthcare: Wireless Networks, Digital Healthcare and the Transformation of US Healthcare, 2009-2014*, have come to pass. Healthcare has increased in every dimension, including per capita spending, insurance premiums, out-of-pocket payments, rates of treatment, and healthcare employment.

The volume of healthcare transactions and the amount of electronic information exchanged over healthcare networks continues to grow faster than any other vertical industry. Telecommunications providers have responded to the increasing demand with more bandwidth, higher performance, and mobility solutions. In the US, Congress, following the Obama administration’s lead, has passed legislation to extend healthcare coverage to the uninsured and dependents, raising the demand for health care services while simultaneously trying to solve the cost challenges that accompany this growth.

Since our last report, healthcare IT service and software providers have grown through consolidation, providing more integrated healthcare solutions—combining wireline and wireless networks and integrating IT platforms with healthcare applications. These providers continue to expand their healthcare solutions practice by partnering with healthcare application providers.

For telecommunications providers, healthcare is an attractive market. The 2012 US healthcare industry is a $2.8 trillion ecosystem of hospitals, physicians, pharmaceutical companies, and insurance providers. Outpacing all other industries, healthcare is projected to grow 6.4 percent per year to $3.9 trillion by 2017. The increased emphasis and spending on healthcare reflects the increased value that consumers perceive in medical treatment. At the same time, providers
and patients share the objective of improving healthcare quality and reducing costs. Information technology and telecommunications will play a critical role in addressing these objectives.

Some of the key findings in this report include:

- **Telecommunications will enable capacity expansion in healthcare.** Improved networks and information technology allow providers to leverage their traditional medical care resources (hospitals, clinics, equipment) across a larger base of remote patients.

- **Pervasive wireless and broadband access enables patient monitoring.** Electronic monitoring will enable an exception management model, whereby systems and networks record continuous patient information, while only exceptional conditions, as determined by treatment rules, will trigger provider intervention.

- **Exponential growth in healthcare data storage requirements.** All healthcare providers are seeing exponential growth in their data storage requirements, as providers adopt digital recording across their treatment systems. Healthcare providers will increasingly rely on service providers to stitch together their existing networks, interconnect adjacent providers, and to build data center platforms in the “Cloud” to handle this growth.

- **Consumers will pay even higher disposable income towards healthcare services.** The US healthcare system places an emphasis on access to care. Patients have greater choice of providers, have longer hospital stays, and have more physicians’ visits than any other country. Accordingly, US consumers pay over twice as much on a per capita basis as the next closest country.

- **Digitized healthcare will foster collaboration.** With interconnected networks and electronic health records (EHR) collaboration will flourish between clinicians, care teams, patients and provider organizations in order to optimize treatment resources. Aggregating patient data and prediction of health status are keys to prevention and pre-symptomatic disease detection. Geographic separation between the point of clinical care and the location of clinical decision can accelerate improvements in patient treatment.
- **Population growth and demographic changes will impact telecom spending.** The aging US population will drive demand for in-patient and outpatient services. Increases in new clinical applications and the dispersion of medical treatment to remote clinics and home care will have a compounded effect on healthcare network traffic. This will provide strong opportunities to the carriers that can deliver infrastructure and services to these providers and patients.

Growth in healthcare expenditures, employment, and treatment locations will be the primary drivers in healthcare telecommunications spending. Centralized providers, individual practitioners, and patients will be bonded in an electronic network, sharing diagnoses with knowledge-based systems and providers across the globe to deliver the most effective treatment instantaneously.

Table I-1 provides a categorization of the major market segments covered in this report.

**Table I-1  Healthcare Market Segments**

<table>
<thead>
<tr>
<th>Market Segment</th>
<th>Description</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Providers</td>
<td>Organizations that provide treatment to patients.</td>
<td>Hospitals</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Physician Offices</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Clinics</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Emergency Providers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Nursing Homes</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Home Care Providers</td>
</tr>
<tr>
<td>Health Plans</td>
<td>Companies that provide individual and employee health insurance.</td>
<td>HMOs (Health Maintenance Organizations)</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Insurance Carriers</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Benefit Administration</td>
</tr>
<tr>
<td>Pharmaceuticals</td>
<td>Companies involved in the development, testing, and dispensing of drugs.</td>
<td>Pharmacists</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Labs</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Clinical Research</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Biotechnology</td>
</tr>
<tr>
<td>Other</td>
<td></td>
<td>Government</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Integrated Health Plan Providers</td>
</tr>
</tbody>
</table>
The applications covered in this report include some of the unique clinical and IT applications that will drive this growth in telecom spending. These healthcare applications include:

- Imaging;
- Practice and Operations Management;
- Telemedicine;
- Healthcare Information Exchanges
- Home Health Monitoring;
- Electronic Healthcare Records;
- E-Prescribing.
- National and Regional Healthcare Networks

Deploying these applications across wide area networks continues—though the pace could certainly be faster. The healthcare industry has already deployed a significant number of advanced technologies in isolated clinical settings, however, the most advanced equipment usually is confined to the major hospitals and labs. While healthcare uses very sophisticated electronic equipment, the benefits of that equipment are all too often limited to a single facility.

Healthcare has been one of the slowest vertical markets to adopt wide-area networking—mainly due to the fragmented structure of the industry. This report will focus on the specific technologies that enable expansion of healthcare applications by linking providers, patients, and other segments across the healthcare industry. Table I-2 lists the network and equipment technologies covered in this study.

<table>
<thead>
<tr>
<th>Technology</th>
<th>Description</th>
<th>Examples</th>
</tr>
</thead>
<tbody>
<tr>
<td>Network</td>
<td>Wireline and Wireless services interconnecting providers, patients, and payers throughout the healthcare system</td>
<td>Broadband, Fiber Optics, Ethernet Services, 3G/4G Cellular, Wireless LANs, WiMAX</td>
</tr>
<tr>
<td>Equipment</td>
<td>Healthcare devices used in clinical and home settings</td>
<td>Imaging, RFID, Patient Monitoring Devices, Storage and Disaster Recovery</td>
</tr>
</tbody>
</table>

Note: 3G/4G = Third Generation/Fourth Generation, LAN = Local Area Network, RFID = Radio Frequency Identification, WiMAX = Wireless Interoperability for Microwave Access
1.2 Healthcare Industry Telecommunications Spending

The growth in healthcare telecommunications spending continues to exceed all other vertical segments, as the underlying industry fundamentals are strong and the proclivity to adopt information technology adoption is accelerating. Healthcare is like any other enterprise segment in that its telecommunications spending is primarily driven by changes in fundamental business activity: the number of locations, employment, end users, and the volume of transactions. The number of healthcare locations is increasing by 2.4 percent annually over the forecast period, while healthcare employment is increasing 2.5 times the total employment rate. Healthcare electronic transactions will grow exponentially over this forecast period as providers interconnect with each other and as patient communication with their healthcare provider will increasingly rely on telecommunications technologies and networks. We expect that bandwidth on these connections will quadruple as data and video replace voice as the primary medium.

Our research suggests that population trends and advances in clinical treatment technology will require new healthcare delivery systems as well as the concomitant expansion of multimedia network services in order to reach patients where they live. The high costs inherent in current healthcare systems are related to the proximity of the patient and provider. Technology will close these proximity gaps, providing patient access to providers and specialists who may be hundreds of miles away.

To cite just one example of how these two important trends will play out: real-time monitoring enables healthcare providers to respond immediately to patient issues, while providing relief to family members who deliver the majority of home care services today. The future of remote monitoring of patients outside of healthcare facilities lies in innovations such as patient sensors, wireless, and video communications technologies that allow vital information about heart rate, respiratory rate, blood pressure and sleep patterns to be tracked continuously.

Wireline and wireless broadband access penetration will pass most US homes in the next decade, and adoption from those age 65 an older, who have the highest need for home medical care, will reach a critical mass that will enable wide-spread use of wireless healthcare. Wireless monitoring—in the clinical setting, patient home, and while patients are mobile—can eliminate a substantial amount of institutional care and treatment.
INSIGHT projects that the US healthcare telecommunications services market will grow from $9.1 billion in 2012 to $14.4 billion in 2017 at a CAGR of 9.7 percent over the forecast horizon due to growth in every healthcare segment. While the US healthcare telecommunications services market may seem large, at $9.1 billion, it only represents 0.3 percent of total healthcare spending of $2.8 trillion. Figure I-1 provides the forecasted wireline and wireless industry revenues for each year.

Figure I-1  Total US Healthcare Telecom Service Revenues, 2012-2017 ($Millions)

Pervasive wireless and broadband access, electronic monitoring, data storage requirements, digitized healthcare collaboration, and demographic changes—all of these factors—will come into play over the next five years. The telecommunications service providers and equipment manufacturers who can address these dynamic requirements will be the winners.
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