



## Population-scale data fiduciary Establishing denominator for achieving UHC

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### **Experiential Learnings from Population-scale Initiatives**





### Master Registry Based UHC IT Platform, TN 2020

Facilities	Address	Service Area Mapping	Family Folders	Master of Masters	User roles & credentials
<ul> <li>State → HSC</li> <li>Profile and Unique ID</li> <li>Organization hierarchy (Admin levels &amp; Institutions) at 10 levels</li> <li>~3 lakh units</li> </ul>	<ul> <li>State → Streets</li> <li>Profile &amp; Unique ID</li> <li>Geographical hierarchy (Village, Town, Mpty., Corp.) at 15 levels</li> <li>~3 lakh units</li> </ul>	<ul> <li>Linking each street to HSC, Anganwadi, PDS shops</li> <li>Recreated hierarchy State → Streets</li> <li>Supported with GIS maps</li> </ul>	<ul> <li>ePDS data, ICDS data, PICME data linked to street level through HSC</li> <li>Profile of individual and families</li> <li>~8.5 crore units</li> </ul>	<ul> <li>Data dictionary</li> <li>Disease classificatio n at 7 levels</li> <li>Linking of datasets through IDs</li> </ul>	<ul> <li>Users, supervisors &amp; admin levels</li> <li>Single Sign on</li> <li>User behavior &amp; IT System response</li> </ul>
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- Dynamically changing (Add/Edit/Delete/Mapping/Coding/Bifurcating) datasets
- Concurrent usage of master registry and applications
- Test credentials, undefined/not mapped IDs like nomads, allocation logics



1)

Universal Health Coverage Information Technology (UHC-IT) Platform, an approach to have a population as the denominator to establish a digital cohort of the State, Tamil Nadu, 2019 - BMC Proceeding - FETPICON 2020 Universal Health Coverage Information Technology Strategy (Population Health Registry), Tamil Nadu, 2020-21



## **Syndromic Surveillance** during Disasters, Mass Gatherings & Pandemic

## **Geotagging for generating alerts [2015]**



## Location-based alerts for decision-making [2015]





## DLDMP: eDFSS Cluster detection (ver1, CDC-GHSA) [2017]

Moving Period Range(in days):5



eDFSS Alerts



## Alert generation using multiple disease data [2017]

Moving Period Range(in days):44

#### eDFSS Alerts



Lab Cases : Dengue Scrub Typhus Lepto Malaria



## COVID-19 War Room Using GIS [2020-21]

## Population Density as denominator, COVID



## Bed Mgmt. in Collab with Bhuvan NRSC

### Estimated Vulnerable Population with IRS, AU



COVID-19: Global best practices in combating the pandemic. dated 17.07.2020. (https://www.policycorps.org/post/covid-19-global-best-practices-in-combatingthepandemic); Universal Health Coverage Information Technology (UHC-IT) Platform, an approach to have a population as the denominator to establish a digital cohort of the State, Tamil Nadu, 2019 - BMC Proceeding - FETPICON 2020; Engaging the community in enhancing public health capacity to detect and report events in Tiruvallur district, Tamil Nadu, India. November 2020 (Global Security Health Science and Policy 5(1):111-120. DOI: 10.1080/23779497.2020.1831396)



## **Integrated IT Systems**

## **Population Health Registry Reference Implementation**

15+ Priority Diseases for 80 million Population, 40 million verified profiles & 20 million NCD follow up

## Systems Sustainability Toolkit (SST) for Adoption

01

30K Frontline Workers 67 Million Profiles 20 Million Health Screening in 6 Months

Configurable Masters Dynamic Relationships Role-based KPIs Cross-platform surfaces



Adaptability and Adoption: Verifiable fiduciary identity, socioeconomic & demographic profiles to prioritise and deliver predictive services.

Mobile first and Cloud agnostic platform designed for scalability, security, and performance with faster roll-out time.

Offline & sync mode for 30K users (FLW &silientDecision Makers) Offline search for the populationin User's catchment area

**Culture mapping** through design; Grounds-up User **Behaviour design** through Collaborative Development & Research with FLWs



## **Platform Modules: Stages & Phases**





https://tnphr.cloud.looker.com/dashboards/629, 15.02.2023 1214

## **Product Surfaces**

#### **App** for Frontline Workers &



#### Web Dashboard for Reporting

TM Performance	MTM Performance												
er Performance	Search Panel												
Id Verification	Individual D Violas												
	Start Date		E E	ind Date		E MTM :	ondition						
	Directorate				* Role								
	District		HUD			Block							
					Class Search								
					Char Starth								
		Total Population			Age: 18-45		Age: 45+						
	6,	64,43,770			3,09,30,501		2,63,61,345						
		Total Screened			Confirmed MTM Beneficiary		Individual With Drug Issued						
	1,	13,06,234			11,23,928		20,27,957						
							Filter						
	District	Total Decidation	10.45	45.	Total Personal	Confirmed MTM Repolation	n Individual With Dava Jaco						
	District	Total Population	10~43	437	Iotal Screened	Committee MTM beneficia	iy individual with brug issu	eu					

#### Web Admin Console for Standardization

🚉 Users Mgmt.	BB F	acility Mgmt.	]								Ne	w Facility
PDS Shop Mgmt.	Sear	ch Panel										~
Streets Mgmt.											é 6	kport
Facility Mgmt.		District	Block	Owner	Directorate	Category	Туре	Level	Facility	Active	Edit	
FTP Mgmt.		None	None	Govt	DMS	GH	Taluk GH	District	Thuvakudi	~	1	
Districts Mgmt.		None	None	Govt	DMS	GH	Taluk GH	District	Padalur Tk GH	~	1	
HUD Mgmt.		None	None	Govt	DMS	GH	Taluk GH	District	Kadavur Tk GH	~	1	
Blocks Mgmt.		None	None	Govt	DMS	Admin	DMS State Admin	State	dmsStateFacility	~	1	
Habitation Momt		None	None	Govt	DMS	DMS Office	DMS Office	State	Test govt department	~	1	
Taluk Mgmt.		None	None	Govt	DMS	Camp	State Camp	State	testcamp	$\checkmark$	1	
Revenue Village Mgmt.		None	None	Govt	DMS	Camp	State Camp	State	testcamp	~	1	
		None	None	Govt	GCC	Admin	GCC Dist Admin	District	Chennai	$\checkmark$	1	
		None	None	Govt	GCC	Admin	GCC HUD Admin	HUD	South Chennai	$\checkmark$	1	
		None	None	Govt	GCC	Admin	GCC HUD Admin	HUD	Chennai North	~	1	
										iems per page: 10 v	1 - 10 of 24433	$\langle \rightarrow$

#### Analytics & Insights for Secretariats



## **Collaborative Development for Successful Digital Adoption**

(Simplifying complex workflows & algorithms of Integrated Healthcare for continued usage)

SI No	Application S	Screen	July to Sep 2021	Oct to Dec 2021	Jan to Mar 2022	Apr to Jun 2022	July to Sep 2022	Oct to Dec 2022	Jan 2023
4)	Population	Views	12,068	1,58,499	1,25,29,479	4,63,65,354	5,55,53,420	2,98,38,341	51,14,490
1)	Profile	Time	1h 18m	48m 22s	16m 22s	31m 36s	40m 12s	25m 52s	10m 25s
0	Welfare	Views	19,406	1,14,773	48,12,942	1,47,54,107	96,96,840	7,15,817	63,892
2)	Schemes	Time	25m 43s	6m 21s	11m 52s	17m 09s	17m 15s	13m 7s	05m 05s
ò	Population	Views	17,341	1,20,427	27,29,138	93,55,093	85,41,366	37,20,531	6,60,036
3)	Management	Time	10m 22s	2m 21s	6m 19s	15m 45s	25m 16s	23m 39s	11m 44s
	Vulnerability	Views	5,250	51,672	45,18,434	1,60,76,768	1,16,49,100	20,30,451	2,93,698
4)	Assessment	Time	13m 12s	6m 20s	11m 5s	17m 17s	45m 34s	29m 34s	05m 46s



Source: <u>https://analytics.google.com/analytics/web/</u>

Updated Date: 30.01.2023 1035





## **Addressing Product Needs & System Stability**







## **Offline Search & Online Search Within Platform**





## **Sustainable & Scalable Adoption**

# 30,000 users 80M profiles 5M+ aggregate app logins, 2x in 2 months





Pag	e title and screen class 👻	+	↓ Views	Users	New users	Views per user	Average engagement time	App version - +	↓Users	New users	Engaged sessions	Engagement rate
	Totals		115,448,132	<b>39,956</b>	11,416	2,889.38	4h 23m	Totals	<b>42,369</b> 100% of total	<b>13,512</b> 100% of total	<b>625,365</b> 100% of total	<b>87.48%</b> Avg 0%
			100% 01 total			Avg 0%	Avg 0%	1 3.2.6	38,421	13,423	605,333	87.95%
1	PatientLandingActivity		24,693,026	31,071	0	794.73	32m 27s	2 3.1.2	3,433	19	5,529	66.41%
2	ScreeningActivity		14.834.843	26.925	0	550.97	22m 36s	3 3.1.5	2,442	29	12,963	83%
_					-			4 3.1.1	320	4	535	52.92%
3	SearchOnlineListActivity		5,564,586	24,499	0	227.14	38m 03s	5 2.1.4	233	0	333	46.19%
4	AssessmentScreeningActivity		5,293,111	21,399	0	247.35	11m 47s	6 3.1.0	116	1	174	61.05%
F	Secreb Activity		E 006 0E7	00.010	0	102.00	<b>FFm OCn</b>	7 3.2.5	46	0	333	83.67%
5	SearchActivity		5,206,357	28,313	U	183.89	55m 065	8 3.0.9	41	0	46	46.94%
6	DemographicDataActivity		4,967,456	22,905	0	216.87	4m 00s	9 1.32	20	10	33	54.1%
7			3 783 546	30,830	0	122 72	7m 54s	10 1.33	18	10	35	64.81%
			0,700,010	00,000	0	122.72	711 040	11 3.2.7	16	16	11	39.29%
8	MedicalHistoryViewActivity		3,659,523	22,650	0	161.57	3m 51s	12 <b>2.1.3</b>	8	0	4	28.57%
9	PastVisitActivity		3,392,467	24,636	0	137.70	4m 01s	13 <b>3.1.4</b>	5	0	10	100%
10					-			14 3.2.3	3	0	25	83.33%
10	FamilyMemberDetailViewActivity		3,038,186	23,126	0	131.38	8m 17s	15 3.2.2	1	0	1	100%



## Scale & Time-tested platform: Ready for deployment





### **Digital-in-Health Vs Digital-as-Health**









**Consultation | Facilitation | Implementation** 

## Solving silos of systems through PGR adoption







Integrated Systematic Approach



Systems Sustainability Toolkit (SST) is a systematic approach to transforming the silos into an integrated one



### **Journey of Governance Systems Transformation**



Population Database

Geodemographic profiles of individuals, families & villages



**Field Verified Profiles** Triangulate data with authorised documents like Aadhaar, ABHA



Capacity Building Imparting skills to local women and youth



Governance

Eligibility for welfare schemes and status of disbursement



Integrated Healthcare

Assessment for 15+ priority diseases and provide vulnerability scores



#### Climate Change

Monitoring local weather, air, water and vector parameters



Authorising local self-help group women to assist citizens

Action Centres Eligibility for welfare schemes and status of disbursement



**One Health** Disease surveillance through hospitals, labs and selfreporting

Internet of Things

**Advanced Analytics** 

Decision support systems for resource forecasting, response recommendations, repeat process automation, smart scheduling, monitoring and explainability

\* Research: foundational block for all the components



# Glocalisation of best practices in PGR Model Site



Localised SDGs: Monitoring, Evaluations, Strategies – Data Systems, IT Systems, Solutions

Human: Screening, Equity schemes, Diseases – Surveillance & Response

Plants: Crops, Diseases – Surveillance & Response



Animals: Livestock, Vectors, Diseases – Surveillance & Response







## **Fiduciary of Services - Pando Platform Architecture**

Components of Data Fiduciary [Dynamic]



- Digital Personal Data Protection Act (DPDP) of 2023
- Differential Privacy Policy & Differential Services at Differential Levels of Health Systems



## **Fiduciary of Services - Pando Platform Architecture**



## **Publications**

- Syndromic surveillance in religious festival involving circumambulation in India (Online J Public Health Inform. 2018; 10 (1): e180. doi: 10.5210/ojphi.v10il.8972)
- Tablet based participatory syndromic surveillance at Simhastha festival in India (Online J Public Health Inform. 2018; 10(1) e182. doi: 10.5210/ojphi.v10il.8973)
- COVID-19: Global best practices in combating the pandemic. dated 17.07.2020. (<u>https://www.policycorps.org/post/covid-19-global-best-practices-in-combatingthepandemic</u>)
- Universal Health Coverage Information Technology (UHC-IT) Platform, an approach to have a population as the denominator to establish a digital cohort of the State, Tamil Nadu, 2019 - BMC Proceeding - FETPICON 2020
- Engaging the community in enhancing public health capacity to detect and report events in Tiruvallur district, Tamil Nadu, India. November 2020 (Global Security Health Science and Policy 5(1):111-120. DOI: 10.1080/23779497.2020.1831396)
- Syndromic surveillance during religious mass gatherings, southern India 2015–2018, March 2022 (Travel Medicine 47(383):102290. DOI: 10.1016/j.tmaid.2022.102290)
- Population Healthcare Approach in Establishing Denominator for Health (ISBN: 97-93-5782-794-2)
- Process evaluation of a complex, multi-level, multi-component scheme for the prevention and control of non-communicable diseases in Tamil Nadu, India: A mixed-methods protocol, https://doi.org/10.1016/j.mex.2024.102739
- Public health preparedness, syndromic surveillance, and response during the largest religious gathering at the Catholic pilgrimage center of Velankanni in South India: 2016









## **Thank You**



## **Problems & Opportunities**

### Solving for good governance at population-scale





### 20x more resources to address emerging issues



#### Migrations, Rapid Urbanization (5000 Vs 100,000 population)

- Increasing population needs assured services from government systems
- Mandate to provide services for all people residing in densely populated peri urban areas



#### NCD (400:1000) Vs MCH (15:1000) – 20 times more resources

- Silent epidemic of NCDs needs close follow-up
- Mandate to provide services for all people residing in service area



#### **Disasters and Pandemics attributed to climate change**

- Unexpected events disrupting citizens' services & livelihoods
- Inter and Intra department Coordination Disaster response, civic services, one health, care collaboration and care continuum



## Leveraging national priorities & localised SDGs



#### Unifying Data Systems for monitoring and service delivery

- Dynamix tour program (DTP) to monitor government staff working in a given location at a time ensure field visits & coordination
- Differential services at differential levels of governance systems



#### **Complimenting National Digitalisation Priorities**

- Grouping individuals as families using National ID & attaching to streets
- Mapping National Digital Stack as De Facto provider to flagship schemes



#### Technology support to kickstart population-scale initiatives

- Offline first, Mobile first, AI accelerated fiduciary platform
- Search 100+ million records (Transactions of 100+ schemes) in <1 second
- Linking open data for enriching insights through the backend process
- Support systems & technology support to link IoT devices



## Solving stakeholders' needs for sustainable adoption





## **Components of Comprehensive Service Packages**

Working with governments (de-facto service provider) on tailor-made interventions for the stakeholders, which consists of the following

- 1) Welfare services/activities/programs to Citizens
- 2) Physical, digital and or phygital solutions\* to ease the use
- 3) Capacity building to deliver the service adhering to SOPs
- 4) Helpdesk for assistance, troubleshooting and grievance redressal
- 5) Monitoring the use, performance and impact
- 6) Research for identifying best practices & Improvement scopes



\* Print & Digital media content to the public, providers & officials. Additionally, the Pando Platform is designed to handle applications, data and storage separately

## Eg: Comprehensive Service Package for diabetes





• Monitoring the SDGs & KPIs



## **Population Healthcare**

## Paradigm shift from Illness to Wellness



Access & Delivery, LHR and SHR

 Transform to line list namebased care delivery in health programs

- Establish a living baseline and denominator for risk assessment
- Enables Community participation
- Brings into focus 'User' and preventive care
- LHR (Longitudinal Health Record) Citizens, Families, Geo Units, Facilities linked with ABDM
- Learning systems for translating experiences thro' evidencebased decisions (Heuristics Embedded)



## **Concept of Population Healthcare**

"Population health is **integrated care systems** to improve physical and mental **health outcomes**, **promote wellbeing** and **reduce health inequalities** across an **entire population**, with a **specific focus on the wider determinants** of health (things like housing, air quality, safe drinking water)"









## **One Health & SDGs**

Learnings of integrating multisectoral data (abundance)

### **One Health**





One Health is an integrated, unifying approach that aims to sustainably balance and optimize the health of people, animals and ecosystems. It recognizes the health of humans, domestic and wild animals, plants, and the wider environment (including ecosystems) are closely linked and inter-dependent. The approach mobilizes multiple sectors, disciplines and communities at varying levels of society to work together to foster well-being and tackle threats to health and ecosystems, while addressing the collective need for clean water, energy and air, safe and nutritious food, taking action on climate change, and contributing to sustainable development. (https://www.who.int/news/item/01-12-2021-tripartite-and-unep-support-ohhlep-s-definition-of-one-health)

## **One Health**

### Healthy ecosystems

### **Healthy humans**

### **Healthy animals**



Food and Agriculture Organization of the United Nations







## **Geotagging of streets [2016]**

P Line List	ist DR Hosp	Lab	*Ma	ndatory fields/	அனைத்து தகவல்	ல்களும் கட்டாய
Patient Details/ நோயானி	ណីណព្វាធ់អត់រ					
Residential Address Informa	ation / வீட்டு முகவரி					
Permanent Address / நிரற்	த்தர முகவரி					
Country/ நாடு *	State / மாநிலம்*	District / மாவட்டம்*	Locality / Village / Town / ஊர் / ரொமம் / நகரம்*			
India 🗸 🗸 🗸	Tamil Nadu 🔰 🗸 🚽	Pudukkottai 🛛 🗸 🛩	Kodumbalur(VP)_Viralima	alai		
Hamlet(VP)/ Street(TP/MP) / குக்கிராமம் (டெப) / தெரு (பே	ரூராட்சி/நகராட்சி)		Landmark / வீட்டு அருகிலுள்ள முக்கிய ப	<b>B</b>		
Select Hamlet(VP)/Street	(TP/MP)		Vira			
		Clear				
House / Apartment / வீடு / குடியிருப்பு பெயர்			Door No / Pincode / கதவு எண் அஞ்சல் குறிர			
Enter House / Apartment			Enter Door No		XXX XXX	
Enter House / Apartment Temporarily residing a Diagnosis information / @pi	way from home? / தற்காலி ாயறிதல் தகவல்	கமாக வேறு முகவரியில்	Enter Door No வசித்து வருகிறீர்களா?		XXX XXX	
Enter House / Apartment Temporarily residing a Diagnosis information / நே Syndrome/Provisional diagnosis(P) நோய்க்குறி / தற்காகிக நோ	way from home? / தற்காலி/ ாயறிதல் தகவல் பறிதல்*	கமாக வேறு முகவரியில்	Enter Door No வசித்து வருகிறீர்களா? Syndrome / நோய்க்குறி		XXX XXX	
Enter House / Apartment Temporarily residing a Diagnosis information / நே Syndrome/Provisional diagnosis(P) / நோய்க்குறி / தற்காலி உறா Acute Febrile Illness (Fevr	way from home? / தற்காலி ரயறிதல் தகவல் , பறிதல்* ar)	கமாக வேறு முகவரியில்	Enter Door No வசித்து வருகிறீர்களா? Syndrome / நோய்க்குறி Acute Febrile Illiness (AFI	)	XXX XXX	
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1	ľ	IP	Susee , W/o.	Kodumbalur(VP)_Virali Pudukkottai, Tamil Nad	malai, Iu, India	40	Fema	le 03/12/2018	Acute Fel Illness (Al	orile FI)	In Admi	ssion $ $ $\vee$	04/12/2018	
2	đ	013	Sathi , Karun	Naghamangalam, Nagamangalam(VP)_Ar Tamil Nadu, India	riyalur, Ariyalur,	21	Male	04/12/2018	Acute Febrile Illness (AFI)		Dischar	ged   ~	04/12/2018	
3	đ	000104	Devi, Subra	House, Malayalapatti, Malayalapatti(VP)_Vep Perambalur, Tamil Nadi	panthattai, u, India ,621117	27	Fema	le 30/11/2018	Acute Feb Illness (Al	orile FI)	In Admi	ssion   ~	01/12/2018	
4	ľ	IP	Priya, W/o.	Ponnamaravathi(TP)_P Pudukkottai, Tamil Nad	onnamaravathy, Iu, India	24	Fema	le 02/12/2018	Acute Feb Illness (Al	orile FI)	In Admi	ssion $ $ $\sim$	02/12/2018	
5	ľ	IP	∨alli, W/o.	Konapattu(VP)_Thirum Pudukkottai, Tamil Nad	ayam, lu, India	60	Fema	le 04/12/2018	Acute Feb Illness (Al	orile FI)	In Admi	ssion $ $ $\vee$	04/12/2018	
6	ľ	67935	Kalai , W/O P	Chidambaram Non Mur Chidambaram Non Municipal(VP)_Kumarai Tamil Nadu, India	Chidambaram Non Municipal, Chidambaram Non Municipal(VP)_Kumaratchi, Cuddalore, Tamil Nadu, India			le 12/12/2018	No Syndr available	ome	In Admi	ssion   ~	12/12/2018	
7	ľ	4211	Pandu , S/o S	Melsithamur, Melsithamur(VP)_Valla Tamil Nadu, India	m, Villupuram,	50	Male	09/12/2018	Acute Fel Illness (Al	orile FI)	Dischar	ged   ~	09/12/2018	
8	ľ	55	Tharu , Murug	K.Chettipalayam Main S Kurukku Streets,, Zone 3(CO)_Tiruppur Corpn , Nadu, India	Street And 3 - , Tiruppur, Tamil	5	Fema	le 26/11/2018	Acute Feb Illness (Al	orile FI)	Dischar	ged   ~	26/11/2018	
9		00012	Srini ,	house, Pallivasal Street		18	Male	04/12/2018	Acute Fet	orile	In Admi	rrion   s	04/10/2018	



## Mapping of dehydration for placing safe drinking water, Kumbh Mela Ujjain [2016]





## WMS layer for field response [2017]



## Clusters (SatScan) & Datasets for Al Validation [2018]

#### SatScan



#### **Report to Health Authority**





# Model District learnings upscaled to State-scale [2018]



#### **Emergency Operation Center (EOC)**

**State EOC,** O/o DPH&PM, Chennai (Alert generation, District EOC activation, Monitoring ATR)

**District EOC,** O/o DDHS, Tiruvallur (Alert generation, RRT deployment, Monitoring ATR)

#### Strengthen Public Health workforce capacity (Training)

#### **District Level Data Management Platform (DLDMP)**

1) Data collection; 2) Data Management; 3) Data Analysis; 4) Data Visualization; 5) Data Reporting; 6) Support



ICMR - National Institute of Epidemiology, Chennai & DPHPM, GoTN

## **Denominator: Creating Family Folder using GIS** [2018]

- Districts 32
- Health Unit District- 42
- Blocks 385
- Corporations 12
- Municipalities 124
- Town Panchayats 528
- Village Panchayat-12260
- Ration Shops 34,773
- Population 6.7 Crores





## Environmental data & Geoserver for hosting [2019]

## Mosquito pools reported with dengue

#### Preparedness Alerts to Health Facilities

#### **GIS layers for master** standardization







## COVID-19 War Room Using GIS [2020-21]

## Clusters with fixed algorithms



#### IDW Hotspot using COVID Data



### Hotspot Analysis (Interpolation +



Inverse distance weighting (IDW), Interpolation (InterP)





## **Data Fiduciary Platform**

## **Our Digital Platform solves Scale & Sustainability**

- Bringing a mobile-first, Al-accelerated proactive care, collaboration, and advocacy to the healthcare system before and post-clinical care
- Breaking down the silos by making data reusable and interoperable by integration with ABDM
- Drives collaboration between multiple layers of stakeholders, enabling the care continuum through real-time visibility of demographics, health indicators and actionable insights for administrators to help prioritize resources and Transform statistical-led public health programs to Citizen centric care delivery
- Identify cohorts based on priority diseases and vulnerabilities, providing the foundation for personalized care models, early interventions, precision diagnostics and care loop closure with healthcare professionals







## **Ref Architecture for Population Healthcare**



## **PGR: Digital Platform**

#### **Aligned With National Digital Initiatives**

#### **Frontline Workers**

#### Citizen-centric data model:

Enables individual and family-level integration of multi-dimensional data across Socio-Economic, Demographic, Health, Environmental, Genetic, and Social determinants.

Living Population Registry\* Implemented with AI, Mobile Apps, H/W & Sensors managed through a Central War Room

Open, Secure API for Third Party Apps, Advanced Analytics, AI as a Service

**National Welfare Programs** 

Population Governance & Research allows to enable collaboration between Government, Enterprise and Private ecosystems with the citizen in the centre

- Low-income families
- Pregnant Mother's Allowance
- Elderly, Disabled, and Kidney Patients Allowance
- Higher Education Scholarship

