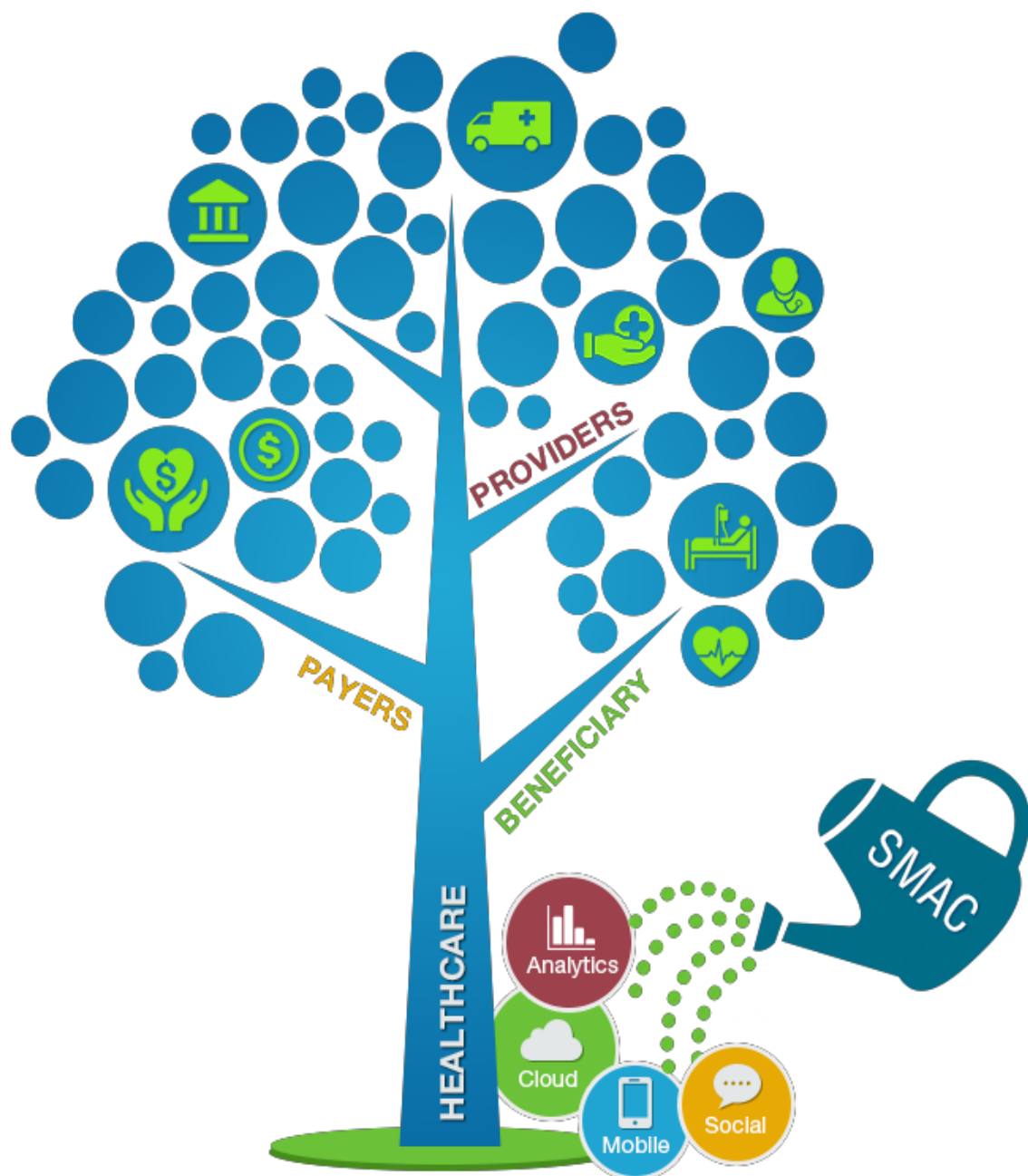


# Social, Mobile, Analytics and Cloud in Healthcare: Golden Opportunity for ISVs



**A Harbinger Group White Paper**

# Harbinger Group

## *Your partner in technology innovation*

**About Harbinger Group:** Harbinger Group ([www.harbingergroup.com](http://www.harbingergroup.com)) is a leading provider of software engineering services to some of the world's best product companies.

This white paper is part of Harbinger's Healthcare practice. Harbinger provides a wide set of software development and testing services for Healthcare ISVs. Visit our [Healthcare Solutions](#) page to learn more.

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## Introduction

We have entered into an era which has ushered in emerging technologies such as Social, Mobile, Analytics and Cloud as a new normal of modern living. Welcome to the post-digital decade as consumers, enterprises and technology vendors have unlocked new possibilities to make daily life exciting. Rapidly evolving technologies have redefined the innovations happening in the IT industry and has also changed the way people conduct business.

The ever increasing demand for the use of internet and smart phones, tablets and related technologies has given access to abundant information on the go. A user with a basic internet connection and a device having easy user interface can access information from any part of the world. This is helping them make informed actions, anytime-anywhere. Mobile has become a ubiquitous device in everyone's life serving personal communication needs as well as professional aspects. It has changed the way people access content, interact with the businesses or communicate with each other furthermore proving that Mobility aspect is at utmost demand these days.

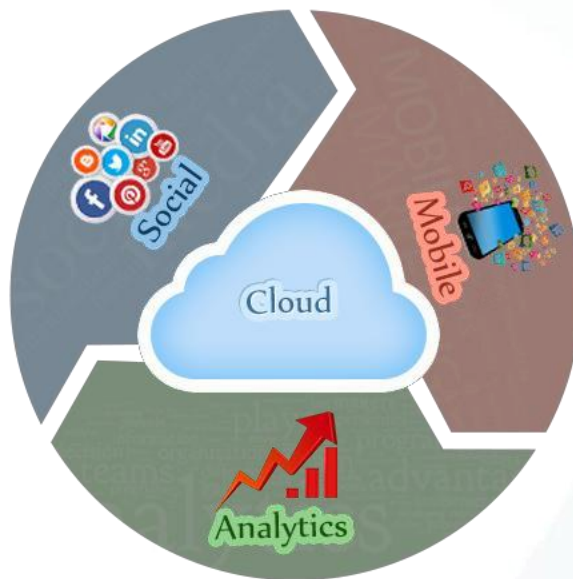


Fig1: Convergence of Social, Mobile, Analytics and Cloud

Brands can market their products/ services and reach consumers swiftly through smart phones. Social Media plays an important role in mitigating the gap between the brand and the user as the information can be easily accessed over a smart phone, equally changing the way we communicate, shop, interact or work with others. Thus social (sharing) has its great impact on marketing function and has become one of the key influential factors for making purchasing decisions in today's modern world.

Analytics has become one of the key focus areas for enterprises, due to heterogeneous data arising out of growing complexity of usage and day to day transactions. Data interpretation and reporting of relevant data patterns have become vital parts of business. It has also been one of the important functions in IT for taking business and management related decisions to get the maximum returns on investment.

Cloud services are booming lately because users across the globe prefer mobile solutions having quick and easy access to cloud on the go. Cloud and mobility although are not mutually dependent but they do benefit from one another when it comes to increased productivity and collaboration with each other to enhance business responsiveness and satisfy customers' demands and needs. Cloud is relieving most of the organizations from hassles of electronic data housing and saving their resources, thus, making it a cost effective solution.

The convergence of Social, Mobile, Analytics and Cloud collectively referred as SMAC is well on its way to become the next business technology enabler for the coming decade or so. Individually each component of SMAC may result in great benefits to an organization, however to increase the productivity for organisations and maximize the output, it would be wise to integrate SMAC capabilities in a single go.

This whitepaper attempts to present the impact or benefits of Social, Mobile, Analytics and Cloud Happening in the Healthcare IT industry. Healthcare is a growing sector, both in terms of volume and complexity and to solve these core challenges, healthcare domain is looking out and embracing newer technologies. And, this is where we believe that SMAC will play a major role in the healthcare industry. For the purpose of discussion, we will look at the impact of SMAC with respect to three major segments in Healthcare domain viz. Provider, Payer and Beneficiary.

## **SMAC for Providers**

Providers, comprising of medical practitioners, clinicians, pharmacies and hospitals, play a crucial role in forming the backbone of the healthcare industry. With the advancement of social media, providers are in constant touch with end users. In a recent survey, medical practitioners preferred open forums for conducting discussions on healthcare topics over online healthcare specific communities. If you ask, a certain level of transparency, easy availability and quick response are some of the reasons for social media preference.

Comments about health related products, health tips are shared on social media platforms which has been one of the significant decision making factor for today's buyer. Hence, marketing is one of the major functions affected and benefited by social media. While the number of people with access to internet is growing at a rapid rate, many organizations have realized that social media is one of the significant channel for marketing, delivering higher returns.

Secondly, paper-based reports caused a major concern for medical practitioners. One of the issues with paper based reports is of handwriting which makes it difficult to read and in turn can cause inaccessibility of data when required by those involved in the patient's care. Another major problem is that it cannot be shared or transferred electronically. With mobile solutions and cloud based EHR systems, users can access the patient's/beneficiary data anytime and anywhere ensuring high availability and reliability. Patient's medical history could be easily tracked with the details of various treatments conducted in the past.

For example, there are several providers who develop applications where a physician diagnoses and a medication prescription is sent to your mobile as well as to a pharmacy with a patient code.

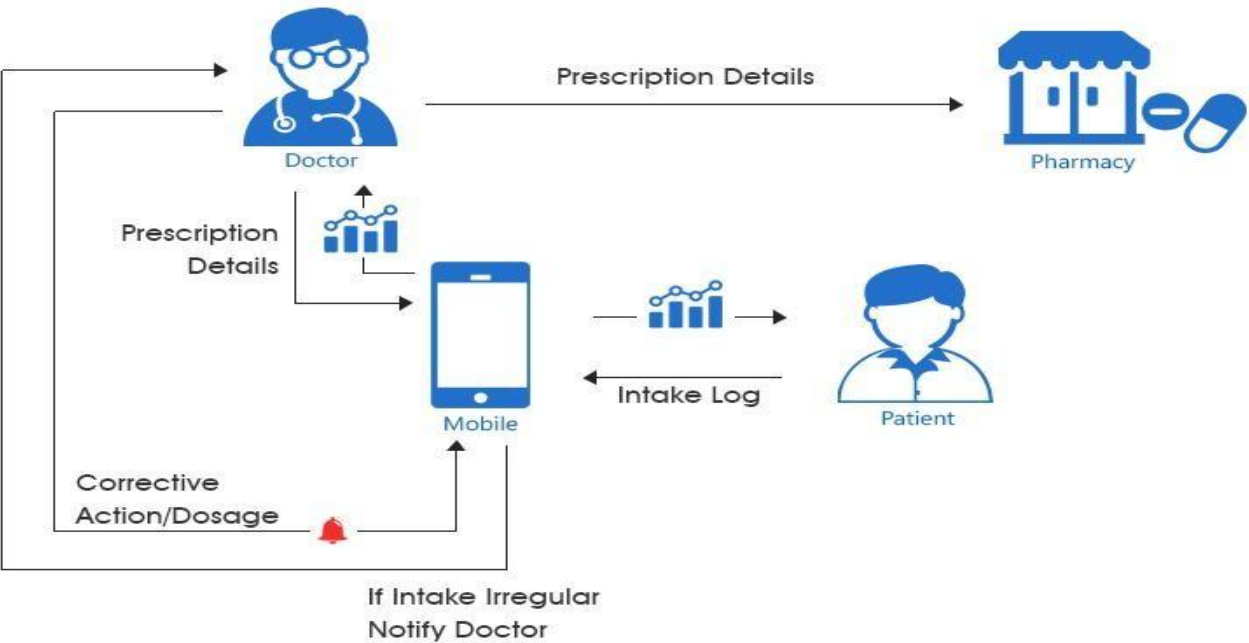


Fig2: Medical Prescription Tracking App

This way, the user can purchase the prescribed medicines accurately. Furthermore, the mobile app Records the daily medicine intake of patient and verifies it against the prescription. Any irregular intake will be notified to the physician or caregiver who would then ensure correct dosage henceforth. The next time when the patient visits the doctor, his/her medicine consumption data can be easily retrieved and further alterations can be suggested by the doctor.

This will help in avoiding common errors which include incorrect drug names in the prescription, Illegible written prescription, irregular medication intakes, indistinct telephone or verbal orders, unavailability of dosage intake details to physicians, etc.

With growing complexities in healthcare industry, the presence of digitized data is a boon for accurate health data analysis and can also form a good base for health related research. By implementing various analysis methodologies on the accumulated digitized data, like- predictive analytics, pattern analysis, trend analysis, co-relation analysis and many more; one can simplify the decision making process. Furthermore, this would help in building an effective decision making system for providers as well. It will assist in performing a better analysis of product design, hospital resources utilisation, cross functional analysis, etc.

SMAC unfolds remote monitoring process and minimises (face to face) visits for both patients and Medical practitioners. To give an example, we developed a HIPAA compliant app for one of our clients. It enables doctors, surgeons and nurses to interact with patients for improved well being with high efficiency. Also, one of the cloud-based mobility service/solutions developed by us for a provider offers delivery of full ready/handy reports on smartphones, by simply accessing the user's EHR (Electronic Health Record) in cloud. Medical practitioners are also able to provide instant remote care. This solution also has the potential to use analytics for pushing out personalised insights, based on the patient's response to treatment.

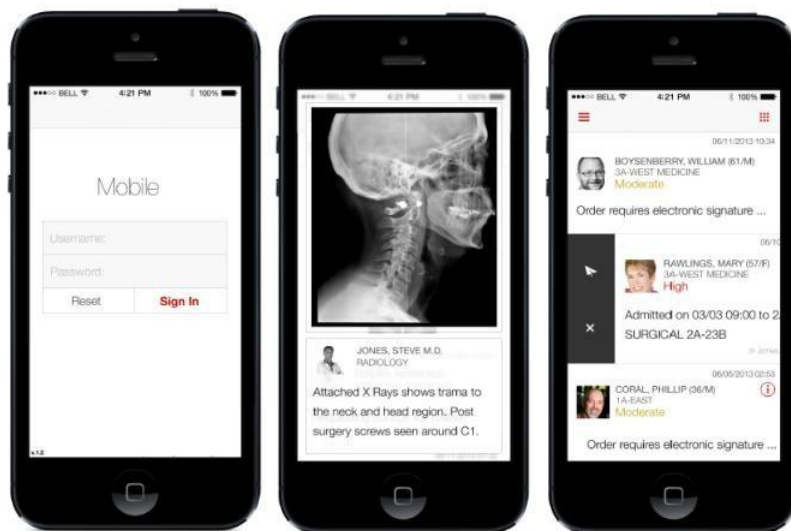


Fig3: Mobile App for Cloud Based EHR

SMAC technologies help in building several applications which include hosting of clinical data, backup of data stored, data (disaster) recovery, analytics of collected data which can help in effective decision making, health awareness over social media, quick response to health related queries, asset management, online prescriptions and secured health information exchange with valid compliances. In conclusion, we can say that provider, being the major service provider and connected segment, gets most affected as well as benefited from SMAC.

## SMAC for Payers

Payer segments involve multiple functionalities such as membership managements, product designs, enrolments, processing claims, billing, fraud mitigation, etc. These functions further involve interactions with various stakeholders at different stages. Managing the complete life cycle of a claim from its investigation to appeals, further with its recoupment and recovery accurately and that too in a cost effective manner is a challenging task.

Earlier, there was a manual process to send the claim details for verification and then the reports would be generated accordingly. But now, we have observed payers developing SMAC solutions which is an interlinked system where beneficiary files a claim, payer communicates with clinics/pharmacies/labs for exact claim details, verify those and forward the report to the next phase of claim lifecycle through their mobile devices. Then, the respective party takes the processing of claim further and communicates with payment gateways for billing. SMAC enables automation of the complete claim lifecycle.

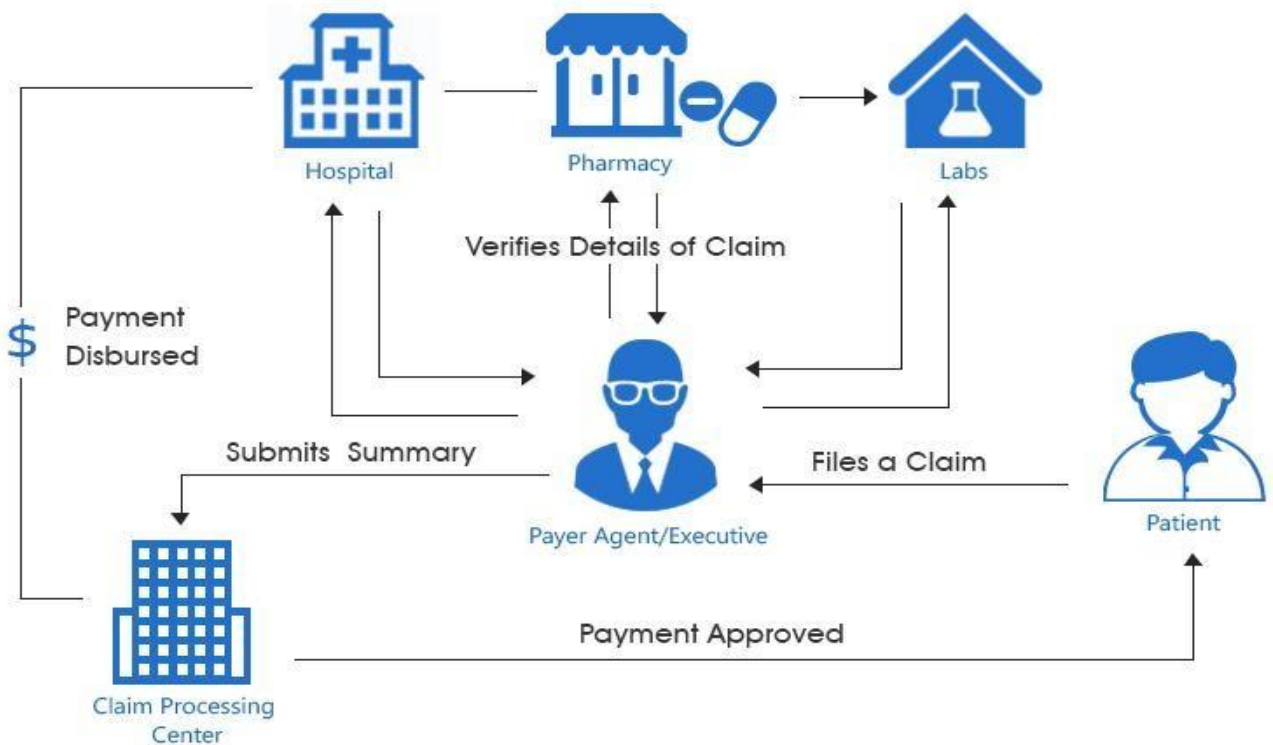


Fig4: Medical Claim cycle

Today, numerous products are available in the market for every sector of industry; marketing of These products in such a competitive world is a big challenge itself. Social Media plays a vital role for Payers in order to advertise, get recommendations for their products, collect consumer inputs and design the plans/products/services accordingly. Users can analyse the requirements and do a better market study with the data they collect from social media.



Benefit plans are changing due to customer demands; new healthcare delivery models and regulations also join the list. As a result, designing a plan that suits the new delivery model or new regulations is a key factor for success. One such application developed for Payer is a cloud based solution, providing customizable plan design with a built-in recommendation engine. It is used for planning selection based on analytics or user inputs to know his/her health profile in-depth.

With so many stakeholders and diverse workflows, we will have enormous claims data, in turn helping to analyse the trends and patterns for filing claims and usage of policies. Payers can analyse the policies used in specific region, the payments accepted in the selected region and also have pre-hand knowledge about any epidemic breakout. One can also track the usage of plans/products that users are opting for as it would also help in designing new plans or policies.

To reduce the number of claims, there are several apps promoting wellness programs which are offered by payers. It is important to educate the members who are aware of the diseases and natural remedies involved for curing; it would help in leading a healthier lifestyle. This will help payers save significant amounts in claim adjudication as well.

Payer organisations across the globe are focussing to bridge the gap between medical costs and funding. To compete in the era of consumerized healthcare, it is important to focus on operational efficiencies and customer satisfaction. Apart from financial or operational benefits, it will also be a value adding feature or a differentiator to their products in the market. By leveraging SMAC, healthcare payers can also redefine themselves for meeting the additional demands for a responsive and flexible system.

## **SMAC for Beneficiary**

Today, beneficiaries prefer social media sites for communication and knowledge sharing. Government bodies have also chosen social media as one of the tools to send informative health messages, to reach most of the beneficiaries in less time. Users' decisions mostly rely on the reviews and comments received on the social sites they prefer visiting often. On the go, users share about their current schedule including diet, workout regime and current purchases. Consider adding social flavour to the recipe, it can be one of the contributing factors for a successful product.



Currently, the market for wearable technology is growing at a rapid rate. With IoT and wearable's in trend, users have different wearable's or wireless devices to measure workouts, insulin levels, blood pressure and other such medical measurements. In short multiple devices for varied purposes. With such variety of mobile devices, there must be a mobile solution which should integrate data from multiple sources and contribute to a composite robust medical profile.

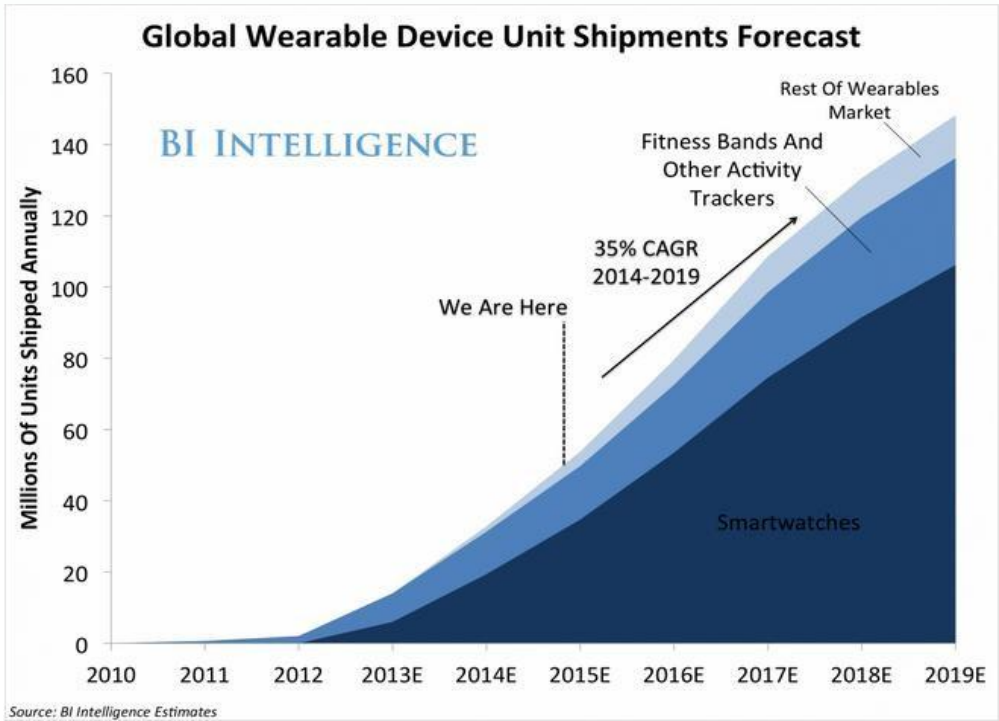


Fig5: Wearable Device Projections

Wearable technology can indeed help humans in leading healthier lifestyles. They would assist in Updating users with their current insulin levels or simply manage chronic conditions further improving access to care. Devices helping users to manage their own symptoms can make a significant difference.

We understand several brands are developing mobile apps to track daily routine. Some of the apps developed for beneficiaries are sleep tracker, water consumption tracker, calorie counter, medication Intake tracker, etc. Diet plays an important role in maintaining one's health. There are apps that will suggest the diet considering various factors as user's health, climate or weather. One can enter the data of the food consumed and calculate the calories or fats consumed. This way, the user is aware of his/her health profile, thus empowering him to lead a healthier lifestyle.

Managing appointments of medical specialists is a very time consuming process where the patient visits the specialist, asks for the appointment and visits again on the next date of appointment. For any trivial queries or suggestions it may sometime lead to repetitive appointments. A mobile app is developed to simplify the process where a patient shares the connection request with doctors.

Further, the doctor accepts the request and opens the available appointment time-slots. Patient books the appointment and visits directly on the mentioned day. Also, the user can chat or get his/her query sorted from the doctor through the app, further enabling quick response and fast access. Doctors can also broadcast mandatory health notices in case of an epidemic.

One of the apps developed for our client includes an end-to-end health profile analysis. It tracks the Daily workout performed by the user. The user can set goals such as weight-loss where the user performs activities on a daily basis as per the recommendations present in the app to achieve the goal. It also manages medical appointments by reminding the user in a timely manner. A complete health report can also be generated and shared with the user’s caregiver on his/her permissions through an authorised medical practitioner. The app also reminds the user about the medication intake time and suggests an appropriate diet as per his/her health condition. Gamification is introduced by sharing workout details and challenging friends on social networking sites thereby encouraging others to follow a healthy lifestyle.

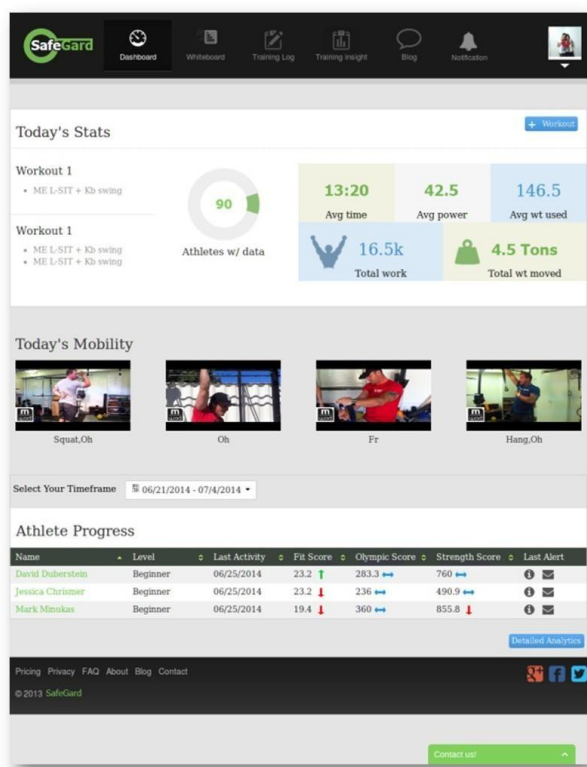


Fig6: Fitness Tracking App with Gamification Concept

Health of an individual differs from others, and hence the health requirements too. This opens a pool of opportunities to develop various types of apps for beneficiaries. Digital Health solutions should emphasise on tapping inputs from various channels, mediums and devices and using these as critical inputs for new solutions with incremental innovations.

## Opportunities for ISVs

SMAC is becoming a profound enabler in the IT industry and has redefined computing and the manner in which IT services are delivered to end users. To provide a seamless user experience along with convenience and productivity to their users, organizations need to SMACify their applications. Furthermore, SMAC will be an integral part, or even a leading factor, of new business models, new products and services, and for competitive differentiation.

Boost the power and appeal of your  
healthcare solution with **SMAC**



As businesses become more agile and flexible, the rising adoption of SMAC will create endless opportunities for Independent software vendors (ISV). An ISV can also help in joining the dots in an existing legacy system, for payers or providers. This is because these systems may or may not be capable of using social media or may not be extended to the mobile platform and these are the missing links where ISVs can provide the flexible product, which will be integrated seamlessly with the system.

Also, a wider sense of analytics can be developed which will include mostly the social analytics. Currently, most of the analytics is based on the in-house data of enterprises; however, social analytics unlocks additional data especially where records of a particular insurance company may indicate 10 different plans it has as offerings. This is where ISVs can jump ahead and grab opportunities to expand this industry.

Healthcare industry has various stakeholders as users in the form of beneficiaries, patients, insured users, corporate or physicians etc. Lately, anyone can develop a mobile application and connect multiple users for conducting seamless interaction, transact and much more on the go.

This brings us to the point where SMAC is rapidly changing the significance of IT assets including but Not limited to ERP, network infrastructure and basic messaging and communication service. SMAC is a relatively new entrant, however it has already played the role of a disruptor, by offering organisations with new businesses and operating models.

At Harbinger, we notice through our dedicated healthcare practice and SMAC technology labs that software vendors can benefit from adoption of SMAC. We have helped some of ISVs explore opportunities in healthcare domain that would add tremendous value to their product dream. The value is beyond just the 'wow' factor, resulting in actual business growth and leading edge.

[Contact us now](#) to know more about our Healthcare IT Services.

## About Harbinger Systems

Harbinger Systems is a global company providing software technology services for independent software vendors and enterprises, with a specialization in product engineering. Since 1990, Harbinger has developed a strong customer base worldwide. Harbinger's customers are software product companies, including hi-tech startups in Silicon Valley, to leading product companies in the US and large in-house IT organizations.

Harbinger Systems builds software solutions leveraging social, mobile, analytics, and cloud (SMAC) technologies for domains such as human capital management (HCM), healthcare, e-learning, and publishing. Harbinger Systems also uses emerging technologies like big data, OpenStack, and Internet of Things (IoT) to build products for tech startups.

By leveraging cutting-edge technologies, Harbinger Systems works with its customers as a partner in technology innovation.

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