



Case Study

Our Achievements

- ➔ **Biometric Solution Provider (BSP) and Biometric Subject Matter Expert (BSME) for India's UID project**
1.2 Billion Residents
- ➔ **The world's first large scale unique citizen ID database for Andhra Pradesh PDS project**
90 Million Residents
- ➔ **The world's first multi-biometric citizen ID project for United Nations World Food Programme (UNWFP) in Orissa**
1 Million Residents
- ➔ **The world's fastest de-duplication project for AP ration cards**
6.2 Quadrillion matches in a record time of 60 days
- ➔ **The world's largest corporate ID system for one of India's leading petrochemical conglomerate**
430,000 Employees
- ➔ **India's second largest enrolment agency for Aadhaar project**
12 Million Residents

The World's first Multi-Modal Biometric Civil ID Programme for providing food entitlements to the beneficiaries

Background

The United Nations World Food Programme (UNWFP) India Country Office has undertaken this project on behalf of the Government of Orissa to reissue ration cards (Ration Card is a identity card provided by Government to the beneficiaries for availing food entitlements) based on biometric technologies and to institute new processes to better manage and monitor the distribution of food entitlements in Rayagada district of Orissa. The objective of the programme is to strengthen the infrastructure and systems of the Department of Food & Civil Supplies, Government of Orissa by leveraging biometric and Internet and Communication Technology (ICT) based solutions.

This project was devised, with the support of the Government of India and the Government of Orissa, with the objective of leveraging the global supply chain expertise of UNWFP and its partner BCG, to strengthen the Targeted Public Distribution System of India. The TPDS is one of the few programmes in this country that has the potential of touching the life of every Indian. Rayagada is one of the remote tribal districts in India with more than 60% of tribal population living in Hilly areas and jungle with no proper infrastructure and transportation facilities. The idea to select Rayagada district by the government is that a project of this importance if successfully deployed in the most challenging areas can easily be replicated all across India.

The first of its kind, the project incorporated the cutting edge biometric technologies and best management processes to ensure that distribution of ration cards to citizens is done with transparency, inclusiveness, effectiveness and efficiency. The project includes capturing of beneficiaries biographic and multi biometric (face, finger and iris) data, creating a unique database by eliminating duplicate entries using biometrics algorithms, printing and distributing the ration cards to the citizens and the last mile biometric authentication solution for monthly disbursement of entitlements. 4G Identity Solutions with its extensive experience and technical expertise in the field of biometric enrollment and matching for large scale civil ID applications in rural settings has been awarded this project through global competitive bidding process.

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Scope of Work

1. Data Digitization ,Integration of databases and Database creation
 - a. Creation of Base line database by Mapping of 1997 BPL Survey Database which is in native Oriya, 2002 House Hold Survey Database in MS Access and hand written ration card issue registers
 - b. Cleansing of the Data of anomalies and migration of data to Unicode bi-lingual English & Oriya database
 - c. Design of the Database with additional data fields for issuance of Biometric Ration Cards.
 - d. Export the data into village level data files with encryption
2. Development of Demographic and Multi biometric enrolment (Iris , Fingerprint and Face) Application
 - a. Frontend Enrollment Application with bilingual input in English and Oriya
 - b. Integration of biometric devices: Iris cameras , Finger print scanners and Web cameras for face capture
 - c. Enrollment Database preparation and data protection



- d. Biometric enrollment of DPL Operators, Supervisors and Government Officials for
 - i. Attendance through biometric authentication
 - ii. Authorization of changes in base data and handling of exceptions by Government officers using their fingerprint authentication.

Solutions

Government

- >> National ID Solutions
- >> Election ID Solutions
- >> Public Service Delivery Infrastructure
- >> Public Distribution System
- >> NREGA
- >> Pensions

Enterprise ID

- >> Recruitment
- >> Time and Attendance
- >> Access Control
- >> Visitor management

Banking & Financial

- >> Authentication
- >> Micro ATM
- >> Biometric ATM
- >> Financial Inclusion
- >> Bank on Wheels

E.National Access Mgmt

- >> Immigration
- >> eVisa
- >> ePassport

Law Enforcement

- >> AFIS
- >> ABIS
- >> Live scan
- >> Mobile ID
- >> ID management for Prisons
- >> ID management for Courts

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Services

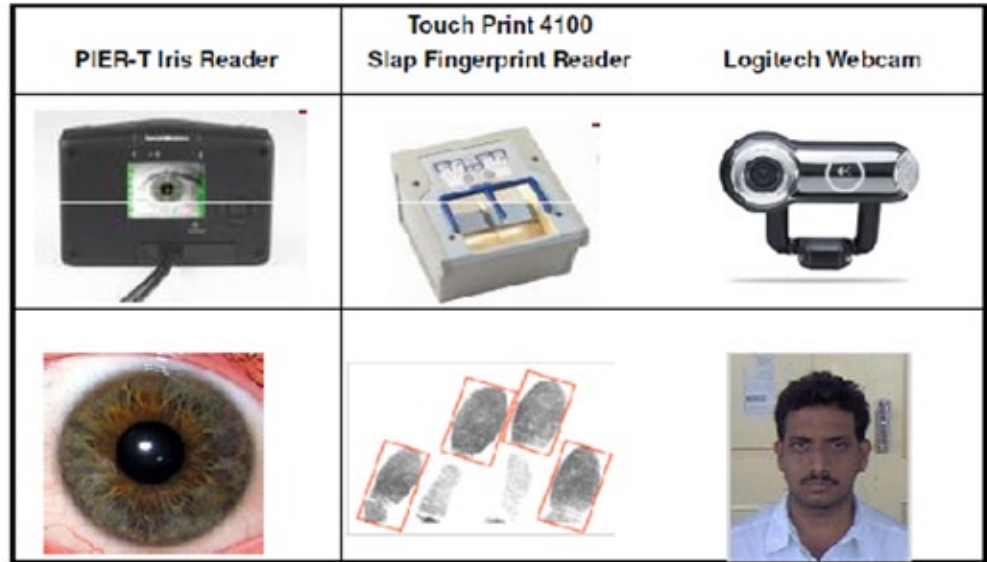
- >> Enrollment Services
- >> De-Duplication Services
- >> Authentication Services
- >> Consulting Services
- >> Data Management Services

Suites

- >> Corporate ID
- >> Recruitment ID
- >> Health ID
- >> Education ID
- >> Airport ID

Products

- >> 4G Multi Modal ID Platform
- >> eAccess
- >> Enrollment Devices
- >> Authentication Devices
- >> Smart Cards



e. Web based interface for project progress tracking

3. Publicity to ensure turnout of beneficiaries for biometric registration



4. Capacity building and training of stakeholders including government and private.



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5. Biometric Registration



6. Periodical Safe and secure transfer of data after encryption to the central data centre

7. Multimodal De-duplication with manual adjudication

- Offline Centralized De-duplication
- Automated Fingerprint Identification System (AFIS)
- Automated Iris Identification System
- Demographic based matching system for beneficiaries with exceptions

No.	Source Card Details	Source Photo	Match Photo	Match Card Details
1	<p>Name : rabati (Age : 22) Citizen ID : 242900800805-A-100022_238 Relation with Head : Wife Family ID : 242900800805-A-10002_238 Card No : BPL-207897 Head: ramnath nayak Address : KHURIGAM(V), KASIPUR(P), Kasipur(B) Enrolled Time : 26-08-2008 18:38:43</p>			<p>Name : SRI RAMNATH NAYAK (Age : 35) Citizen ID : 242901101704-A-100051_25 Relation with Head : Self Family ID : 242901101704-A-10005_25 Card No : APL-13-2000 Head: SRIRAMNATH NAYAK Address : KHALIGUDA(V), KOTAPETA(P), Rayagada(B) Enrolled Time : 26-06-2008 17:22:00</p>
2	<p>Name : ramnath nayak (Age : 35) Citizen ID : 242900800805-A-100021_238 Relation with Head : Self Family ID : 242900800805-A-10002_238 Card No : BPL-207897 Head: ramnath nayak Address : KHURIGAM(V), KASIPUR(P), Kasipur(B) Enrolled Time : 26-08-2008 18:37:24</p>			<p>Name : KASATI (Age : 28) Citizen ID : 242901101704-A-100052_25 Relation with Head : Wife Family ID : 242901101704-A-10005_25 Card No : APL-13-2000 Head: SRIRAMNATH NAYAK Address : KHALIGUDA(V), KOTAPETA(P), Rayagada(B) Enrolled Time : 26-06-2008 17:23:22</p>
3	<p>Name : SADHU (Age : 60) Citizen ID : 242900818216-A-1_243 Relation with Head : Husband Family ID : 242900816216 Card No : BPL-207843 Head: MANDIA JHODIA Address : KHURIGAM(V), KASIPUR(P), Kasipur(B) Enrolled Time : 26-08-2008 11:17:33</p>			<p>Name : SADHU JHODIA (Age : 65) Citizen ID : 394283 Relation with Head : Self Family ID : 242900816133 Card No : BPL-313679 Head: SADHU JHODIA Address : 187, KHURIGAM(V), KASIPUR(P), Kasipur(B) Enrolled Time : 26-08-2008 12:27:43</p>

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8. Printing and personalization of different credentials: Laminated cards with security features and Smart Cards in bilingual language



Smart Card with Photo of head of the family on front and family members photos on back side



Plastic Laminated Card with Photo of head of the family on front and family members photos on back side



9. Last mile handheld authentication solution for distribution of commodities
 - a. Fingerprint Offline (1:1) Authentication of beneficiaries through use of handhelds and smart cards before disbursement of food entitlements
 - b. GPS module that connects hand held with central server periodically for transfer of transaction data at fair price shop for Inventory Management

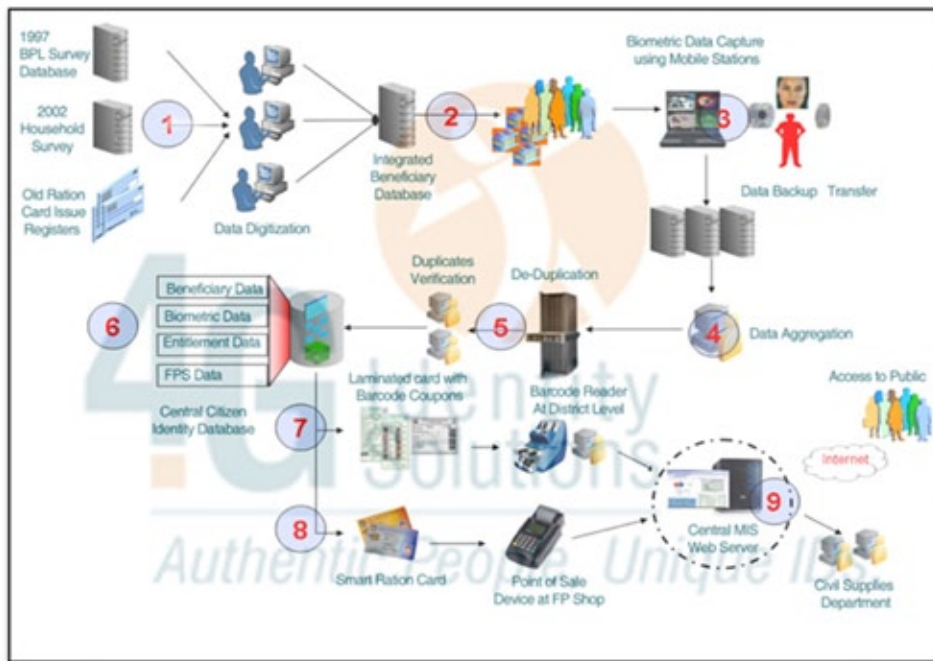


Inauguration and distribution of Handheld Biometric Authentication Devices by Chief Minister of Orissa state & visit of UNWFP officials to one of the fairshops where the handhelds were operational

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10. MIS system for monitoring the Public distribution System and by officials and other stake holders

Project Life Cycle



Key Challenges

As Rayagada had lot of remote rural areas with no infrastructure and transport facilities it required the enrolment operators to walk lots of distances carrying the mobile enrolment kits for enrolling the beneficiaries as there are no roads available for reaching these remote areas. The enrolment operators had to live along with locals for smooth completion of enrolment registrations.

Electricity is not available in most of the villages. Necessary arrangements in terms of carrying power generators with stabilizers and diesel along with mobile enrolment kits were made to ensure the successful registration in time.

Low turn-out for enrolment, needing multiple rounds of registration operations to make the project more inclusive. Most of people living in villages had gum collection from trees and manual labour as their main occupation because of which the fingerprints collected from these people were not of good quality and were not qualified for de-duplication. The poor quality images contribute to difficulty in detecting features from the image and hence may decrease the performance of AFIS matching System in terms of accuracy. The multimodal biometric system designed by 4Gid used the iris biometric for de-duplication and ensured that the performance of de-duplication was not affected. Another



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Another important aspect of the system was negligible biometric failure to enrol and ensuring every beneficiary turning up for registration is enrolled into the system with zero failure to enrol in the system making the programme 100% inclusive. By capturing multi biometrics and having multimodal de-duplication ensured that the system achieved highest accuracy during de-duplication.

Impact

This project is a unique public-private partnership that has fundamentally enhanced the efficacy of food distribution system of Rayagada district and had impact on the Food Entitlement Systems in India and across the world. The overarching goal of the Project was to get more food grains to the rightful beneficiaries. This was achieved through two key steps. The first part of the project where the biometric registration of the beneficiaries and the subsequent de-duplication ensured that the right beneficiaries were provided with new biometric based Food Entitlement Identity cards and removal of duplicate, deceased and nonexistent beneficiaries. The second part of the project which involved last mile biometric authentication solution while issuance of food entitlements ensure that the beneficiaries are empowered to exercise their right to this subsidy through better systems and data transparency.

The project implementation has ensured that about 22,000 bogus/ ghost cards were eliminated and leakages and pilferages in the PDS were effectively checked, which resulted in the saving of Rs. 3 crores savings in one year for the Government of Orissa. Most of the number duplicates that came were during the initial phase and once every one realized that the System was 100% foolproof in eliminating duplicate registrations, automatically the number of duplicate registrations has come down significantly.

In terms of impact on the biometric industry, this project is first of its kind in which end to end Multimodal biometric System was provided for large scale Civil ID Programme that paved way for the world's largest national Unique Identification System i.e. Aadhaar/ India's UID project by Government of India. The learning's and experiences of the project haven incorporated into the UID's project in terms of benchmarking the processes, technologies, performance and Systems. Today most of the national Identity Projects are being made a reality at a scale never thought before through adoption of Multimodal biometric technologies and the credit for this undoubtedly goes to this project.

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Key Success Factors

- Deep rooted passion to make this project a success and the excitement to use the technologies for doing something to help feed the poor in this country
- Proven record of success in deployment of similar large scale Biometric Identity Projects
- Excellent technological capability
- Solution that is thorough and is tailored to the situation at hand.
- High Quality team committed to the cause and able to react effectively and efficiently to learning's on the ground.
- Most importantly support from UNWFP and Government of Orissa that is committed to the cause

About Us

4G Identity Solutions Private Limited (4Gid) is a Pioneer (since 2001) & Global leader in providing large scale Identity Management Solutions using biometrics. 4Gid specializes as an End-to-End Identity Management Solutions provider & System Integrator in Civil ID, Homeland Security & Law Enforcement for Government, Corporate, Banking and Defence sectors.

4Gid has re-defined ID Management business space by providing thought leadership and proof of concepts that led to the world's largest ID programmes. 4Gid has executed many of the world's first large scale Identity Management Solutions for federal governments, multilateral agencies and top notch Corporates, and is currently delivering the world's biggest Civil ID Project – India's Unique ID / Aadhaar.