

Universal Rural Health (URHealth™)

A Systems and Technology based approach to
Global Rural Health Transformation

Business Strategy and Execution Plan

11/27/2007
ESD.57 Technology Based Business Transformation
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EXECUTIVE SUMMARY

According to reports published by World Health Organization (WHO), primary healthcare delivery in various parts of the world is far below the standards established by the United Nations Millennium Development Goals. The situation is especially grave in the remote rural villages and communities where the rural population is deprived of basic, preventative and primary healthcare. India, with roughly two-thirds of its population inhabited in rural areas, lacks healthcare delivery penetration in the rural sector. Some of the constraints, as identified by the Indian Government, are lack of adequate healthcare providers – doctors, paramedics, lack of infrastructural capabilities, and dearth of adequate supply of medications.

We believe that significant grass root level efforts, policy decisions, technological infrastructure establishments have to be undertaken to build capacity, and lay the foundation for a sustainable solution to the health care provision and delivery. It is our effort that this project will provide us with the tools and the impetus to make a phenomenal impact in the way primary health care is provided, not only in India, but in various parts of the developing as well as developed world.

The remainder of this document outlines the vision/mission of the project, the strategy and the execution plan to implement technology leading to a universal rural health transformation.

MISSION/VISION STATEMENT

The high level mission of this project is to improve the rural healthcare in various developing as well as developed countries, through use of technological systems and solutions.

GOALS

The overarching goals of this project have been identified as:

- 1) Implementation of Patient Health Record (PHR) system – URHealthPoint™
- 2) Implementation of Decision Support System (DSS) – URFirstContact™
- 3) Implementation of remote diagnosis and collaboration system. – URSecondOpinion™
- 4) Implementation of energy infrastructure system to support the village clinic.

SOLUTION OVERVIEW

In an effort to improve the equity, reliability and accuracy of primary health care, we propose the implementation of medical information systems and infrastructural systems. The medical information systems to be used are:

- 1) Patient Health Record System (URHealthPoint™) - Implementation of an electronic health record (EHR) system would help clinic workers make better, more informed diagnoses and provide continuity in care. The solution will store patient health care records, and will allow IRHS to move away from primitive means of information storage and retrieval which are prone to natural disasters and aging/errors.
- 2) Decision Support System (URFirstContact™) - An experience and evidence-based system of clinical guidelines for detection and intervention will help the health care center paramedics provide

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intelligent and accurate means of preliminary diagnosis of patient's condition. This will reduce the time involved to assess the criticality of a patient in need.

- 3) Remote Collaboration System (URFirstContact™) - A remote collaboration system that will virtually connect the clinic to doctors and specialists in Hyderabad. This system would allow the clinic to make use of the skills and resources in Hyderabad remotely.

Figure 1, illustrates the “AS-IS” scenario in a rural health clinic. Figure 2, illustrates a clinic which has successful implementations of the systems mentioned above.

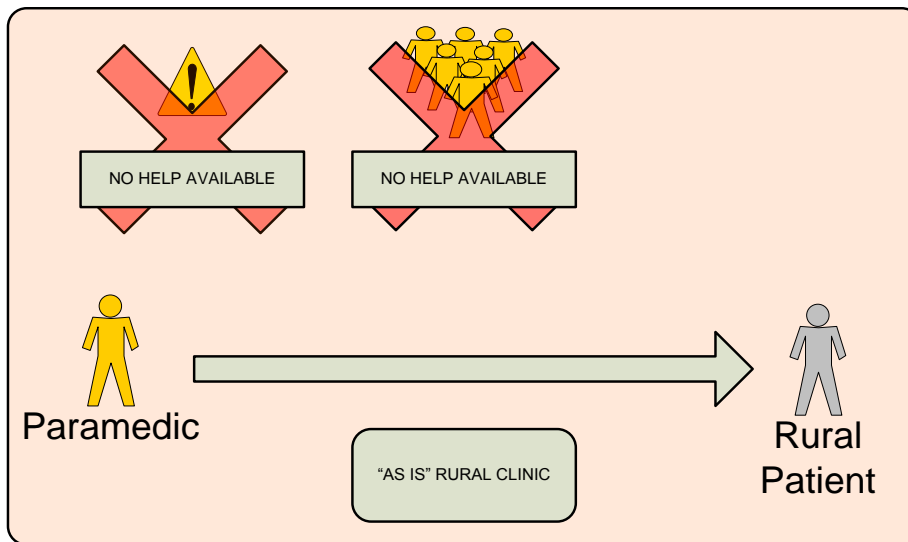


Figure 1 – “AS IS” rural health clinic system

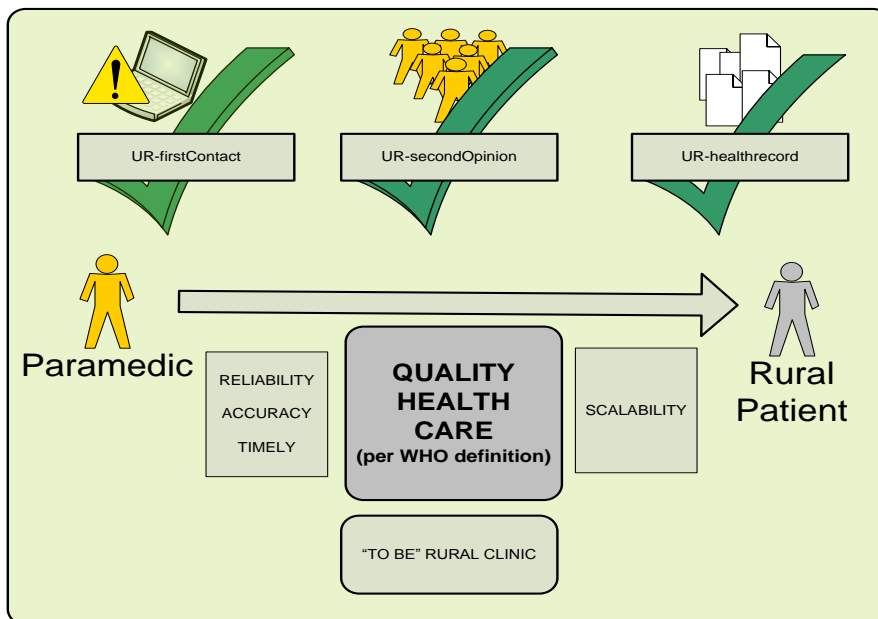


Figure 2 - "Proposed" Rural health clinic

MARKET ENGINEERING

This section outlines our market strategy, proof of concepts strategy and the competitive strategies that will be adopted to ensure market establishment and penetration.

MARKET STRATEGY

Successful launch of any product or service requires a thorough understanding of needs, and a robust reference implementation, to ensure that all wrinkles have been straightened, and the product is ready for a widespread market launch. Our pre-market strategy would be to perform a proof of concept and provide a reference implementation working with our partner, Institute of Rural Health Studies ¹(IRHS). IRHS has been providing healthcare services to the rural community of India, in the villages of Dokur and Kotakadra, Andhra Pradesh. IRHS's private clinic, has been an exemplary evidence of private **user** and **lead user innovation**².

COMPETITIVE STRATEGY

There are various stakeholders involved in the rural healthcare market, namely –

- 1) Government agencies
- 2) Private NGOs
- 3) Technology Providers – telecom companies, health solution providers
- 4) Healthcare Providers
- 5) Insurance agencies
- 6) Pharmaceutical companies.
- 7) World Health Organization (WHO)
- 8) United Nations (UN) health mission groups.

The key stakeholders that are going to either compete or partner with us in providing the technology solutions are:

- 1) Telecom companies
- 2) Government agencies
- 3) Private clinics (e.g. IRHS)

Our long-term strategy will be to be partner with Government agencies in India, developing countries and the middle-east to provide robust technology solutions for their needs.

As per various policy documents, Government of India is interested in setting the Government-private partnerships, thereby enhancing the Government's participation in the healthcare. According to published reports, Govt. spending is about overall 14% of the spending in healthcare, and it is their goal to increase this in the next 5 years. Considering this, our short-term goal would be to partner

¹ (IRHS) – Institute of Rural Health Studies.

² (Hippel, 2006) – Democratizing Innovation defines lead user innovators as users who have introduced innovations in the market for implied market needs. Lead User Innovations lead to improvement of users' work processes and also helps in delivery of any services or products to the end user.



with Government of India, and prove that this model works. This will provide us the competitive edge and will help us in directing our efforts for long-term engagement.

PROJECT MANAGEMENT

EXECUTION STRATEGY

The complexity of the project necessitates significant need assessment, analysis, design and development efforts. In an effort to streamline the project execution and its management, the project has been divided into 3 phases. Phased approach will provide us with lessons, improvisations and lessons learned at the end of each phase will help us in refining our overall strategy and execution plan for subsequent phases.

This approach also allows us to hone our niche in the market, and consider profitable ventures and partnerships with various stakeholders who may be interested in collaboration.

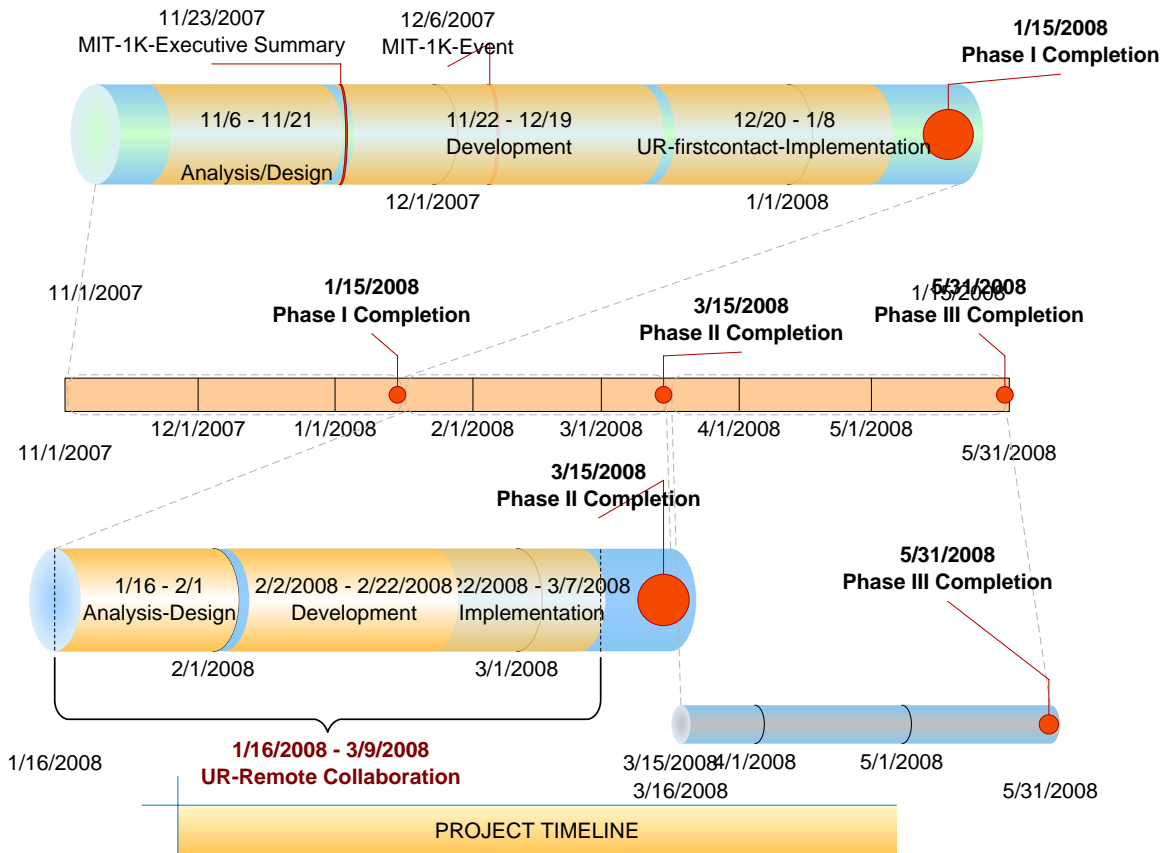
This will also lead to reduction in time-to-market and mitigation of market and technology risks.

PROJECT PLAN OVERVIEW

TIMELINE

As per our execution strategy outlined by the group, the Project will proceed in three Phases. Figure 3 outlines the project timeline, and key events falling under the umbrella of this endeavor.

- 1) Phase I – 11/6/2007 – 1/15/2008
- 2) Phase II – 1/16/2008 – 3/15/2008
- 3) Phase III – 3/16/2008 – 5/31/2008



DEVELOPMENT PLAN

The development plan for Phase I will follow the Rational Unified Process (RUP) and Systems Engineering approach. The high level steps of the development plan have been outlined below.

Project Phase	Stage	Sub-stage	Deliverable	Start Date	End Date	Status
Phase I	Inception	Vision and Goal Setting				Completed
		Mission Statement				Completed
		Web site design and implementation				Ongoing
		Apply for Grants and Funding	Grant/Funding applications			Ongoing
	Elaboration	Identification of user needs	System requirements	11/1/2007	11/29/2007	Ongoing
		High level Technology Assessment	Technology options Matrix			Ongoing
		Open Source-	Open source			Ongoing

	assessment	options matrix			
	Pugh design analysis	Technology and design option			
	Conceptual Design	Sequence Diagram			
	Conceptual Design	Activity Diagram			
	Detailed Design				
	Development	Development Standards			
	Development	Hire Development team			
Implementation	Development	Monitor development progress	12/12/2007	12/31/2007	Not started
		Develop use-cases		12/31/2007	
		Test integration		12/31/2007	
		Perform system testing		12/31/2007	
		Test hardware implementation		12/31/2007	
Transition		Travel to India		01/15/2007	Not started
		Implement Solution		01/15/2007	
		Document Lessons Learnt		01/16/2007	

PHASE I FUNDING PLAN

Since Phase I of the project will be a proof of concept and reference implementation phase, there will be no revenue generated. Project will utilize funding/grants/fellowships opportunities available at MIT, and outside of MIT.

ORGANIZATIONAL STRUCTURE

Board of advisors¹

- 1) Dr. Irving Wladawsky-Berger, Professor - Engineering Systems Division, MIT

Team ¹

¹ Additional Professors have been contacted, and their expertise in Collective Intelligence, Management sciences, Decision Support Systems will not only be instrumental to the team.

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1. Ankur Sinha, SDM Fellow, Sloan School of Management and School of Engineering, MIT.
2. Pon-Pon Yeh, S.B. from MIT, M.S from London School of Economics, UK.
3. Stephane Chong, Dept of Collective Intelligence, Engineering Systems Division, MIT.

We sincerely believe that we have a team comprising of enthusiastic and passionate technologists, leaders and policy experts. Our Board of Advisors, will provide us support and advice, to enable us to move towards our vision and reach the goal.

CONCLUSION

It is our firm affirmation that creating technological solutions for some of the pressing healthcare needs, can position us to further our research efforts on providing sustainable health and energy needs of the developing countries. Our solutions also provide incentives for private/Non Governmental Organizations (NGO) to scale horizontally, and foster alliances which in turn will improve healthcare.

¹ Other students, professors from MIT community (directors, students, alum) are being approached to aid the team in its efforts.

Hippel, Eric Von. 2006. *Democratizing Innovation*. s.l. : MIT Press, 2006. 0-262-00274-4.

IRHS. Institute of Rural Health Mission. *Institute of Rural Health Mission*. [Online] [Cited: 11 27, 2007.] <http://ruralhealthindia.org/>.

Figure 3 - Decision Support System (URFirstContact)

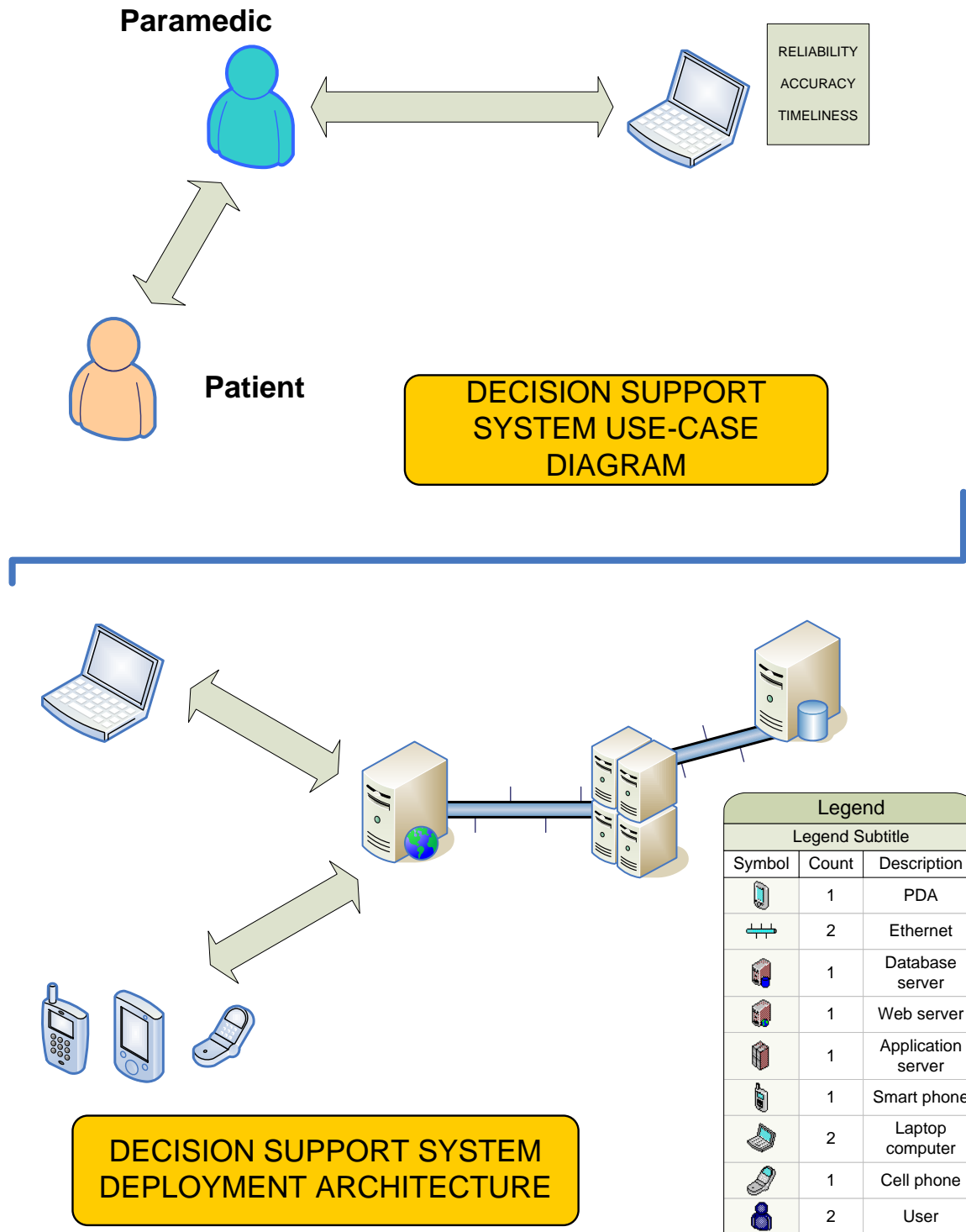


Figure 4 - Remote Collaboration System

