Towards a Cheaper Telemedicine Application

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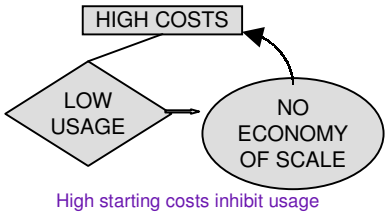
Introduction

Telemedicine is now an established tool in the clinicians' armamentarium, Telemedicine has been found to be cost effective in reducing healthcare costs[i], not only in developed countries but also in the developing world[ii].
However, uptake has been far lower than potential. Among the many reasons for this is high costs of various components, complex applications, bundling w.
Believing that some of these costs can be made manageable leading to economy of scale, we are proposing cheaper software which, by promoting a wider user base can solve some problems affecting Telemedicine usage



High starting costs inhibit usage

- Despite all efforts, telemedicine yet to take off on a large scale. Reasons----
  - Lack of awareness
  - Still in innovation phase
  - High costs (no economy of scale)
  - Lack of standards
  - Low payment capacity of medical profession
- A comprehensive EMR lacking in most hospitals
- HIS not integrated with currently available apps for telemedicine

The Philosophy

Evolutionary change is least painful and hence most likely to succeed

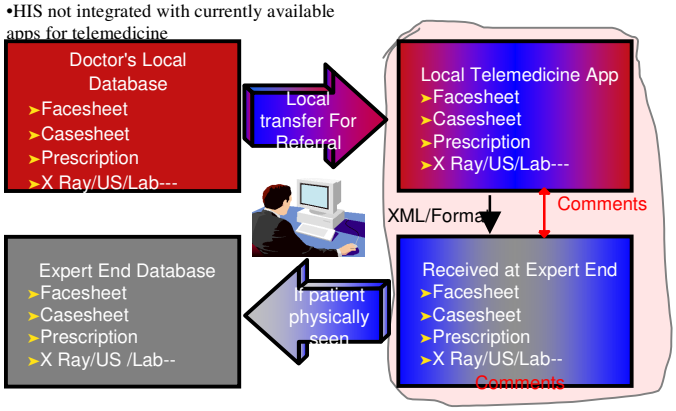
In India at least, the current scenario Telemedicine has its greatest scope for linking small and individual clinics in Rural and Peripheral areas with specialists in nearby towns. This closely follows current referral patterns. An application catering to this market segment currently does not exist.

The needs for such a market segment have to follow Technology and diagnostic modes existing in such a market. This would be little more than the history, examination findings, Simple photographic Images and occasional ECGs and X Rays.

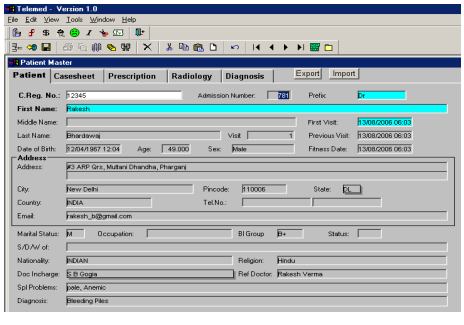
We have outlined the essential requirements of such a simple application with these modes in mind.

Usage - **Store and Forward**
Connectivity – **Dialup / ISDN / Broadband** or any that is available locally including Satellite

What is most used is likely to become the standard
Cost is a major factor is deciding usage

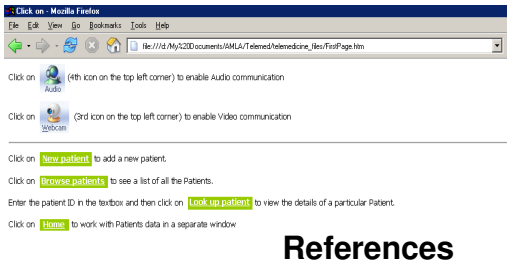


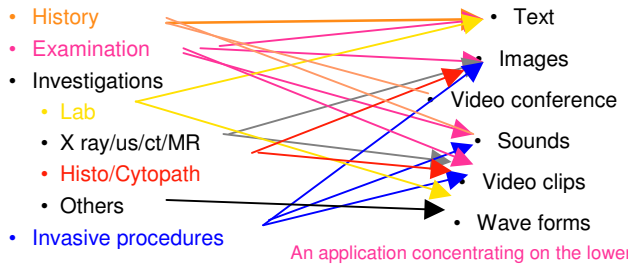
Item highlighted in pink shall be provided by this application, thus allowing other existing different HIS providers to link through a common app



Screen shot of a suggested application. Data interchange shall be through XML

A sample plug in with MSN (Curtsey Sean Blagsvedt, Microsoft Research India)





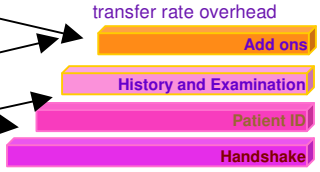
The Flow Pyramid

While in an actual physical transfer of data, The actual data rests on a very small foot print – which is the hand shake and the patient ID. Once basic contact and information transfer takes place, existing apps concentrate on the following - arranged in priority

- Real time imaging review (Very High Data transfer rate for streaming)
- Video conference (Very High Data transfer rate for streaming – but ready made cheap apps available)
- Multimedia files (50 Kb upwards)
- Wave form analysis (25 Kb Upwards)
- Text data (1 – 5 Kb, 80% of Diagnosis

An application concentrating on the lower end be low cost and provide information on more than 80% of the diagnosis. It would be simple and easy to implement and learn.
Videoconferencing and chat should be used as an essential add on using freely available services like MSN®, Yahoo Messenger®, Trillian® and others

Thus only 10 – 20% of Diagnosis depends on a huge cost an data transfer rate overhead



Objectives

Create a basic EMR which can store all patients records as well as serve as a common application which can transfer patient's medical data through online method, between different locations

2. To allow interchange of data between pre - existing users of different EMR as well HIS systems
3. The present app should be able to function as an independent EMR In the absence of a pre existing software available with the user,
4. The application should be low cost or free to enable a large number of users
5. It should be simple and easy to use on a daily basis for all patients
6. Sending patient data should not require extra effort for creating or writing the data at the time of transfer
7. It should be able to link up with off the shelf free or commercially available video conferencing systems

It should use be de-linked with the connectivity option and use any which is easily available at the site. It may be E Mail, ADSL, ISDN or satellite connectivity

Components

Patient database

- Basic Information and ID
- History and Examination
- Treatment Given

Any application concentrating on the above with requisite validation checks will ensure that 80 –90% of a patient's problem is looked into. In the large majority a few additional Image files or ECG will be serving over 95% of the needs of any place.

Video Conference

A simple Tool bar can be added for telemedicine purposes to
Plug ins on demand

- Video Conference and Chat (off the shelf free downloads like MSN / Yahoo)
- Tele - ECG
- Scanner/ Digital Camera (Use JPEG or available software with the device rather than DICOM)
- Microscope with camera attachment
- Additional devices
  - Tele Stethoscope
  - Tele Ophthalmoscope

The above devices can be provided as per need of the particular location. Expenses and

For further information

Please contact *gogia7@gmail.com* More information on this and related projects can be obtained at *www.amlamed.com*. A freely downloadable copy of this poster –as as well as the beta of the proposed software is available on request through the above links

Issues addressed

- High Costs
- Removing the Elitist Tag
- Involving the Private sector
- Capacity Building
- Making it less complicated
- Evolutionary Approach

References

[i] Richard Wootton. Telemedicine, BMJ 2001; 323:557-560 (8 September)

[ii] Vassallo DJ, Hoque F, Farquharson Roberts M, Patterson V, Swinfen P, Swinfen R. An evaluation of the first year's experience with a low cost **telemedicine** link in Bangladesh. *J Telemed Telecare* 2001; 7: 125-138

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