

The R & D Tax Credit Aspects of the Health Cloud

By Charles R. Goulding, Andressa Bonafe and Jacob Goldman

Charles R. Goulding, Andressa Bonafe and Jacob Goldman discuss the federal R & D tax credit opportunities available for companies developing new and improved solutions for healthcare records management using cloud computing to increase access and collaboration.

Recent trends demonstrate an accelerated migration of healthcare applications to cloud platforms. Initially reluctant, the risk-averse healthcare sector seems to have learned from other industries' successful experiences in taking advantage of cloud benefits, such as lower costs and enhanced agility, without compromising data security. Put simply, the healthcare industry is beginning to trust the cloud.

This change in attitude not only signals a technical IT change but is part of a much bigger transformation. Cloud computing is at the heart of a more digital, collaborative, patient-centered and data-driven healthcare industry.

This article will discuss the federal R & D tax credit opportunities available for companies developing new and improved cloud solutions for healthcare.

Charles R. Goulding, Attorney/CPA is the President of Energy Tax Savers, Inc., an interdisciplinary tax and engineering firm that specializes in R & D tax credits.

Andressa Bonafe is an Analyst with Energy Tax Savers, Inc.

Jacob Goldman, LEED A.P., is an Engineer and Tax Consultant with Energy Tax Savers, Inc.

The Research & Development Tax Credit

Enacted in 1981, the federal Research and Development (R & D) Tax Credit allows a credit of up to 13 percent of eligible spending for new and improved products and processes. Qualified research must meet the following four criteria:

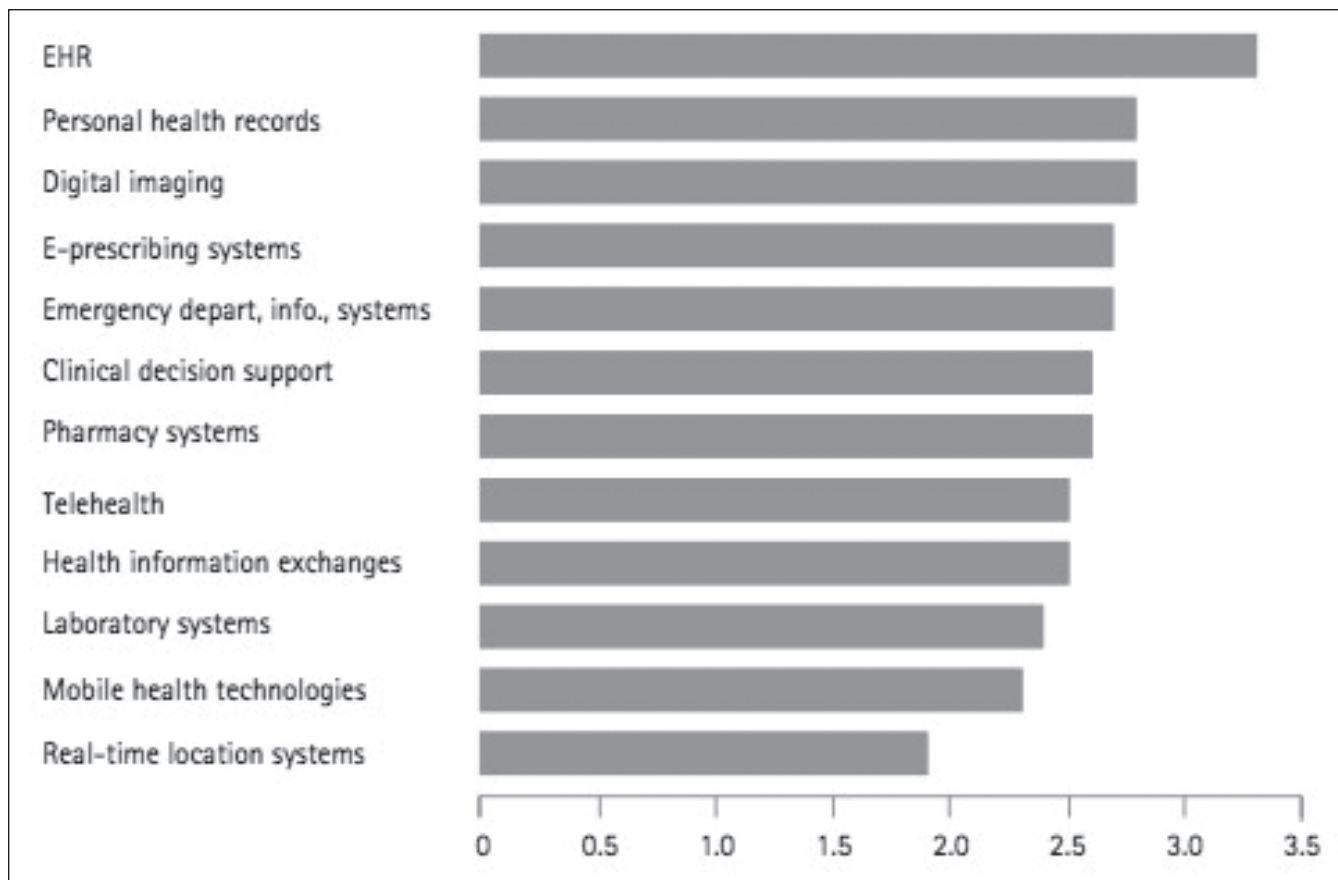
- new or improved products, processes or software;
- technological in nature;
- elimination of uncertainty; and
- process of experimentation.

Eligible costs include employee wages, cost of supplies, cost of testing, contract research expenses and costs associated with developing a patent. On January 2, 2013, President Obama signed the bill extending the R & D Tax Credit for 2012 and 2013 tax years.

Cloud Computing at a Glance

Cloud computing is a comprehensive solution that delivers IT as a service.¹ It allows for providing and

Chart 1. Hospitals' IT investment priorities, as ranked by hospital CIOs (1 unimportant, 4 critical)



sourcing IT services on a “pay-per-use” basis using web-based tools and applications. Different from traditional models, cloud services are considerably elastic—they can be configured, adapted and scaled to meet specific needs. Therefore, cloud computing generally entails less up-front investments and operational expenditure than conventional IT models.

In the cloud model, instead of handing over IT resources to be managed, customers plug into the cloud, treating it as an internal data center or computer. In most cases, the cloud features self-service interfaces where customers can obtain resources for as long as they need. In addition to reducing investments in infrastructure, cloud solutions facilitate application development and deployment and save resource allocation overhead.

Clouds can be private, public or hybrid. A public, or external, cloud is fully owned and provided by a third-party vendor. It is located outside a company's firewall and is also referred to as a shared, multitenant infrastructure. A private, or internal, cloud is an environment located behind a firewall and dedicated to a single company for exclusive use. Finally, in a hybrid cloud, a company is able to retain confidential

information in a private cloud while having access to external services offered by public clouds.

There are three basic delivery models in cloud computing:

- **Infrastructure as a Service (“IaaS”)** provides servers, virtual machines, storage capacity, load balances, etc.
- **Platform as a Service (“PaaS”)** provides a computing platform and environment for application and service development.
- **Software as a Service (“SaaS”)** is a complete software application that is delivered to the end-user *via* the cloud.²

The Health Cloud

Imprivata's 2013 Desktop Virtualization Trends in Health report revealed that healthcare organizations are more willing to migrate to cloud computing than they have been in the past. While in 2012, only nine percent of respondents used the cloud model, this year 30 percent of them did.³

In a recent report, ACCENTURE lists five ways in which cloud computing, combined with mobility

and analytics, will revolutionize the healthcare industry, namely:⁴

- (a) creating the agility for healthcare providers and insurers to flex their business models, collaborate at low cost and high speed, meet changing regulations—and deliver better patient services;
- (b) helping ensure seamless, personalized healthcare anywhere in the world, through ubiquitous and secure data sharing;
- (c) shifting the focus of chronic healthcare from the hospital or clinic to the home—delivering better patient care and comfort at a lower cost;
- (d) harnessing and analyzing health and nonhealth “big data” in the cloud—including social media—to improve public health through preventative well-being monitoring and encouraging healthier lifestyles; and
- (e) transforming access to health services in emerging markets without heavy investment in physical hospitals and clinical centers.

Chart 1, originally featured in Ovum’s 2013 *Trends to Watch: Healthcare Technology* report, presents a list of hospital’s IT priorities as ranked by CIOs.

The different categories give us an overview of potential cloud computing applications.⁵

According to the previously mentioned Imprivata report, the most common cloud application currently used in healthcare is the electronic medical records (“EMR”) system. This is followed by application access, imaging archiving and communication systems (“PACS”) storage. Respondents saw great promise in cloud-based electronic prescribing and secure text messaging, which are expected to intensify in the next two years.

Cloud Computing Solutions for Healthcare

The multiplication of cloud-based solutions for the healthcare industry illustrates the revolutionary potential behind this new wave of IT innovation. Companies engaged in R & D activities aimed at fostering the widespread adoption of cloud computing in healthcare may be entitled to significant federal tax credits. The following paragraphs present examples of recent innovation efforts in this field.

Headquartered in San Jose, CA, *Cisco Systems* has developed a number of cloud-based solutions for the healthcare sector. Cisco’s Medical Data Exchange Solution, for instance, provides the infrastructure necessary to carry out Health Information Exchanges (“HIEs”) along with similar shared healthcare services in the cloud. The system gives healthcare providers the flexibility necessary to support the increasing exchange of data, images and video. Cisco’s solution includes the Cisco Medical-Grade Network, the Cisco Unified Computing System™ and Cisco collaboration tools.⁶

AT&T Medical Imaging and Information Management Solution (“MiiM”) is also a cloud-based solution that helps hospitals store, access and share medical imaging. In addition to overcoming time and cost consuming inefficiencies, such as the necessity of searching through multiple systems for patient images, the solution also advances virtual collaboration among health professionals and mutual interpretation of patient images. It enables instant access to images from anywhere and facilitates the creation of hospital networks to manage referral

patient images in cases of reallocation.⁷

Located in San Francisco, CA, *Practice Fusion, Inc.*, has pioneered an innovative, free cloud-based model for electronic medical record technology. The

software solution helps manage the relationship with patients and other healthcare agents. According to the company, there are currently 150,000 healthcare providers using its services on 60 million patients. The no-cost approach is made possible through advertising and the establishment of connections with partners’ services, such as labs and pharmacies.

In April 2013, Practice Fusion launched a new service, Patient Fusion, which enables the online scheduling of appointments with any participating doctor. In addition to the convenience of knowing which doctor from the Practice Fusion Network is available at the time needed, patients can also review their physicians after each visit. Once an appointment is booked, the doctor has automatic access to the patient’s health history from Practice Fusion.⁸

According to the Centers for Disease Control and Prevention, in 2012, 72 percent of office-based physicians used electronic medical record or

Complexity is intensified by industry-specific security concepts, such as consent, data access history disclosure and proxy health data custodians.

electronic health record (EMR/EHR) systems, up from 48 percent in 2009.⁹ As cloud-based EMR systems grow, so does the data they collect. Access to Big Data can change the face of healthcare, producing system-wide improvements.¹⁰ Potential advances include the consolidation of evidence-based care, the spread of informed lifestyle choices, the establishment of effective settings for treatment and the boosting of R & D productivity. As pointed out in McKinsey's report *The 'Big Data' Revolution in Healthcare: Accelerating Value and Innovation*, the emergence of healthcare Big Data will create new value pathways and foster an ecosystem feedback loop.¹¹

The use of Big Data can also contribute to better diagnosis. IBM's Watson, a language-proficient computer system initially created to answer questions on the show *Jeopardy!*, has the ability to assimilate and analyze an enormous quantity of data. Its cumulated "knowledge" includes "more than 600,000 pieces of medical evidence, more than two million pages from medical journals and the further ability to search through up to 1.5 million patient records"¹², an amount of information no human doctor's mind can match. IBM, in partnership with the Memorial Sloan-Kettering Cancer Center in New York and the American private healthcare company WellPoint, is working to enable oncology hospitals, clinics and individual doctors to rent time with Watson over the cloud. Watson's wider deployment would significantly increase accuracy of diagnoses while simultaneously reducing costs. When tested for lung cancer diagnoses, Watson's success rate was 90 percent, compared to an average of 50 percent for human doctors.¹³

Another interesting example of innovation comes from Minneapolis, MN, home of Fairview Health Services, a network of 10 hospitals and 42 clinics. The company created a cloud-based communications platform that enables doctors to conduct virtual video "visits" with patients and program future visits. The solution has improved care coordination and reduced costs—being cloud-based, the only hardware costs consist of headsets and video cameras. The innovative system enables physicians to consult with patients from their homes and pharmacists to guide them through medication therapy management. The use of encrypted communications guarantee Fairview Health Services' compliance with the Health Insurance Portability and Accountability Act (HIPAA).¹⁴

OrthoSensor, Inc., is developing innovative solutions to deliver intelligent orthopedics. The company's sensor-equipped implants would provide

doctors with constant information about the patient's conditions (range of motion, temperature, fluid build-up, infections, pain, etc.). Such data would then be linked to a cloud-based system that can analyze it and incorporate the resulting information to electronic health records ("EHR").¹⁵

Healthcare Innovation Challenges

The healthcare industry has been pushed towards the cloud. The growing necessity of different organizations to share information, the rise of mobile health, new standards of meaningful use of EHR, the accountable care organization ("ACO") model and the ICD-10 switch are a few drivers of the recent migration to cloud computing.

However, from an industry-wide perspective, the cloud computing model is still in its early stages of adoption. Significant R & D efforts will be necessary to resolve the concerns behind persisting reluctance.

Privacy and security are major concerns in an industry permeated by sensitive information (known as Protected Health Information, or "PHI"). Complexity is intensified by industry-specific security concepts, such as consent, data access history disclosure and proxy health data custodians.

In addition to tackling the risks of unauthorized access or loss of PHI, cloud-based solutions must support the compliance with strict regulation requirements—such as The Health Insurance Portability and Accountability Act (HIPAA),¹⁶ The Health Information Technology for Economic and Clinical Health Act (HITECH)¹⁷ and The Federal Information Security Management Act of 2002 (FISMA).¹⁸

Promising alternatives include "self-protecting" data, which consists of building security and authorization access into the metadata attached to the data itself—a system that allows security to follow data as it moves across cloud services, networks and devices. Cloud-based identity and access management services can also take advantage of advanced biometric, geo-location authentication and risk-based, adaptive authorization. For data exchange, encryption and tokenization have proved successful in other industries.¹⁹

In short, the widespread adoption of cloud computing by the healthcare industry must come hand in hand with the development of potent analytics-based security systems capable of neutralizing ever-evolving threats.

Cloud computing is bound to promote an

unprecedented level of data availability in the healthcare industry. Transforming this data into useful information, however, is an outstanding challenge. Industry-specific predictive analytics software must be designed to enable the beneficial use of Big Data in healthcare through the generation of reliable actionable information.

Predictive analytics software is already helping hospitals improve outcomes. California-based Predixion Software specializes in healthcare predictive intelligence. The company has introduced the innovative idea of self-service predictive analytics aimed at simplifying the process of sharing models and automating predictions for nontechnical end users in healthcare. Potential uses of Predixion's solutions include preventable

readmissions, length-of-stay estimation, hospital acquired conditions, chronic care management, predictive illness/disease progressions, identification of high cost cases, among many others.²⁰

Conclusion

A growing number of healthcare organizations are migrating to cloud computing. While benefits are evident, challenges remain, particularly when it comes to privacy, security and predictive analytics. Companies engaged in innovative efforts to accelerate the adoption of the cloud model in healthcare may be entitled to significant federal R & D tax credits.

ENDNOTES

- ¹ Charles Goulding, Jacob Goldman and Cassandra Gengler, *The Tax Aspects of Cloud Computing and Data Centers*, CORP. BUS. TAX'N MONTHLY, Dec. 2010, at 9.
- ² IBM Developer Works, *Cloud Computing*. Available online at www.ibm.com/developerworks/cloud/newto.html.
- ³ *2013 Desktop Virtualization Trends in Healthcare*, IMPRIVATA. Available online at www.imprivata.com/resources/analyst-reports/2013-desktop-virtualization-trends-healthcare-report.
- ⁴ *A New Era for the Healthcare Industry: Cloud Computing Changes the Game*, ACCENTURE, Sept. 16, 2013. Available online at www.accenture.com/us-en/Pages/insight-healthcare-industry-cloud-computing.aspx.
- ⁵ *2013 Trends to Watch: Healthcare Technology*, OVUM, Oct. 17, 2012. Available online at <http://ovum.com/research/2013-trends-to-watch-healthcare-technology/>.
- ⁶ *Healthcare in the Cloud: Health Information Exchanges and Beyond*, CISCO. Available online at www.cisco.com/web/strategy/docs/gov/fedbiz031611Healthcare.pdf.
- ⁷ More information available at www.corp.att.com/healthcare/miim/.
- ⁸ *A Medical Service Using the Cloud*, THE NY TIMES, Apr. 9, 2013. Available online at http://bits.blogs.nytimes.com/2013/04/09/a-medical-service-using-the-cloud/?_r=0.
- ⁹ Charles R. Goulding, Andrea Albanese and Charles G. Goulding, *The R & D Tax Credit Aspects of the Medical Software Industry*, to be published at www.energytaxsavers.com/ArticlesSearch.php.
- ¹⁰ Charles R. Goulding, Charles G. Goulding and Jacob Goldman, *The R & D Tax Aspects of Big Data*, CORP. BUS. TAX'N MONTHLY, May 2013, at 23.
- ¹¹ *The "Big Data" Revolution in Healthcare: Accelerating Value and Innovation*, MCKINSEY & COMPANY, Apr. 2013. Available online at www.mckinsey.com/insights/health_systems_and_services/the_big_data_revolution_in_us_health_care.
- ¹² *IBM's Watson Is Better at Diagnosing Cancer than Human Doctors*, Feb. 11, 2013. Available online at www.wired.co.uk/news/archive/2013-02/11/ibm-watson-medical-doctor.
- ¹³ Charles R. Goulding, Andressa Bonafe and Charles G. Goulding, *The R & D Tax Aspects of Cancer Treatment*, CORP. BUS. TAX'N MONTHLY, Jan. 2014, at 11.
- ¹⁴ *Cloud-Based Communication*, Healthcare Informatics, March 22, 2012. Available online at www.healthcare-informatics.com/article/cloud-based-communication.
- ¹⁵ *Cloud Computing from Inside the Body? OrthoSensor, with \$13M, Says Yes*, THE WALL ST. J., Oct. 15, 2013. Available online at <http://blogs.wsj.com/cio/2013/10/15/cloud-computing-from-inside-the-body-orthosensor-with-13m-says-yes/>.
- ¹⁶ The Health Insurance Portability and Accountability Act (HIPAA) (P.L. 104-191).
- ¹⁷ The Health Information Technology for Economic and Clinical Health Act (HITECH), enacted as part of the American Recovery and Reinvestment Act of 2009 (P.L. 111-5).
- ¹⁸ The Federal Information Security Management Act of 2002 (FISMA), enacted as Title III of the E-Government Act of 2002 (P.L. 107-347).
- ¹⁹ *Supra* note 4.
- ²⁰ For more information, see www.predixion-software.com/Solutions/Healthcare.

This article is reprinted with the publisher's permission from the CORPORATE BUSINESS TAXATION MONTHLY, a monthly journal published by CCH, a part of Wolters Kluwer. Copying or distribution without the publisher's permission is prohibited. To subscribe to CORPORATE BUSINESS TAXATION MONTHLY or other CCH Journals please call 800-449-8114 or visit www.CCHGroup.com. All views expressed in the articles and columns are those of the author and not necessarily those of CCH.