



DRAFT DETAILED PROJECT REPORT FOR DIGITAL NERVE CARE CENTRE AT TUMAKURU

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Implementation of Smart City Mission Project of Tumakuru

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LIST OF ABBREVIATIONS

ABD	Area-based development
ATM	Automated Teller Machines
BESCOM	Bangalore Electricity Supply Company
CAPEX	Capital Expenditure
CSS	Centrally Sponsored Scheme
DRM	Digital Rights Management
HPSC	High Power Steering Committee
KUIDFC	Karnataka Urban Infrastructure Development & Finance Corporation
KSRTC	Karnataka State Road Transport Corporation
LAN	Local Area Network
MoUD	Ministry of Urban Development
OPEX	Operational Expenditure
O&M	Operation and Maintenance
RTP	Real Time Protocol
RTCP	Real Time Control Protocol
SLNA	State Level Nodal Agency
SLA	Service Level Agreement
TSCL	Tumakuru Smart City Company Ltd
UDP	User Datagram Protocol
ULB	Urban Labour Bodies
VPN	Virtual Private Network
WEP	Wired Equivalent Privacy

1.0 Introduction

According to the Smart City Mission of the Government of India, the Smart City Mission is expected to drive economic growth and improve the quality of life of people and enable development of local areas. It also focusses on creating an enabling digital environment for its citizens. It will help connect technology which will lead to smart outcomes.

The State of Karnataka with its progressive approach has defined for itself a clear cut healthcare goal – that of providing Accessible, Available, Affordable healthcare to all its people. With this in mind the State rolled out various healthcare programs including the Universal Healthcare Scheme. But, very soon the State Govt. realized that just bringing in Health care scheme was not enough, rather utilization of the same was / is of paramount importance.

Re instituting the trust of the general public in the Public Healthcare System was understood to be the key to achieving the State's vision. Given that 70% of the citizens are rural based, reviving the Primary Health Care (PHC) was considered an efficient and effective approach, to help increase the reach and utilization of the Health Scheme. A robust PHC would not only help pull back the masses especially those at the grass-root level, from heading to Private Health Centers and incurring heavy expenditure, it also had the potential to improve health outcome.

The State also realized that the PHC revival strategy can sustain, only if there is stakeholder buy in at all levels - from Health centers and Doctors to on ground Health Workers. This requires overcoming the obstacle of communication and coordination across different system levels and creating an engaged healthcare system. Even when this is achieved, the task of bringing in the care seeker within the fold of the healthcare system is not easy. A digital enrolment program, supported by a concerted and systematic awareness generation mechanism was thought to be crucial at this juncture. The need of the hour – a solution that helps revive the Public Healthcare System, overcoming the obstacle of communication and coordination across different healthcare levels and creating an engaged healthcare system.

2.0 Project Background

Tumakuru, the district headquarters of the Tumakuru District, is located 70 km northwest of Bangalore spread over an area of 48.60 sq.km. Tumakuru with a total population of 3, 05,821 as per the 2011 census is majorly an agricultural based economy but also derives its economic base from industries in and around it. Tumakuru has been selected as one of the Smart Cities under the Smart Cities Mission of the Government of India the second round of the competitive selection process by the Ministry of Urban Development.

An SPV, the TSCL has been constituted to carry out the implementation of the Smart City plan.

Healthcare system by definition is ‘the organization of people, institutions, and resources that deliver health care services to meet the health needs of target populations’. However, in the Indian context this is a herculean task given that the average doctor to patient ratio in India is about 1:1600 as against the WHO recommended ratio of 1:1000. The above ratio is even more skewed for specialized healthcare services especially in rural areas. 70% of Indians are Rural based but healthcare units in these areas account for only 31.5% of hospitals and 16% hospital beds. 81% of the Rural Community Health Centres are short of Specialists.

PHCs are neither able to serve as an entry point for the patients, nor as a referral hub for care management. The rural inhabitants and those living below the poverty line have no recourse but to either head to urban health units or turn to the high cost Private healthcare resulting in huge bills and heavy debt. About 62% of personal savings is spent on Healthcare.

The sad state of rural healthcare has had a ripple effect on the Tertiary and Specialist Healthcare Centres, which face the burden of filling in for the lacunae existing at the primary healthcare level. Nearly 86% of all the medical visits to Tertiary Centres are made by rural patients, who often travel an average of 50 kms or more just to avail primary care.

All the above has led to an ever escalating disease burden, whereby India accounts for 20% of the global burden of disease, 27% of all neonatal deaths and 21% of all child deaths.

The State of Karnataka similar to other States is also plagued by the legacy challenges affecting the Indian Public Healthcare System.

- > 70% Population is rural based but is serviced by < 20% Specialists
- < 20% PHCs are fully staffed and functional
- > 55% prefer Private care to Public Primary Care

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- < 25% aware of Govt. Scheme & <15% aware of PHC operating schedule
- > 30% Tertiary care load requires only basic care

Grappling with the above issues, the Govt. of Karnataka (GoK), decided to take control and make 'Healthcare for All' a reality.

TSCL envisages to run Digital Nerve Centre Enabled Primary Care Transformation with deployment of Doctors, Nurses, and service desk executives. TSCL will provide the CAPEX and OPEX cost for 1 years.

3.0 Project Structure

The Government of Karnataka has accorded approval for implementation of Smart Cities Scheme in the State. The High Power Steering Committee (HPSC) for Smart Cities Scheme has also been constituted under the Chairmanship of Chief Secretary with representatives of various State Government departments to guide the mission in the State.

The Karnataka Urban Infrastructure Development & Finance Corporation (KUIDFC) has been nominated as the State Level Nodal Agency (SLNA) and Mission Directorate by the Government of Karnataka.

The High Powered Steering Committee (HPSC) had recommended selection of six cities, viz., Belagavi, Shivamogga, Mangaluru, Hubballi Dharwad, Tumakuru & Davanagere for development under the Smart Cities Scheme based on the guidelines issued by the Ministry of Urban Development (MoUD), GoI.

These 6 Smart Cities prepared their “Smart City Proposal” for participation in the “City Challenge” and submitted the same to MoUD.

Tumakuru has been selected as one among the 100 Smart Cities to be developed in India under the Smart Cities Mission of the Government of India.

Tumakuru was selected in the second round of the challenge through its proposal that aimed at “Transforming Tumakuru from a mere EDGE CITY OF BENGALURU to the MOST PREFERRED DESTINATION within the region with a strong focus on economic development and provision of enhanced CONNECTIVITY, high QUALITY OF LIFE, ECOLOGICAL integration, and INCLUSIVE development”. Tumakuru’s Area-based development (ABD) proposal revolved around a retro-fitting of about 1400 Acres in the CBD area along with the Amanikere Lake to be an inclusive and thriving space catering to all user groups with the aim of decongesting the city centre, upgrading the available infrastructure & services, and integrating the built space and the environment.

To implement the above projects, an SPV named Tumakuru Smart City Company Ltd (TSCL) has been incorporated.

A consortium of IPE Global Pvt. Limited, Grant Thornton India LLP and Aryavartha Design Consultants LLP has been appointed as the Project Management Consultants (PMC) for implementation of the Smart City Mission Project of Tumakuru City. The consortium has entered into agreement with TSCL for the above PMC.

4.0 Project Area: Tumakuru City

Tumakuru, the district headquarters of Tumakuru district in South East Karnataka, is an industrial city spread over about 48 Square Kilometers, popularly known as the City of Education and the City of Coconuts. Almost 7 years ago, Tumakuru was accorded the status of a City Corporation. Tumakuru is in close proximity to the Karnataka State Capital, Bengaluru which is located just 70 km South West of Tumakuru.



The following table summarizes some key facts about Tumakuru City.

Table 1: Facts about Tumakuru

Tumakuru City Population	305821 (2011 Census)
Area	48.21 Sq. Km.
Population Density	6300/km ²
Population of the ABD	43,941
Area	5.48 Sq. Km.
ABD Area	5.48 Sq. Km.
Number of Properties	93494
Number of Wards	35
Length of Roads	575 Km
Sex Ratio	976
Literacy	88.91%
Total Water Supply	46-47 MLD
Per Capita Water Supply	115 – 120 LPCD
Temperature	Summer: 32°C – 40°C Winter: 17°C – 30°C
Elevation	822 m
Latitude	13.34°N 77.1°E
Distance from Bangalore	70 KM
Connectivity	Nearest Airport – Kempegowda International Airport, Bengaluru (86 KM) Nearest Railway Station: Tumakuru Railway Station

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	Nearest Major Railway Station: Yeshwantpur Railway Station, Bangalore (63 KM)
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Tumakuru is a primarily an agrarian economy with the major products being coconuts, millets, rice, pulses, areca nuts and oil seeds. In recent years however, the economy has been bolstered by several industries that have been set up around it. The major manufacturing industries are cotton clothes, blankets, ropes, watches etc. Several industrial houses are also operating here such as WIPRO, HMT, TVSE etc.

Tumakuru also is home to several temples, Dargahs and has places of religious importance. These sites are seeing a steady rise in visitors every year, with the floating population pegged at an average of about 5000 per day. It is also the Hub for various educational institutions.

5.0 Stakeholders in Tumakuru Smart City Project

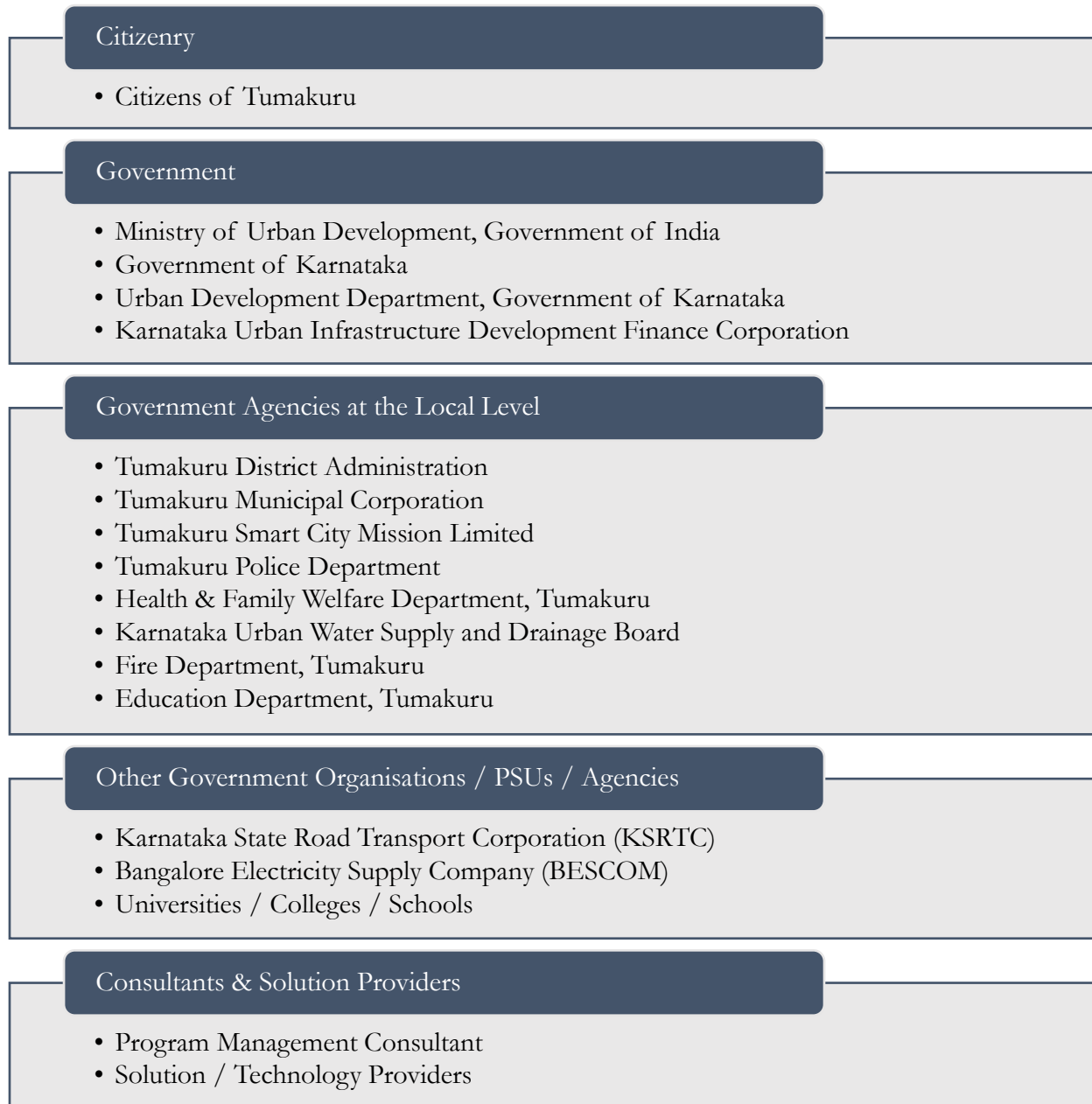


Figure 1: Tumakuru Smart City Stakeholders

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The bidder has to set a model, which has turned it into both an employment generator and a creator of digital-savvy up-skilled pool of healthcare resources. The uniqueness lies both in its technology and in its on ground implementation approach. The approach is primarily a combination of Physical and Digital presence, that helps overcome the foremost issue of 'Touch & Feel' - A constrain of technology aided healthcare service.

The Physical platform consisting of trained human touch focused on delivering seamless on ground healthcare service, while in parallel the cloud based digital platform opens new touch point.

Physical examination is of primacy in healthcare which carefully calibrates digital and physical elements to create a solution specific to the needs of patients & doctors

The Agency should enhance accessibility through appropriate technologies, thereby helping overcome another common issue, which is the lack of pre-planned appointments especially among rural and remote patients, who in spite of travelling long distance often find themselves returning without consultation or enduring another long wait to get an appointment.

At the District Healthcare centres, The Agency to utilize a combination of ingenious techniques such as optimal utilization of existing resources, communication amplifiers and way-finding approach among others, to enrich patient experience and help overcome the universal issue of overcrowding at the Outpatient Departments (OPDs).

To sum up – The Agency should work as a combination of People, Technology, and Processes that essentially work in sync with each other to deliver the following:

People to

- Bridge the Healthcare resource gap at the grass-root level
- Reduce nonclinical query burden on clinicians by taking the onus of guiding and answering general question put forward by patients
- Institute Pre- planned visit for care continuum and referral care
- Provide human touch and compassionate care in the face of technology

Technology to

- Expand the reach of Healthcare Service
- Enable assured and quick access to doctors and health services
- Herald in digital healthcare service – Virtual Consultation
- Propagate Healthcare schemes to care seekers through call / messaging services

Process to

- Deploy pre-planned health centre visit mechanism
- Institute way finding navigation system
- Support workload redistribution - reduce burden on tertiary care centres

Envisaged Benefits are:

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- Expand the reach and delivery of specialist healthcare service
- Assured and quick access to doctors and health services
- Increase in Planned Visit - optimal use of resources and infrastructure.
- Enhanced patient convenience, avoidance of unnecessary hospital visits.
- Easy post consultation care with minimal travel and cost burden
- Robust referral care system - Right treatment at the right time and at the right place

6.0 Scope of Work

The broad scope of the work is to procure, installed and commissioning of the hardware envisaged under this project (List of the BoQ given in Section 7 of this RFP) which will be operated by 25 numbers of the Human Resources having different expertise.

The envisaged scope are as follows:

Known Citizen Drive:

A significant of the rural population is still unaware of the healthcare process and schemes. Lack of knowledge also results in inhibiting them to visit the Healthcare Centre and get necessary medical help. Known Citizen Drive is an awareness generation program for educating the general population about the healthcare facilities / schemes and making them comfortable with the processes for them to gain necessary confidence in walking up and availing the rolled out healthcare service. The ASHA workers supported by Patient Care Coordinators help carryout this very essential activity of spreading knowledge and bringing in care seekers within the fold of a digital system whereby they can avail healthcare services at a click.

Care Continuum

Care Continuum is continuous process. It entails making proactive call to patients, reminding them of necessary procedures to undertake and diagnostic / consultation schedule, enabling in effective treatment management. This service plays an important role in the healthcare outcome since many at times a delay in follow-up visits and non-compliance of consultation advice has been seen to result in the spread of a disease with fatal consequence.

The Agency should connect with patients helping them stay on course of their treatment / recovery plan in the right order & time as prescribed by the doctor; thereby improving care quality and bettering clinical outcome. This helps patient maintain timeline with respect to their consultation and cope with long term medical journey.

Virtual Consultation

Remote patient consultation system to help citizens connect with Specialists based at Tertiary Health Units on real time basis. This results are expanded reach and delivery of quality of care in a timely manner, without hassle of long travel, heavy medical expense or compromise of patient safety. It also serves as a medium for remotely located health care professionals to seek necessary advice from specialists on a particular medical case they might be having problem with and enabling in optimum utilization of the scarce clinical resource.

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Care Coordination

This is a tracking system that helps patients cope with long term medical condition (Diabetes / TB) by managing their treatment journey - through follow up reminders with regards to diagnostic schedule and appointments. The Agency team reaches out to patients a number of times helping them stay on course their treatment / recovery plan in the right order and time as prescribed by the doctor. This results in enhancing patient satisfaction, improving care quality and bettering clinical outcome.

Consultation Pre-planning

This is a Pre-planning service for patients to plan their consultation visits and have timely access to medical care with minimal patient wait times across the continuum of care. Patients are given appointment by the Agency through the Doctors Schedule roster and are categorized as Fast track Patients. These Fast track patients when they visit a Healthcare Unit for consultation, they are given consultation priority over the walk in patients.

The appointment system also serves as a mechanism to help clinicians gain prior know-how of their workload and plan their day in keeping with the scheduled appointments.

Referral & Triaging Service

Triaging service by medical experts to enable care seekers understand the nature of their ailment / medical need. The care seekers just need to call toll free number to be provided by the selected Agency and narrate the health issue that they are facing. The Clinician after collecting the relevant details, guides the care seeker to the right medical centre to receive the right medical service at the right time with minimum delay. The referral process also acts as a load equilibrium. It facilitates optimal utilization of Primary Care Units, which in turn helps reduce the unwarranted footfall / burden on Tertiary & Specialist Healthcare Centres.

Counselling Service

The Agency should provide Counselling services of both on ground and via call. Through this service key information and support is provided to care seekers and citizens in their local language, helping address general non-medical queries such as those with regards to Healthcare Facilities, Blood Bank, Timings etc.

The above plays a dual role of increasing patient satisfaction and also putting their anxiety at rest. At the hospital or health centre level it helps augment informed clinical decision making, allowing clinicians to spend more quality time with care seekers.

Common Data Repository

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A Common Data Repository or CDR to translate, standardize and hold the data across hospitals, for sharing of diagnosis, lab, in-patient treatment and clinical records to create a longitudinal health record of the patient. This helps in managing patient medical record and having all the necessary medical history at one place. Going forward, steps are being taken to make this service available across all the connected hospitals such that at a single click a complete view of patient history and consultation advice is available to all.

AUGMENTED PRIMARY HEALTHCARE

Mother and Child Care

The selected Agency should be enabling PHCs to help overcoming the issue of high mother & child mortality with ease and dexterity. It helps coordinate care for the mother at all the stages of pregnancy and later post birth for the child. The Agency's Care Continuum Service should assist with Pre planned visits to ensure that the Expectant or New Mother follows all the consultation, diagnostic and Follow-up advice.

The services should support Mother-Child care are that ensure care coordination with proper Follow-ups, Immunization reminders, Nutrition counselling, Family planning, Referrals in case of high risk pregnancy, Thai card upload and Specialist care via VCon like Lamaz training.

NCD Program

60% deaths in India are due to Non Communicable Diseases or NCDs such as Cancer, Hypertension and Diabetes. Agency's intervention needs to help for curbing the rising menace of NCD prevention through NCD identification and care coordination drive which enables ASHA workers/PCCs to identify NCD patients at early stage and then care coordinates NCD patients using HealthX NCD app.

Mental Health Care

High stress, work pressure and excessive peer competition has had a direct negative impact on the human mind bringing about a mental healthcare crisis that is affecting people of all age group.

A non-medical counselling service in local language should acts as a partner to patients. Its Toll-free call feature assures patients of having an all-day support system. It not only puts the caregiver / patient's anxiety to rest

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but also helps build his confidence in undertaking necessary help through the right medical Centre at the right time.

Universal Healthcare

Aided by a strong awareness generation drive, Agency should help citizens gain knowledge about the various facilities and schemes provisioned by the government for them to avail at the right time – converting the dream of Universal Health Coverage a reality.

Stakeholders involved in this Projects:

1. District Hospital, Tumakuru
2. Primary Health Care Centres, Tumakuru
3. District Hospital, Kolar
4. National Health Mission, GoI
5. Tata Consultancy Services
6. Tumakuru Smart City Limited (Fund on Capex)

Roles of the Stakeholders:

1. District Hospital (DH), Tumakuru

District Hospital will provide the necessary space to setup the Digital Nerve Centre from where the 10 numbers of Patient Care Co-ordinators (PCC) will operate. The doctors are working in DH will extend all possible co-operation to the PCCs are working out of the DH. The PCCs available at DH will help to the patients who will be visiting to the DH for their health check-ups or treatment. At District Healthcare centres, PCCs will utilize a combination of ingenious techniques such as optimal utilization of existing resources, communication amplifiers and way-finding approach among others, to enrich patient experience and help overcome the universal issue of overcrowding at the Outpatient Departments (OPDs). The PCCs will help the people to:

- Bridge the Healthcare resource gap at the grass-root level
- Reduce nonclinical query burden on clinicians by taking the onus of guiding and answering general question put forward by patients
- Institute Pre- planned visit for care continuum and referral care
- Provide human touch and compassionate care in the face of technology

2. Primary Health Care Centres, Tumakuru

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Primary Health Care Centre will provide the necessary space to sit and operate a Digital Nerve Centre by a Patient Care Co-ordinators (PCC). Each PHC's have at least one Primary Health Care Coordinator for a maximum of 7 PHCs. The doctors are working in PHCs will extend all possible co-operation to the PCCs are working out of the PHCs. The PCCs available at PHCs will help to the patients who will be visiting to the Public Health Care Centre for their health check-ups or treatment.

3. District Hospital, Kolar

A full phased system of Digital Nerve Care Centre is running in Kolar District by Tata Trust under the supervision of District Hospital, Kolar. Tata Trust has set up a big Operation Centre / Control Centre at Digital Nerve Centre Kolar District. TSCL has requested to the District Surgeon of Kolar District and the Tata Trust to provide the Control Centre services for Tumakuru as well without any financial cost, wherein TSCL will arrange all necessary hardware at DH and PHCs of Tumakuru for its success operation in Tumakuru.

4. National Health Mission, GoI

It is another major stakeholder for this project. National Health Mission (NHM), GoI will provide an amount of Rs.40,00,000/- (Rupees Forty Lakhs) which will be used for the TA and DA for the trainer for a period of 6 months to provide the capacity building training to the Primary Care Coordinator to be hired under this project.

5. Tata Consultancy Services

Tata Consultancy Services (TCS), a unit under Tata Trust, has ample expertise on providing health care support to the citizen of India through their Digital Nerve Care Centre. They have doctors, nurses, etc. work out from their DiNC Centre. In this project TCS will provide the required Capacity Building training to the 17 Patient Care Coordinators to be hired under this project. Tata Trust has set up an Operation Centre / Control Centre at Kolar District of Karnataka. This Control Centre has been operated by some skilled Doctors, Patient care Managers, Patient Care Coordinators, Operators, etc.

7.0 Suggestive Bill of Material

List of Human Resources:

#	Particulars	Qty.
1	Patient Care Coordinator for DH, Tumakuru	10

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2	Patient Care Coordinator for PHCs	7
3	Patient Care Manager	2
4	Doctors to be sited at DiNC, Kolar	2
5	Nurses to be sited at DiNC, Kolar	2
6	Patient Care Coordinator for DiNC, Kolar	2

Indicative List of the Hardware for District Hospital, Tumakuru:

#	Particulars	Qty.
1	Arena	2
2	VPOD	2
3	KIOSK	4
4	DISPLAY MONITOR	2
5	TAB	2
6	UPS (2.5 KVA)	2
7	TOKEN DISPENSER	2
8	SIGNAGES AND POSTER	1

Indicative List of the Hardware for 7 Primary Health Centres, Tumakuru:

#	Particulars	Qty.
1	Arena	7
2	VPOD	7
3	KIOSK	7
4	DISPLAY MONITOR	7
5	TAB	27
6	UPS (2.5 KVA)	7
7	TOKEN DISPENSER	7

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8	SIGNAGES AND POSTER	7
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8.0 Project Implementation Timelines

The broad timelines for implementation of the scope of work is as follows:

Sl. No.	Activity / Component	Timelines (T = Signing of Agreement)
1	Supply of hardware, software & fixtures (LAN cabling, etc.)	T+2 weeks
2	Hiring of Human Resources including Doctors	T+3 Weeks
3	Installation & Commissioning of all hardware components of the DiNC	T+4 weeks
4	User Acceptance Test for software applications	T+5 weeks
5	Project Duration	T+1 year

9.0 Estimated Project Cost

S. No.	Description	Qty.	Unit	Unit Cost	Total
CAPEX COST					
1	Arena (EACH Arena having 2 Desktops with 2 Multifunction Printer)	9	Nos	3,00,000	27,00,000
2	VPOD	9	Nos	75,000	6,75,000
3	KIOSK	11	Nos	20,000	2,20,000
4	DISPLAY MONITOR	9	Nos	65,000	5,85,000
5	TAB	29	Nos	15,000	4,35,000
6	UPS (2.5 KVA)	9	Nos	55,000	4,95,000
7	TOKEN DISPENSER	9	Nos	10,000	90,000
8	SIGNAGES AND POSTER	8	Nos	8,00,000	64,00,000
TOTAL CAPEX					1,16,00,000.00

S.No.	Description	Quantity	Unit	Unit Cost – Per Month	Total Cost for the 1 Year
OPEX COST					
1	Patient Care Coordinator	19	Nos	18,000	41,04,000
2	Patient Care Manager	02	Nos	20,000	4,80,000
3	Doctors	02	Nos	50,000	12,00,000
4	Nurses	02	Nos	15,000	3,60,000
TOTAL OPEX					61,44,000.00
TOTAL PROJECT COST					1,77,44,000.00
Contingency (5%)					8,87,200.00
Tender Premium (5%)					8,87,200.00
GST (18%)					31,93,920.00
Total Estimate					2,27,12,320.00