Youth and teenager health service in community organizing: prevention health care in China

Yang Wei, Huihong Zhang and Xiaozhi Li

Southeast University of Physical School, Nanjing, China

ABSTRACT
Health of children and adolescent are increasing problems in China society. Developing the technologies, however, offer more possibilities for building convenient and efficient solutions for young person and teenagers. This thesis describes and introduces a new concept of using Software-as-a-service (SAAS) platform to monitor and service adolescent sports and movements with data analyzing and information collecting as well as different techs of support the idea and philosophy makes available. Through literature and case studies, this study investigates and analyzes the current status of adolescent health services, especially the promotion mode of operation, content and strategies, and so on. Based on this, we explore the Internet perspective how to further expand the ways and means of youth health service promotion. Put forward SAAS promotion model, analyzed its feasibility, studied its implementation strategy, deeply analyzed the core content and key factors in SAAS promotion model.

KEYWORDS
the healthy; youth; teenagers; service; SAAS platform

Introduction
Teenagers healthy growth service background

Lifestyles and living conditions have changing in China as a result of the economic on the ground of pursuing to modernization. The consequences of such changes on health and daily life are apparently. Knowledge for effective action to improve the health of women, children and adolescents in the post-2015 era.(Flavia Bustreoa, 2015) Health is an essential element of quality of life. The healthy growth of young people is not only healthy, but also includes mental health, willpower health, learning ability, social skills, talent development and other dimensions. Indeed, we know that benefits of endurance sports are especially beneficial to cardio-vascular plan. Physical activities performed by children and adolescents are good for their health, both in terms of prevention of many diseases related to physical inactivity, but also in terms of physical skills and potential physical drive.

Physical activity is an important factor in development of personality and development. (MaugendreE, 2011) For each adolescent, how to scientifically test the quality of each health dimension in all age groups and vary from person to person, provide them with the nearest and targeted service items, and further how to accurately evaluate adolescent participation in the corresponding service items The effect, in order to continuously optimize service projects, is the trend of the era of big data. It is also an ideal shared by public service agencies and commercial service agencies that care for the healthy growth of young people and have long-term social and economic values.
According to the statistics of China Youth Research Center in 2013, there are 200 million primary and secondary students nationwide. With the liberalization of the second child policy in recent years, it is estimated that the number of primary and secondary students in the country will exceed 250 million in 5 to 8 years. At the same time, the service institutions for young people in our country has reached more than 40 million, which is a huge service market and support resources, with a vast space for development.

The current problems of adolescent healthy growth services

In 2013, there were 1.2 billion adolescents, about 17% of the world’s population (Clifton & Hervish, 2013), the largest population of adolescents throughout history to date. Likewise, in nowadays China, given the increasing numbers of older adults who are living longer, with chronic health conditions that require significant health care resources, are the policy makers aware of adolescents’ health needs and issues, and include adolescents in health systems plans? A core component of community health practice is Surveying and Recording of the health status of populations. In some areas of the world, the health and mortality data collected are still not regularly reported separately for adolescents.

This analysis of the US health system reviews its organization and governance, health financing, health-care provision, health reforms, and health system performance. The US health system has both considerable strengths and notable weaknesses. It has a large and well-trained health workforce, a wide range of high-quality medical specialists as well as secondary and tertiary institutions, and a robust health research program and, for selected services, has among the best medical outcomes in the world. But it also suffers from incomplete coverage of its citizenry, health expenditure levels per person far exceeding all other countries, poor data on many objective and subjective measures of quality and outcomes, an unequal distribution of resources and outcomes across the country and among different population groups, and lagging efforts to introduce health information technology. (Rice T, Rosenau P, et al. 2013)

Across five urban sites (Baltimore, New Delhi, Johannesburg, Ibadan, and Shanghai), 2,320 adolescents aged 15–19 years completed a survey using audio computer-assisted self-interview technology. This study confirms the important associations between perceptions of a neighborhood and adolescent health. At the same time, it demonstrates that not all neighborhood-level factors are associated with adolescent health outcomes in the same way across different urban contexts. (Kristin M, mari Dr.P.H, et al. 2014)

Recent studies and articles synthesized the evidence supporting the beneficial effects of physical activity in youth. According to some researches, (Aires et al., 2010) physical activity has well-documented physical, social, and psychological benefits for adolescents, including increased cardiorespiratory fitness, weight gain prevention (Simon et al., 2008), and decreased body fat and blood pressure (Farpour-Lambert et al., 2009). At the same time, long-term physical benefits of physical activity include improved fitness and bone health in adulthood (Kemper et al., 2000), as well as decreased risks of chronic diseases including diabetes (Helmrich, Ragland, Leung, & Paffenbarger, 1991) heart disease, and cancer (Booth, Gordon, Carlson, & Hamilton, 2000). In addition, increased adolescent physical activity has also been linked to reduced depressive symptoms (Sanders, Field, Diego, & Kaplan, 2000), improvements in school performance (Field, Diego, & Saunders, 2001; Sibley and Etnier, 2003), and improved self-image, self-esteem, and relationships (Field et al., 2001; Kirkcaldy, Shephard, & Siefen, 2002). Conversely, adolescent sedentary behavior and low physical fitness have been shown to contribute not only to poor current health among youth but also to poor adulthood health outcomes, including chronic diseases, obesity, and increased cholesterol, among others (Boreham et al., 2002; Hancox, Milne, & Poulton, 2004).

At present, the following problems commonly exist in public service and commercial service projects for young people in China: First, both of them are extensive similarity, they are lack of scientific design; the lack of similar projects quantitative assessment; the lack of the effectiveness
and the good projects can not get better development. Second, services are scattered, we generally lack targeted classification and collation solutions for young people. Third, the service-oriented lack of appropriate dimensions of health assessment tools, so that they have no aim and service performance is not easy to show. Fourthly, public welfare administrations at all levels, including governmental, Civil Affairs, Women’s Federations, communities and streets, they find it is difficult to accurately and objectively use public funds to serve the people, at the same time, it lacks the tools to carry out quantitative monitoring of the whole process. The last but not least, there is a lack of professional services for commercial schools which offer healthy growth services for young people to schools, parents and students who have needs. From the Chinese market point of view, we also lack of platform and e-commerce service mechanism.

**Platform target**

The development of community health services represents an area in which some significant changes are taking place in health and social services. The changes themselves reflect a complex interweaving of ideas about the type of care and service that should be available to people, financial pressures, different organizational arrangements and challenges to the established power structures within and between groupings. (Su Kingsley Robin Douglas, 1991) This is extending the notion of consumerism within these services. The management of these processes of change, whilst maintaining acceptable levels of service, is a particularly demanding task.

Today, with the flourishing development of the Internet, Internet of Things, cloud computing and big data, society urgently needs a platform that provides professional services for the healthy growth of young people and solves the following problems. Wearable and mobile sensors enable monitoring human behavior in different conditions (Kay, Santos, & Takane, 2011; Yang, 2008). Low power consumption and robust sensor design support consumer applications that could be applied to recognize challenging situations where children and youngsters need help (Czeskis et al., 2010). Human behavior can also be monitored and made more visible using portable devices containing a range of embedded sensors (Kay et al., 2011; University of Illinois College of Engineering, 2014; Dey et al., 2014). Connecting sensors to social media systems is increasing rapidly, especially among fitness people. A number of activity buttons and wristbands (e.g., Fitbit Flex, Jawbone Up, Polar Loop, Withings Pulse) can be connected to different types of media to transmit performance data to friends. Due to the geographical location of the gap, the polymerization of the country’s professional and adolescent healthy growth-related public and commercial organizations and their services to enable them to form a resource platform, so that demanders can easily find and participate in the corresponding service items.

To establish health assessment mechanisms for the healthy growth of adolescents in all ages, including quantitative data collection, health operations of various dimensions, as the platform of service demand-driven engine. On this basis, we can provide targeted solutions and services to young people so that services can be quickly put to the ground, service processes can be monitored in the whole process, the service effectiveness can be quantitatively assessed, and the healthy growth of young people can be effectively served.

**Introduce the SAAS platform**

We put forward a preliminary definition and outstanding key features of a community service platform. A community service platform is the set of local participant, family memberships, and processes engaged in, promoting for, advocating, and supporting health in communities. In doing so, we have drawn on our knowledge and experience in China, the Jiangsu province, and beyond.

In recent years, increasing attention has been paid to personalized health support systems (Free et al., 2013; Matthews, Doherty, Sharry, & Fitzpatrick, 2008; El-Gayar, Timsina, Nawar, & Eid, 2013) and preventive measures to control such diseases as diabetes. In terms of overall well-being, it is
important to support actions geared toward promoting health, well-being and motivation at the individual level (Kay et al., 2011). Research and develop SAAS platform system to solve the interaction between service and service demand, continuously improve data and analyze and push members accurately. Early we will take cloud computing, big data, instant messaging, sharing marketing and other basic technologies. In personnel management, we adopt e-business services, flat communication, transparent management, data value of these cutting-edge ideas and tools.

We take the multi-tenant SAAS (Software-as-a-service) structure, for the public welfare and business-oriented, do not go together, each other, each tenant can freely set their own sites, circles, shops, online customer service, each with its own interface style and business characteristics. In the user experience, we will provide several ways, including pc, WeChat and app. For government departments and non-government organizations, we will provide tenant centers that will allow them to manage their own resources, businesses and data. These features (summarized in Figure 1) make the governance of implementation and operation to strengthen community service platform.

The business functions we use in platform design include: login, health search engine, platform site and personalization site, platform circle and personal organization circle, e-commerce related (store, shop, order, reservation, payment, logistics), Instant messaging, smart notification, event registration system, service file system, service evaluation system, plug-in service business (such as community, after-school etc.). In the data center, we will adopt the backstage panoramic big data center, which not only provides unified operation and management of the platform resources,

![Figure 1. SAAS (Software-as-a-service) platform.](image1)

![Figure 2. Orienteering.](image2)
business and data, but also provides the panoramic rendering and monitoring of the correspond-
ing dimension data.

Platform operation mode and plan

The key principles

As a society our target must be health care – addressing the underlying causes of sick or ill by
intervening in the web of disadvantage that impacts on individuals, families and communities. We must
acknowledge that most young people in China do not participate sports and games in the community. For those young people who do come into contact with the community service system we need to commit to rehabilitation as the primary purpose of the youth health system. Community service platform(SAAS)’ vision for the youth health system is to enable young people who participate (or willing to cooperate) to lead Health, vitality, happiness lives.

Evaluation is important for the community service platform work. To provide health services to all who need them. When we talk about services, it is helpful to understand two different aspects: quantity and quality of services. If we talk about the quantity of services, we want to know how many services we have provided? When and where are they held and how many parents and children attend? If we ask about the quality of services, we want to know how good those services are. Are the methods and solutions of analyses and treatments used correct?

We will cooperate with government departments of civil affairs, the Communist Youth League, Women’s federations and neighborhoods to open up multi-cooperation and win-win situations by openly cooperating with the corresponding non-governmental organizations under the brand of youth health public service. The initial SAAS platform will promote resources and project sharing among agencies by providing informational support and publicity, consultation and event planning services to its nonprofit organizations, promote the institution’s high service standards and efficient management of the competent departments, and promote their benefits. Quantitative changes have qualitative changes, we believe that the various agencies in the platform of business development in turn for the platform to increase membership, service projects, business flow, but also promoted the social and commercial value of the platform to enhance.

Expansion steps

Being a first effort to systematically collect and process statistical information on the situation of China cities, and seen as essential to support the development of strategies and new intervention policies, this project was also an important incentive for local authorities to implement their own systems to collect, process and analyse urban indicators.

There, at the initial stage of the SAAS platform, we will set up several fist service projects to point the surface, these projects include orientation, four o’clock classroom and so on. Through step-by-step business development, project bundles form service brand packages for all dimensions of adolescent health. Through the cooperation with the public welfare association, the SAAS platform has obtained the qualifications of conducting public welfare activities and running public welfare funds, and finally has expanded to cover more than one age group with one age group.

Working capital

SAAS platform construction and operation has take a small step run mode, the initial working capital in addition to helping start-up funding, but also through various forms of team members to raise shares, try to use existing resources to save costs. At present, we have set up pilot units in
many cities in China and successfully introduced venture capital. In the initial stage, all cooperative institutions will still survive with the current profit-making mode, such as commercial promotion and public welfare project funding, and gradually obtain more funds through platform expansion of coverage and public welfare projects.

Sample project operation (orienteering)

Orienteering is popular in Scandinavian countries and to a lesser extent in North America and in Western Europe. The sport is featured more frequently within school sports curricula in the west, and its inclusion within these curricula is a rare example of the explicit teaching and learning of map-based navigation in western cultures (Heft, 2013). Moreover, various countries teach orienteering within their armed forces (e.g., Malinowski & Gillespie, 2001). For example, orienteering is used as a task in the U.S. Army’s Best Warrior competition (Ward et al., 2008). National guidelines recommend that children and adolescents engage in at least 60 min of moderate-to-vigorous physical activity (MVPA) each day (Hootman, 2009). We chose Orienteering to be the SAAS platform as the first model project. There is a growing body of literature demonstrating the influence of participation in leisure activities on the positive development and well-being of adolescents. The strongest correlations have been found between participation in organized activities, school well-being, and academic achievements (Eccles et al., 1993; Fredricks and Eccles 2008; Fredricks and Eccles 2006; Gilman 2001).

Current sports programs are either highly specialized or require high hardware facilities such as venues, and the general public is more involved in walking and marathons. Current sports programs are either highly specialized or require high hardware facilities such as venues, and the general public is more involved in walking and marathons. Walking sometimes appears monotonous, in full swing marathon for the professional needs of the general population is very high, so often appear sudden death. At the very moment, China attaches great importance to the National Movement and requires all localities to vigorously develop the nationwide sports and fitness programs. According to the social survey, the national fitness program has a low threshold for learning, simple equipment, and less demanding hardware investment in the venue. It is easy to popularize with large audiences due to its low participation in the field of hardware investment. According to their own needs, we choose orienteering in the sports industry is easy to form industry, suitable for market operation. In particular, adolescents and their families have a particularly high degree of enthusiasm.

In order to carry out this project better, we set up the SAAS platform for adolescent healthy growth. The goal is to solve the problem of teachers, incubating and directing the operation teams in the streets of the city, nurturing targeted members, developing professional equipment, managing the output of directed bases, setting training and oriented events. Absorbing members to enter the SAAS platform system, orienteering as a representative of leisure sports, orienteering is also easy to combine with tourism, outdoor sports and so on, forming a certain scale of supporting industries.

We provide SAAS platform for project participants to download maps from mobile terminals, such as computers and mobile phones, and record the time and route of each exercise. SAAS platform through the background to members of a comprehensive evaluation, put forward suggestions for improvement in order to improve participants’ level of exercise, according to individual will meet the overall physical ability to meet the higher requirements.

Based on the network and app provided by the SAAS platform, the base of the orienteering campaign established through the SAAS platform stores the base map data and movement data in the platform for download and use by those who use it. At the same time SAAS platform also provides teaching videos, for those who have not been exposed to the sport, in the App Terminal can also be online learning, and then download the map to exercise. After downloading the map on SAAS, the App Terminal starts to exercise. The terminal will record the participant’s motion track and record the time between the start and end time and each bid mark. After the exercise, the
platform grants participants a score based on the difficulty of the map and the time spent by the participants. At the same time, the SAAS system also provides a horizontal comparison to compare the time spent by participants and other participants in rankings. The system also gives appropriate comments and suggestions based on the participants’ movements, so that participants can improve their performance.

**Discussion**

The service program though not big in scale, has shown that it does have potential to improve the quality of the community health care and provide volunteer and staff with greater confidence in their skills, understandings, and personal and professional capacities. At a time when community service deficient and lack in China amongst children educators is acknowledged as a significant problem, SAAS platform is also able to play a small part in supporting.

However, the platform service program would also have gained some of its beneficial outcomes through the way in which it was designed to bring educators and parents together. There was a high level of Self-efficacy, job satisfaction, motivation and commitment among all members involved, who joined together to undertake the training as part of the overall Community Service Project.

**Conclusion**

SAAS system design and development effectively solve the problem of how to serve members such as professional coaches can guide the movement of technology and programs, coaching record file management data analysis and improvement of adolescent health promotion methods. Not only to address the needs of parents, but also to solve the team’s operations and management.

Through the preliminary research and discoveries, there are some problems in the current public welfare agencies serving young people: First, China’s overall nonprofit industry is clearly not enough professionally, and financial support is inadequate. The second is targeted sports industry is the growing sport in China, all over the city clubs springing up. The use of SAAS platform to support members and complete the interactive platform is very feasible to absorb a large number of members and teams, the market prospects are also very optimistic.

**Disclosure statement**

No potential conflict of interest was reported by the author.

**ORCID**

Yang Wei [http://orcid.org/0000-0003-2490-5851](http://orcid.org/0000-0003-2490-5851)

**References**

Aires, L., Silva, P., Silva, G., Santos, M. P., Ribeiro, J. C., & Mota, J. (2010). Intensity of physical activity cardiorespiratory fitness, and body mass index in youth. *Journal of Physical Activity and Health, 7*, 54–59.
Booth, F. W., Gordon, S. E., Carlson, C. J., & Hamilton, M. T. (2000). Waging war on modern chronic diseases: Primary prevention through exercise biology. *Journal of Applied Physiology, 88*, 774–787.

Boreham, C., Twisk, J., Neville, C., Savage, M., Mury, L., & Gallegar, A. (2002). Associations between physical fitness and activity patterns during adolescence and cardiovascular risk factors in young adulthood: The Northern Ireland young hearts project. *International Journal of Sports Medicine, 23*, 522–526.

Bustreo, F., & Gorna, R. (2015). Knowledge for effective action to improve the health of women, children and adolescents in the post-2015 era: A call for papers[J]. *World Health Organization. Bulletin of the World Health Organization, 93*(5), 286–286A.

Clifton, D., & Hervish, A. (2013). The world’s youth: 2013 data sheet. Washington, DC: Population Reference Bureau. Google Scholar.

Czeskis, A., Dermendjiev, I., Yapi, H., Borning, A., Friedman, B., Gill, B., & Kohno, T. 2010. Parenting from the pocket: Value tensions and technical directions for mobile safety, In: Proceedings of the 6th Symposium on Usable Privacy and Security (SOUPS ’10), New York, USA.

Dey, S., Roy, N., Xu, W., Choudhury, R.R., & Nelakuditi, S. 2014. AccelPrint: Imperfections of Accelerometers Make Smartphones Trackable. Network and Distributed System Security Symposium NDSS 2014, 23–26 February 2014, San Diego, CA, USA. doi:10.14722/ndss.2014

Eccles, J. S., Midgley, C., Wigfield, A., Buchanan, C. M., Reuman, D., Flanagan, C., et al. (1993). Development during adolescence: The impact of stage-environment fit on young adolescents experiences in school and in families. *American Psychologist, 48*(2), 90–101.

Eccles, J. S., & Roeser, R. W. (2011). Schools as developmental contexts during adolescence. *Journal of Research on Adolescence, 21*(1), 225–241.

El-Gayar, O., Timsina, P., Nawar, N., & Eid, W. (2013). Mobile applications for diabetes self-management: status and potential. *Journal Diabetes Science Technology*, (7(1), 247–262. doi:10.1177/193229681300700130

Farpoor-Lambert, N. J., Aggoun, Y., Marchand, L. M., Martin, X. E., Herrmann, F. R., & Beghetti, M. (2009). Physical activity reduces systemic blood pressure and improves early markers of atherosclerosis in pre-pubertal obese children. *Journal of the American College of Cardiology, 54*(25), 2396–2406.

Field, T., Diegro, M., & Saunders, C. E. (2001). Exercise is positively related to adolescents’ relationships and academics. *Adolescence, 36*(141), 105–110.

Fredricks, J. A., & Eccles, J. S. (2008). Participation in extracurricular activities in the middle school years: are there developmental benefits for african american and european american youth? *Journal of Youth and Adolescence,37*(9), 1029–1043. doi:10.1007/s10964-008-9309-4

Free, C., Phillips, G., Galli, L., Watson, L., Felix, L., Edwards, P., . . . Haines, A. (2013). The effectiveness of mobile-health technology-based health behaviour change or disease management interventions for health care consumers: A systematic review. *PloS Med, 10*(1), e1001362.

Hancox, R. J., Milne, B. J., & Poulton, R. (2004). Association between child and adolescent television viewing and adult health: A longitudinal birth cohort study. *Lancet, 364*, 257–262.

Heft, H. (2013a). Environment, cognition, and culture. Reconsidering the Cognitive Map. *Journal of Environmental Psychology, 33*, 14–25.

Helmrich, S. P., Ragland, D. R., Leung, R. W., & Paffenbarger, R. S. (1991). Physical activity and reduced occurrence of non-insulin-dependent diabetes mellitus. *New England Journal of Medicine*, 325, 147–152.

Hootman, J. M. (2009).2008 physical activity guidelines for americans : an opportunity for athletic trainers. *Journal Of Athletic Training, 44*(1), 5–6. doi:10.4085/1062-6050-44.1.5

Kay, M., Santos, J., & Takeane, M. (2011). mHealth: New horizons for health through mobile technologies. *Global observatory for eHealth series*. Vol. 3. Geneva: World Health Organization.

Kemper, H. C., Twisk, J. W., van Mechelen, W., Post, G. B., Roos, J. C., & Lips, P. (2000). A fifteen year longitudinal study in young adults on the relation of physical activity and fitness with the development of bone mass: The Amsterdam growth and health longitudinal study. *Bone, 27*, 847–852.

Kingsley, S., & Douglas, R. (1991). Developing service strategies: The transition to community care. In A. McNaught (Ed.), *Managing community health services* (pp. 17–34). Boston, MA: Springer.

Kirkcaldy, B. D., Shephard, R. J., & Siefen, R. G. (2002). The relationship between physical activity and self-image and problem behaviour among adolescents. *Social Psychiatry and Psychiatric Epidemiology, 37*(11), 544-550. doi:10.1007/s00127-002-0554-7

Kristin, M., Mari, Dr. P. H., Lantosa, H., et al. (2014). A global study on the influence of neighborhood contextual factors on adolescent health. *Journal of Adolescent Health, 51*, S13–S20.

Malinowski, J. C., & Gillespie, W. T. (2001). Individual differences in performance on a large-scale, real-world wayfinding task. *Journal of Environmental Psychology, 21*, 73–82.

Matthews, M., Doherty, G., Sharry, J., & Fitzpatrick, C. (2008). Mobile phone mood charting for adolescents. *British Journal Of Guidance & Counselling, 36*(2), 113-129. doi:10.1080/03069880801926400

MaugendreE, M. (2011, June). Spitz. Perceived health, anxiety and sport motivation. *Annales Médico-psychologiques, revue psychiatrique[J], 169*(5), 277–338.
Rąglewska, P., Urbaniak, D., Straburzyńska-Lupa, A., & Czubaszewski, Ł. (2009). Physical activity level in gymnasial youth and the awareness of physical exercise importance in prevention of cardiovascular diseases in the light of questionnaire survey. *Physiotherapy*, 17, 2.

Rice, T., Rosenau, P., Unruh, L. Y., Barnes, A. J., Saltman, R. B., & van Ginneken, E. (2013). United States of America: Health system review. *Health Systems in Transition*, 15(3), 1–431.

Sanders, C. E., Field, T. M., Diego, M., & Kaplan, M. (2000). Moderate involvement in sports is related to lower depression levels among adolescents. *Adolescence*, 35, 793–797.

Sibley, B. A., & Etnier, J. L. (2003). The relationship between physical activity and cognition in children: a meta-analysis. *Pediatric Exercise Science*, 15(3), 243-256. doi:10.1123/pes.15.3.243

Simon, C., Schweitzer, B., Oujaa, M., Wagner, A., Arveiler, D., Triby, E., et al. (2008). Successful overweight prevention in adolescents by increasing physical activity: A 4-year randomized controlled intervention. *International Journal of Obesity*, 32, 1489–1498.

United Nations Task Team on the Post-2015 UN Development Agenda. Realizing the future we want for all: Report to the Secretary-General. New York: United Nations; 2012.

University of Illinois College of Engineering. (2014, April 28). Smartphone sensors leave trackable fingerprints. ScienceDaily. Retrieved from October 10, 2014. [http://www.sciencedaily.com/releases/2014/04/140428121433.htm](http://www.sciencedaily.com/releases/2014/04/140428121433.htm)

Ward, P., Farrow, D., Harris, K. R., Williams, A. M., Eccles, D. W., & Ericsson, K. A. (2008). Training perceptual-cognitive skills. *Can Sport Psychology Research Inform Military Decision Training? Military Psychology*, 20, 71–102.

Yang, H. A. R. F. (2008). Wireless body sensor networks for health-monitoring applications. *Physiological Measurement*, 29(11), R27.