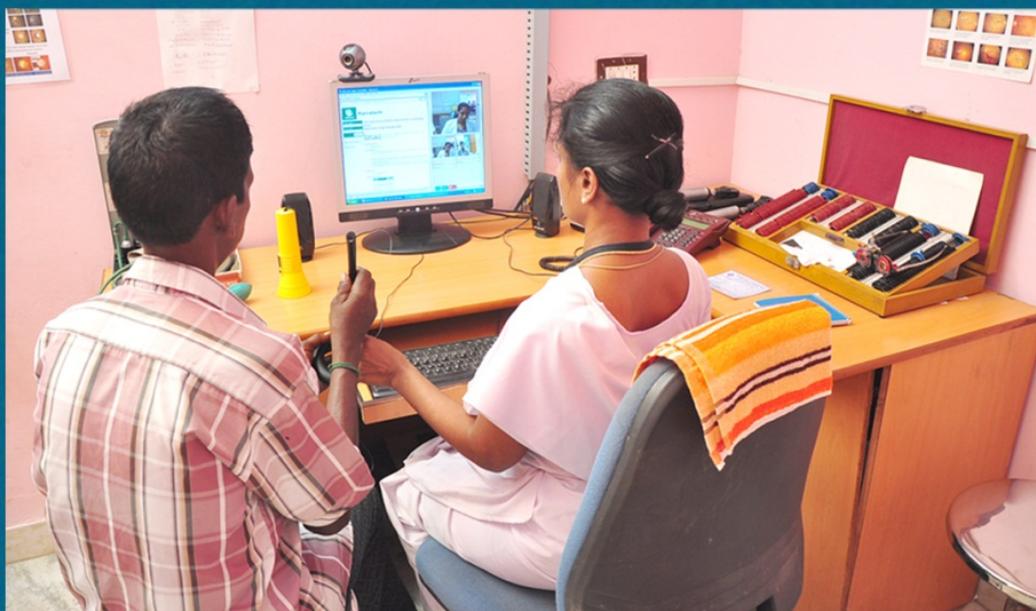# Primary Eye Care Services through IT enabled Vision Centre as a Pilot in three districts at Jharkhand, India

Project Proposal Submitted to Government of Jharkhand

Submitted by

Common Service Centers (CSC)
Centre for Innovation in Public Services (CIPS)
& Aravind Eye Care System (AECS)

JANASEBA KENDRA
Common Service Centre

Innovations in Public Systems

ARAVIND EYE CARE SYSTEM

Primary Eye Care Services through IT enabled Vision Centre as a Pilot in three districts at Jharkhand, India

Background:

There is an estimated 12 million blind people in India. Over 80% of all vision problems can be avoided or cured and in Indian scenario, Cataract contributes to close to 70% of treatable causes of blindness. Consequently, Cataract Surgical Rate (CSR) has been considered as a proxy to measure the volume of eye care services in any population CSR is nothing butthe number of cataract operations performed per year, per million populations in a specified area. Atpresent, CSR in Jharkhand forthe year 2012-13 is 2,462 which is far lower than the national average of 5,124. This means that a lot of people with eye impaired vision are yet to be reached by eye care providers in Jharkhand.

Setting up primary eye care centres in rural villages with tele-ophthalmology connectivity with base hospitals has been found to be an effective model to reach the patients who otherwise don't have access to quality eye care. Aravind Eye Hospital in Tamilnadu has successfully implemented this model covering a total population of above 3 million. Theseprimary eye care centres (Vision Centres)can make eye care available for the rural population at their door steps. This significantly increases the uptake of eye care services thus leading to considerable reduction in the burden of avoidable blindness. Most of the problems are addressed locally at the vision centres and only a miniscule number of them are referred to either a secondary or a tertiary level hospital for further management. This not only saves unnecessary travel by the patients but also considerably reduces their financial burden by saving expenditure on travel, food and/or lost wages.

Key initiators of this project:

Common Service Centers (CSC):

Common Service Centres are Implemented under the National e-Governance Plan (NeGP) formulated by the Department of Electronics and Information Technology (DeitY), Government of India.The Common Services Centers (CSCs) are ICT enabled front end service delivery points at the village level for delivery of Government, Financial, Social and Private Sector services in the areas of agriculture, health, education, entertainment, FMCG products, banking, insurance, pension, utility payments etc.The Scheme is being implemented in a public private partnership framework with a focus on rural entrepreneurship & market mechanisms. The CSCs have been set up by implementation partners called Service Centre Agencies (SCA) who are appointed by State Designated Agencies (SDAs) through a transparent bid process. The CSCs are operated and managed by Village Level Entrepreneurs (VLEs) who are appointed by the SCAs.

The location of each of the one lakh CSCs is decided in consultation with the State Designated Agency (SDA) to serve a cluster of 6-7 villages, thereby covering close to 6.50 lakh villages across India. This is the world's largest government approved ICT enabled network and is ideally positioned to strengthen India's banking network, by extending the business correspondent network.

About Aravind and Vision centres:

Aravind Eye Care System (AECS) A 11 bedded Aravind Eye Hospital was founded in 1976 by Dr. G. Venkataswamy with a mission to eliminate needless blindness by providing appropriate, compassionate and high quality eye care to all. Today the Aravind Eye Care System (AECS) encompasses of 5 Tertiary eye care centres, 5 Secondary eye care centres, 6 community eye clinics and 48 Vision centres. Aravind's patient care services cater to the states of Tamil Nadu, Kerala and the bordering districts of Andhra Pradesh & Karnataka and also the Union Territory of Pondicherry serving a population of 100 million. About 55% of all the surgeries provided are

either free or at steeply subsidized costs and yet the hospital continues to be financially self-sustainable. Last year alone, Aravind handled over 3.2 million outpatient visits and performed 378,035 surgeries & laser procedures.

Aravind Eye Hospital started its initiatives to reach the unreached through outreach eye screening camps which subsequently became a standard practice in India and other developing countries. But a population based research study published in 1999 revealed that only less than 7% of the people who required eye care are accessing the eye camps.In response to this finding, Aravind began experimenting with the Vision Centre as an alternative model to deepen the reach. Today there are 48 telemedicine linked Vision Centres (VC), each covering a population of 50,000+. These Vision Centres, staffed by an ophthalmic technician and a patient counselor with telemedicine support from the base hospital, are able to resolve 90% of the presenting complaints. The remaining 10% are referred to the base hospital for further investigations or surgery. By and large, the services of Vision Centres are limited to treating refractive errors, dealing with minor problems and referring those in need of surgery or advanced interventions to the base hospital. Based on the patient registration data, it is estimated that these Vision Centres are accessed by 80% of those in need in the surrounding community. Aravind has got experience in vision centre management in their network of hospitals in the states of Tamil Nadu and Pondicherry. Apart from this, Aravind worked as technical partner with Infrastructure Leasing and Financial Services Limited (IL&FS) in replicating the Aravind model of vision centre in the state of Tripura in more than 40 locations.

Centre for Innovation in Public Services (CIPS)

The Government of India set up the Centre for Innovations in Public Systems (CIPS) in May 2010 as an autonomous body, within the campus of the Administrative Staff College of India (ASCI), Hyderabad. This Centre was set up in pursuance of the recommendations of the XIII Finance Commission.

In line with its mandate and objectives, CIPS is working with state, central and district level government departments and functionaries in developing policies and practices for promoting an innovative culture for transforming creative ideas into sustainable practices for improving service delivery. The areas of focus for CIPS are education, health, e-governance and urban governance.

CIPS has identified and prepared a database of 318 innovative practices (116 practices in the Education sector, 60 practices in the Health sector, 70 practices in the e-Governance sector and 72 practices in Urban Governance). All the above agencies are collaborated with each other to delivering the responsibilities for this initiative.

The Proposal: This proposal is for setting up of IT embedded Primary Eye Care centres (Vision centres) in three districts of Jharkhand. These centres will be co-located in the Common Service Centers (CSC).The whole process will be facilitated by Centre for Innovation in Public systems (CIPS). The technical assistance will be provided by Aravind Eye Care System (AECS).
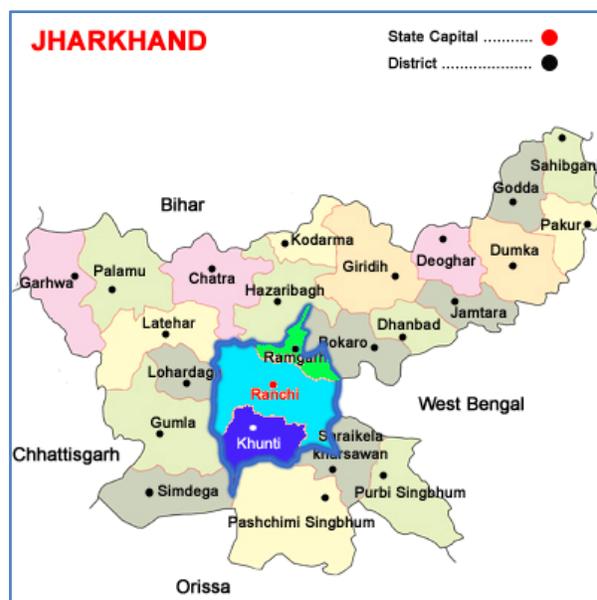
Objectives:
- To provide primary eye care services through the network of 15 vision centres as a pilot project in three districts (Ranchi, Khunti and Ramgarh) in the state of Jharkhand.
- To replicate and scale up this model in other districts of Jharkhand based on the learning from this pilot.

Target Population:

These Vision Centres will be established in three districts in specific locations (guidelines for selection of the locations described later) within 40 KMs radius of each of the service provider/District hospitals located in the respective districts.

District	Population
1. Ranchi (City)*	1,126,741
2. Ranchi(Rest of the district)	1,787,512
3. Khunti	531,885
4. Ramgarh	949,443
TOTAL Population served	**3,268,840**

*Note: This service area population is excluded as vision centres will not be established in Ranchi city area.

Project Strategy:

In order to achieve the above objectives, the following strategies are being proposed:

1. Setting up Vision Centres linked to the nearby district hospital where the secondary eye care services available.
2. Broad band internet connectivity will be to enable real time consultations with an ophthalmologist at each District hospitals. This would enhance the quality of diagnostic services thereby increasing uptake to the treatment advised.
3. Training for the Vision Centre technicians will be provided in collaboration with well-established eye care institutes in the region.

Key stakeholders in the project: The following key stakeholders will be engaged in this initiative with their roles and responsibilities as given below:

Stakeholders	Role and responsibilities
Government of Jharkhand (Enabling Partner)	• Provide support for setting up and running of 15 vision centres in three districts • Linkages of the vision centres with respective district hospitals • Provide space for vision centre with supply of electricity • Assign a champion for the initiative – State Nodal Officer • Monitoring overall service levels
CIPS (Facilitation partner)	• Overall facilitation of the project activities with respective stakeholders

CSC (Implementing Partner)	• Overall implementation of the project
	  - IT Infrastructure: Set up the computer systems with broadband connectivity in each Vision Centre. Assign a central server to support these Vision centres and store data.
	  - Day-to-day operational management of vision centre by appointing one Project coordinator
	  - Staffing: Selection, training and appointment of Vision Centre Technician (someone with optometry background)
	  - Supervision and monitoring the performance of vision

	centre technicians - Supply chain management (medicines and spectacles) - Monitoring patients compliance to treatment and follow-up - Financial management
AECS (Technical Partner)	• Provide technical support in setting up of vision centres and management - Orientation to the senior team including the State Nodal Officer - Setting up of the centres: Guidance on location, standard lay out, awareness materials (Posters and pamphlets), etc. - Equipping the centre: Under a sub-contract from the implementing partner supply the agreed upon list of equipment. This will be executed by Aurolab, a unit of Aravind Eye Care System - IT Systems: Installation of vision centre management software (VCMS) and Video conferencing system - Running of the Centre: Guidance in clinical protocol, workflow, referral, compliance monitoring, community linkages, etc. - HR training – identifying appropriate training institutions to train vision technicians; share the training curriculum and orient the training centres - Regular monitoring and sending reports to all key stakeholders

Major milestones of the project:

- Project approval
- Orientation for the senior team
- Site selection – town & specific building
- Remodeling /renovation of the building
- Recruitment, selection and appointment and of Vision Centre Technicians (someone with optometry background)
- Completion of 3 months Training of Vision Centre Technicians on VC functions at reputed institutions
- Procurement of equipment and supplies,
- Establishing IT systems and connectivity at VCs and district hospitals
- Establishment of supply chain to ensure uninterrupted supply of Medicines and Spectacles.
- Inauguration of Vision Centres and services being offered

The total number of Vision Centres as proposed would be established in two stages (roughly about 7 in the first year and 8 in the second year).

Project Strategies in Details:

1. **Guidelines for setting-up a Vision Centre:**

    a) **Selecting the location:** The Vision Centres will be setup within existing network of CSC. The criteria for selecting the locations for the Vision Centres are given below:
    - Rural town or village with a population of 15,000 and above
    - Has good transport connectivity and a market hub for nearby villages
    - A population of 50,000 lives within 5 km radius
    - No eye care services available locally.
    - Nearest eye hospital within 40 to 50 kms.
    - Building: Preferable to locate Vision centre at one of the productive CSCs; where this is not feasible to provide a space (about 400 sq.ft.) in an easily accessible location frequented by the public like the PHCs

    b) **Infrastructure and other facilities:** The Vision Centre needs adequate space (400 square feet) for reception, refraction, patient examination and tele-consultation.

    c) **Equipment/Facilities:** The Vision Centre will be equipped with the following equipment. Aurolab will supply the necessary equipment and instruments for setting up of vision centres.

Equipment/Instrument	IT requirements
1. Trial sets, IPD scale, NV charts& JCC 2. Digital Vision Chart 3. Streak Retinoscope 4. Direct Ophthalmoscope 5. Slit Lamp with 90D Lens 6. Applanation Tonometer 7. Low vision Charts 8. Basic sterilizer 9. BP apparatus 10. Glucometer with Strips 11. Weighing & Height scale 12. Digital camera and adapters for digital retinal imaging	1. Central Server *(1 unit)* 2. Computer systems at VCS (15 systems) – Core i3, 4GB RAM, 2 x HDD, webcam, speaker/mic, printer 3. Computer systems at Consulting cum Referral centres *(3 systems – one per district)*- Core i3, 4GB RAM, 2 x HDD, webcam, speaker/mic 4. Computer systems for project coordinator and Nodal Officer (2 systems) - Core i3, 4GB RAM, 2 x HDD, webcam, speaker/mic, printer 5. Firewall VPN 5 users at Base Centre *(3 units)* 6. Broadband connectivity 7. UPS at all locations 8. Vision Centre Management System (VCMS) software

    d) **Staffing at the Vision Centres:** One Vision Centre Technician will be appointed in each centre. She/he will carry out comprehensive eye examination, handle tele-consultations and refer when indicated.
    e) **Tele-Medicine:** Availability of broadband connectivity at an affordable cost has enabled leveraging IT applications in various areas to bridge urban – rural divide. All the Vision Centres will be linked to the district hospitals through a broadband to carry out real time patient consultations with a specialist. This would enhance the quality of diagnostic services and treatment advised in the Vision Centres. The connectivity will also be used for data exchange, communication, and also to update the Vision technician's skills on a regular basis.

2. Training of VC Technicians:

This program relies on the availability of skilled human resources (Optometrist) who need to have specific knowledge and skills to accomplish the activities at the Vision Centre. To support the proposed network of Vision Centres, fifteen Vision Technicians need to be trained in a staged manner for a period of three months. Additional manpower can be recruited and trained as reserve and can be used as need arises. An appropriate training institution will be identified in the adjoining area. The broad content of the training can be grouped into the following modules:

- Patient examination and associated clinical work
- Optical dispensing
- IT enabled functions
- Vision Centre administration.

3. Services at vision centre:

The following services can be provided at the vision centre.

1. **Patient care services:** Patient examination will include visual acuity measurement, refraction, slit lamp examination and fundus examination. Intra-ocular pressure (IOP) and random blood sugar will be measured for all patients above 40 years. In addition, blood Pressure, height and weight will also be measured to offer general health counseling to the patients.

2. **Treatment:** Necessary first aid services will be given to people found with minor ailments like conjunctivitis and for patients with corneal ulcers, corneal abrasion and trauma.

3. **Patient referrals:** Those patients who are in need of further procedural or surgical interventions like cataract, laser for diabetic retinopathy and management of corneal abrasion, corneal ulcers, trauma, glaucoma; childhood blindness etc. will be referred to the district hospitals.

4. **Prescription of medicine and spectacles**: Based on the advice of the doctor, the prescription will be given by the vision technician for medicines and spectacles. The patient can procure them locally.

4. Project management and monitoring:

One project coordinator will be appointed at central level to manage the project. The project coordinator will work under the guidance of the State Nodal officer. He/she will coordinate with the respective stakeholders for implementing the project activities and run the vision centres effectively. He/she will monitor the vision centre performance, IT systems and community linkages.

Project Output

A well-established vision centre can produce the following:

Indicators/Estimation	Per Vision Centre
Service area population covered (overall)	50,000
No. of patients referred for cataract surgery and subsequently operated at base hospital (based on ideal CSR of 9000 in India)	450
No of spectacles dispensed: (16% of the population need services for refractive error –estimated as 8,000)	800 - 1000
No. of Diabetics (9.9% of the age 30+ population are diabetics – estimated as 2,500)	500
No. with Diabetic Retinopathy(12% of diabetic)	60
No. of Glaucoma cases detected or followed up(1% of the population – estimated as 500)	250
Low vision services(0.1% of the total population – estimated as 50)	25

Project Outcomes

Project outcomes are determined based on the eye care needs in this region. The following are the outcomes of the project:

- The 15 vision centres will cover a population of 1 million with the eye care. If these vision centres are optimally serving, it results in tripling the current level of eye care services in all the three districts
- The development of a sustainable and replicable Vision Centre model – both for scaling up in the state of Jharkhand and for disseminating to other eye care programs.

Annexure 1: Detailed budget

Budget for Setting up Vision Centres
SN	BUDGET CATEGORY	Explanation	Quantity	Unit cost	Budget for one VC	Budget for 15 VC
	Non Recurring Expenditure				**(in Rupees)**
A	**OPHTHALMIC EQUIPMENTS**					
1	Slit lamp	Slit lamp with motorized table (Aurolab)	15	125,000	125,000	1,875,000
2	Streak Retinoscope	Heine Beta make	15	20,500	20,500	307,500
3	Direct Ophthalmoscope	Heine Beta make	15	17,000	17,000	255,000
4	Trial sets, IPD Scale, JCC, Mirror (Refraction) Near Vision Chart	Balliwala & Homi	15	24,100	24,100	361,500
5	Schiotz tonometer	Biro	15	4,500	4,500	67,500
6	Basic sterilizer	Cooker type	15	2,200	2,200	33,000
7	90 D lens	Volk	15	10,000	10,000	150,000
8	Digital vision chart	Aurolab	15	16,500	16,500	247,500
9	Digital Camera & Adapter	For Fundus Photograph	15	12,000	12,000	180,000
10	Other clinical instruments used in patient care	Thermometer, BP Apparatus, Stethoscope, Torch light, Height chart, weighing scale, Glucometer with 100 strips etc.,	15	7,545	7,545	113,175
11	UPS(Uninterrupted Power Supply)	To plan the capacity required as per the ground realities (2KVA)	15	33,400	33,400	501,000
	Sub Total (A)				**272,745**	**4,091,175**
B	**IT Systems at Vision Centre**					
1	Computer systems at Vision Centre - Core i3, 4GB RAM, 2 x HDD, webcam, speaker/mic - 3 years warranty	1 units (for patient registration desk and teleconsultation) at VC	15	36,000	36,000	540,000

2	Broadband connectivity at Vision centre	At vision centre one time	15	10,000	10,000	150,000
3	Printer	1 laser printer for e-prescription	15	10,000	10,000	150,000
4	Vision Centre Management Systems (VCMS)	Software package. 1st Year - Customization, Installation and Training charges;	15	10,000	10,000	150,000
		2nd year onwards - remote support, updation and maintenance / per year	15	5,000	5,000	75,000
5	Video-Conferencing	Marratech or any other options preferred by the client				
	Sub Total(B)				**71,000**	**1,065,000**
C	**VC SETTING UP COST**					
1	Awareness creation materials	Posters, Pamphlets, mike publicity, Boards inaugural expenses etc.	15	50,000	50,000	750,000
2	Building Renovation & Electrical works	Painting, EB supplies, Partition, etc.,	15	50,000	50,000	750,000
3	Furniture & Fittings	Special table 2nos, cupboard 1 no, bench 2 nos, waiting chairs 10nos, staff furniture 2 nos, revolving stool 2nos, Optical counter 1 no.	15	50,000	50,000	750,000
4	Stock initial supply (3 months' stock)	Stationeries, Consumables, diagnostic medicines etc., @ Rs. 5,000 pm	15	15,000	15,000	225,000
	Sub Total (C)				**165,000**	**2,475,000**
D	**Training of Vision Centre Technicians:**					
1	Training of Vision Centre Technicians	Bridge Course for 3 months (cost includes course fee, materials, stay, food, travel etc.,)	18	50,000	50,000	900,000
	TOTAL (A to C)				**558,745**	**8,531,175**

D	**Recurring Expenditure**					

1	**Staff Salary**						
	Salary to VC Technician	1 No. Rs. 15000 per month	15	180,000	180,000	2,700,000	
2	**Maintenance cost**						
	Broadband Rental Charges For Vision Centre	Recurring cost(4 Mbps up to 25 GB download)/per annum	15	19,200	19,200	288,000	
	VC space, Electricity Charges, telephone charges, house keeping expenses	Supported by Government, Jharkhand			-	-	
	Sub Total (D)				**199,200**	**2,988,000**	

Note
1)   *Sales Tax and other applicable taxes will be as extra*
2)   *We will provide basic training for maintenance of the equipment at Site during installation*

	Budget for Telemedicine and Project Management				
SN	**BUDGET CATEGORY**	**Explanation**	**Quantity**	**Unit cost**	**Total cost**
	Non Recurring Expenditure			(In Rupees)	
A	**DIGITAL CONNECTIVITY for Telemedicine**				
1	Central server PN: 737646A ,Two Way Rack, Intel Xeon X 5620 (Quad Core) Processor 2.40GHz, 12MB Cache,1066MHz, 1X8GB Memory 3x500GB , 3.5in HS SATA,Multi Burner, Integrated RAID 0,5 + Battery Assembly + Windows,3Years Onsite Warranty	Central server (1 Unit)	1	245,000	245,000
2	Computer system for Consulting and referral centre: system Core i3x 4gb RAM - 3 years warranty	For telemedicine consultation at District hospitals (3 stations/one per district)	3	34,000	102,000
3	Firewall vpn 5 users at Base Centre - 1 year support	At base centre (3 stations/one per district)	3	38,000	38,000
4	Base Hospital Internet connectivity 2 Mbps- leased line per annum		1	120,000	120,000
	Sub Total(A)				**505,000**
B	**Project management**				

1	Computer systems for project coordinator and Nodal Officer (2 systems) - Core i3, 4GB RAM, 2 x HDD, webcam, speaker/mic, printer(2)	For project coordinator and Nodal officer	2		44,000	88,000
2	Salary to VC Project coordinator	1 No. Rs. 50000 per month (for one year)	1		600,000	600,000
	Sub Total(B)					688,000
TOTAL (A + B)						1,193,000

Budget for Technical support - Aravind						
SN	BUDGET CATEGORY	Explanation	Quantity	No of days/Trips	Unit cost	Total cost
1	**Travel & other expenses**				(In Rupees)	
	Executive Director	Initial visit for meeting with senior government officials: Airfare and local travel cost	1	1	26,000	26,000
	LAICO Faculty	Onsite visit to provide technical support in setting up of vision centre, Workshop and follow-up visits: Airfare, local travel cost to visit 3 districts	1	4	26,000	104,000
	IT person	Setting up of IT systems, Software & telemedicine connectivity	1	4	26,000	104,000
	Stay and food	Stay and food cost Rs. 3500 per day for Executive Director	1	2	3,500	7,000
		Stay and food cost Rs. 3500 per day for LAICO faculty. 3 days/visit	1	12	3,500	42,000
		Stay and food cost Rs. 3500 per day for IT person. 3 days/visit	1	12	3,500	42,000
2	**Consultant's time**					
	Executive Director	Man days @ Rs. 10,000/per day (including travel)	1	3	10,000	30,000
	LAICO Faculty time	Man days @ Rs. 10,000/per day	1	15	10,000	150,000
	IT Person's time	Man days @ Rs. 5,000/per day	1	15	5,000	75,000
3	**VC management training workshop**	Workshop venue (1 Day)	2		5,000	10,000

	(onsite)	Food expenses for technicians and faculty	20		250	5,000
		Local travel expenses for the VC technicians	18		300	5,400
					TOTAL	**600,400**