Innovation in User Experience: SpeaCure

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The websites in World Wide Web are primarily meant for the people who can get access to internet. But rural India doesn't know about its intricacy and usage. This decade has seen many innovations in user experience but one sector that has not witnessed such success is the Healthcare sector. Thus, the main idea of this paper is to provide solution for the healthcare problem faced by the population especially the rural India. SpeaCure uses the idea of VoiceSite to get appointment to the doctor depending upon the illness. The rustics cannot access web, but use cell phones. So, SpeaCure is a web like connection without the web connection. SpeaCure is a small step towards a better tomorrow.

Internet | HealthCare | Rural India

Motivation

The decade of User Experience as it has been rightly gestured, UX has been very successful in making advances in many sectors but the one which has not received much attention is that of the Healthcare. The rural India has very less access to the healthcare. Main reason for this is people are unable to utilize the resources as they have no knowledge about them.

The World Wide Web has been a rich source of information in the past decade and is advancing rapidly. Making it accessible, the Internet is the most significant technology that has changed our lives. But still it is not accessible to the 3/4th of the world as 53% of world's population lives below USD 2 per day [1] and the remaining 30% is illiterate or semi-literate [2]. This forms the 83% of the population which can't afford to have PC or those who can't use it. But the people at Bottom of the Pyramid know about the usage of mobile phone!

Internet stores vast amount of data. Here we can book tickets for railways and make appointments with the doctors. But for most of the rural India, which doesn't understand the theory behind this gigantic Internet world and nor do they have any access to it, need to have an alternative. The design of our project is to extend the recent idea 'Internet without Internet' to the people who are less exposed to the Internet world.

Compared to Internet penetration, last few years have seen tremendous growth in mobile phone penetration in the developing regions. The phone penetration has reached 32.4% in 2006 [9]. The cost of a phone is significantly lower than a PC and, the learning required to operate a phone is negligible as compared to a PC.

Thus we combine these two ideas that the rural people have limited healthcare facility but are well acquitted with usage of mobile or telephone lead us to the idea of connecting these people to the healthcare services via cell phones or telephones without the use of internet. This is the main idea of 'Speacure'.

Introduction

The system of 'Internet without Internet' is possible through voicesites which are analogous to the web sites which stores the required information and this information can be accessed through phone calls. Voicesites are voice driven applications that are created by the subscribers and hosted in the telecom network [4]. VoiceSites can be interconnected using 'VoiLinks' (analogous to hyperlinks) through Hyperspeech Transfer Protocol(HSTP) [5] which are links between two voice applications within the web. VoiLinks can span across different enterprises enabling cross-organisational workflows driven by a voice interface over an ordinary phone. Different subscriber is given different voicesite and each voicesite has its corresponding call number. Creation of voicesite is made easy by VoiGen

(VoiceSite creator) system where anybody can call VioGen and communicate through voice to add up his details as information for the site which he wants to create. This is free.

Operation

The doctor(with the help of an assistant) who has to create his VoiceSite, needs to dial in the VoiGen, feed the information like his name, specialisation, location of his hospital, charges , and even rough timings of his availability so that the patient gets whole idea about the doctor and his service. This information is then collected by a VoiceSite holder for a village who recites it in the regional language as this is to benefit the rural people.

The person who desires to exercise this service needs to dial into the VoiceSite, which contains information regarding different sectors. When user specifies the sector he wants to explore, he gets directed to that VoiceSite which suits his request [Web of Voicesites can be linked to one another]. Here the user can get information regarding the doctor as well as make an appointment at a given time so that he can get his check up done at required time and this would avoid wastage of time.

In a village, a VoiceSite owner gathers relevant data required for the fellow villagers and also information regarding the nearby city doctors and upload it into his VoiceSite. The villager can dial into that VoiceSite and get the information he requires.

Scenario: Small Example on how SpeaCure Helps the lay man:

Mr.X wants to consult an orthopedist as he was suffering from acute bone marrow disorder. Since he needs immediate attention, he searches for a good doctor at favorable fees. Finally he locates a hospital but after traveling for a long duration from his village, he finds that he can get an appointment with the doctor only the next week. Mr.X will be in great loss due to wastage of time and money.

One solution could be that the villager should know about the doctor's timing and other details before hand-as this is not possible, the solution can be SpeaCure.

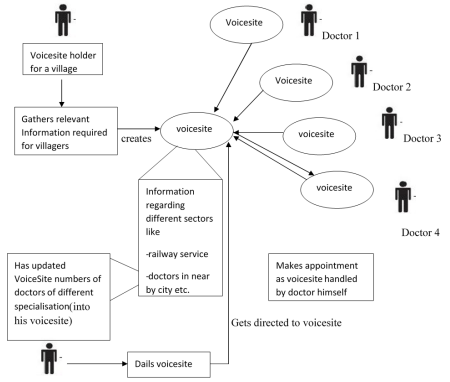

Fig. 1. Working of SpeaCure

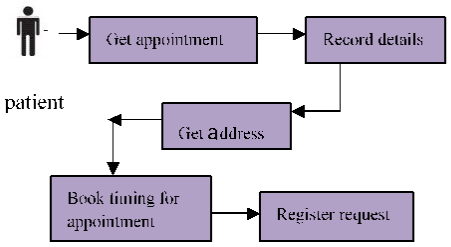

Fig. 2. Appointment process flow

Doctor himself or with the help of an assistant (who would be updating his voicesite) can create his VoiceSite. This can be done by making a phone call to the Viogen and then specifying the different features about his service. When the system asks, Doctor must reply by mentioning his hospital location, charges, working hours and a list of patients' references which can vouch for his good work. This information is used to create his VoiceSite.

Mr.X makes a phone call to doctor's VoiceSite[via the village information collector who has stored the doctor's number in his VoiceSite] and gets all the details about the doctor, charges and appointment time available.Satisfied with the responses, Mr.X finally seeks appointment to the orthopedist. Thus SpeaCure helps many villagers like Mr.X to gather information about the doctor and get their treatments done.

Deployment Approach

The end users call up the VoiceSites by dialling a specific phone number from a regular phone. The VoiceSites are hosted on a centralized server. The VoiceSites are authored in VoiceXML and use a VoiceXML browser and a speech recognition server built on standard languages and supporting standard protocols.

The specific application presented in this section, on receiving a call, carries out the following activities:

1. It uses custom recorded prompts to acknowledge the caller (Doctor) about the content he/she can put in his/her VoiceSite.
2. It prompts the caller to specify his/her preferences and records them.
3. It browses through the template and guides the creator to provide information to customize the template. (Information may include name, specialization, location of the hospital, charges and even tentative timings of his availability.)
4. On receiving all the inputs, it parses the data obtained, and automatically generates a VoiceSite for the caller using a generation engine.

Figure shows the control flow diagram of a concrete template that we used in VoiceSite and Specure to enable healthcare service to the rural India. This voice template allows the users to create their welcome page, create their business page where they provide information about their services.

Potential Applications

Most of the rural India have no knowledge about the usage of Internet and hence end up sticking to the conventional way which may result in investing much time in seeking appointment to the doctor.

And on the other hand it also helps the doctor to extend his work in the service of the rural people in an efficient way. But, for the user, whenever he dials into the VoiceSite, to get connected to the sector he wants, he must spend at least five minutes as the introduction in the VoiceSite must be completed before he asks his query. Research is going on with protocols for improvement of search process in the speech technology which can be implemented in the future course for better and faster searching.

Conclusion

Technology sets up trend but the same technology does not meet its standard if it is not successful in providing services to the people who need it the most. A large section of humanity is untouched by IT revolution. Our aim is to bring IT into these people's life! SpeaCure is a drop of trend, idea and innovation. It makes us useful contributors to the international user experience strategy and design planning as SpeaCure attempts to shower relief to the rustics. SpeaCure is an attempt to envision a healthcare service for the rural community, similar in theme to what WWW is to the IT users today. It enables masses to access information and services through voice driven channels.

SpeaCure is one of the novel system to prove the importance of user experience in lifting a simple idea from ashes to sky. Through simple implementation it aims at greater achievements.

Future Scope

We believe that multimedia applications are an important part of the future of health information. Along with traditional paper-and-pencil information, the digital revolution has converted audio, video, and high-resolution still images into readily transmissible data. The power of these new technologies is that a wide spectrum of data can be made accessible to physicians and other health care providers regardless of the proximity of the patient. At SpeaCure, we have demonstrated the feasibility of distant medical consultation. The next step is to incorporate distant consultation with other forms of health information to give physicians full access to all necessary information in treating patients. Until very recently, a model

of healthcare information that incorporated all forms of data, including, audio, video, and high-resolution stillimages, was almost unimaginable.

However, we feel the research progress in fields like "Auditory and Phonetic Coding of Speech" may provide the backbone to make this new model of health care informatics a reality.

References

1. Population Reference Bureau. 2006 World Population Data Sheet. Technical Report ISSN 0085-8315, August 2006.
2. R Wedgeworth State of Adult Literacy.ProliteracyResources, http://www.proliteracy.org,September 2004.
3. A. Kumar, N. Rajput, D. Chakraborty, S. K. Agarwal, A. A. Nanavati. Organizing the Unorganized- Employing IT to Empower the Under-priviliged, India.
4. A. Kumar, N. Rajput, D. Chakraborty, S. Agarwal, and A. A. Nanavati. Voiserv" Creation and delivery of converged services through voice for emerging economies. In WoWMoM'07 Proceedings of the 2007 International Symposium on a World of Wireless, Mobile and Multimedia Networks, Finland, June 2007.
5. S. Agarwal, D. Chakraborty, A. Kumar, A. A. Nanavati, and N. Rajput. HSTP: Hyperspeech Transfer Protocol. In ACM Hypertext 2007, UK, September 2007.
6. N. Rajput, S. Agarwal, Arun Kumar, A. A. Nanavati. An Alternative Information Web for Visually Impaired Users in Developing Countries, India, July 2008.
7. A. Kumar, N. Rajput, D. Chakraborty, S. K. Agarwal, A. A. Nanavati. VOISERV: Creation and Delivery of Converged Services through Voice for Emerging Economies, Finland, June 2007.
8. http://en.wikipedia.org/wiki/WorldWideTelecomWeb
9. http://www.itu.int/ITUD/ict/statistics/ict/graphs/mobile.jpg