Appendix 1: logical framework (log frame) for study

	Summary of quantified SMART targets for each level in log frame	Indicators (2017 baseline)	Means of Verification	Assumptions
Impacts	**By 2021, people of all ages enjoy healthy lives and well-being and Nigeria's core capacity for managing national health risks is strengthened. [SDG 3 Good Health & Well-Being]**	*1a) % of births assisted by skilled health personnel*	For 1a-c): ● Baseline assessment including interviews with LGA chairmen	
	a) At least 50% of births assisted by skilled health personnel (vs. 38% now) [KPI-1]	*1b) % of women who attend ANC; and % who receive postnatal check-ups within 48Hrs of birth*	● Labour room register ● Routine HMIS form	● Availability of ANC, post-natal and family planning services in health facilities
	b) ≥70% of pregnant women attend ANC and receive postnatal check-up within 48Hrs of delivery (vs. 60% and 40% respectively now) [KPI-1]		● Quarterly CliniPAK analysis report ● Quarterly Log of decisions made by LGAs on interventions	● National & local health authorities have suitable historic/current data available, or it can be collected
	c) ≥70% of women that attend postnatal check-ups at within 42days of birth (vs. 60% and 42% now) [KPI-1]	*1c) % of women who attend postnatal check-ups within 6weeks of birth*		without disproportionate expense or difficulty
	d) At least 2% increase per year in access to family planning services [KPI-1]	*1c) % in access to FP services*		
	e) Increase (by ≥30% points compared to baseline) the state's capacity to generate and utilize e-Health data for policy and decision-making [KPI 3]	*1d) % points in national capacity to generate and utilize e-Health data for health policy and decision-making*	1d) Baseline assessment ● Quarterly CliniPAK analysis report ● Quarterly Log of decisions made by LGAs	● Health systems in rural communities will not be impacted by severe shocks (e.g. widespread epidemics).
	By 2021, remote, technologically disadvantaged communities in 3 states of Nigeria have better access to healthcare solutions and services that contribute towards healthier living and wellbeing and a stronger health system [SDG 3 Good Health & Well-Being]	*2a) № of health facilities in each state with improved health treatment standards*	2a) Qualitative interviews with a sample of 40 heads of facilities and 40 FHWs ● Qualitative interviews with service users to check standard of care and treatment ● Mid-line and end-line assessment	● Post-project monitoring and evaluation (M&E) funding is granted
	a) Service users in all 122 communities have access to improved standards of health care and treatment [KPI-1, KPI-2]			
	b) Using training e-Health solutions, 195 (i.e. 65% of) FHWs achieve a pass rate of at least 60% KPI-2, KPI-3	*2b) № of workers trained and passing.*	2b) pre-training & post-training test results	
Outcomes	1. By 2019, 10-15% improvement in achievement of core public health program goals (compared to state baseline) due to improved standards of treatment and care provision in primary health facilities [KPI-1, KPI-2]. *Note: Disaggregate by national and state-level goals.*	*1. Measured % change in state-level health program goal achievement for RMNCH Births assisted by skilled health staff Access to ANC & postnatal services Access to family planning products*	Baseline assessment conducted to verify current state of key indicators in selected LGAs of the 3 States and 'control' LGAs; 1b. Mid-line and end-line assessments	● Access to critical e-Health /innovations will trigger distinct improvements in health worker knowledge, skills and/or care provision in PHC facilities.
	2. By 2019, at least 75% pre- or post-natal daily average users (DAUs) of PHC facilities are impacted by interventions in connectivity disadvantaged regions [KPI-4]. *Note: % of DAUs is compared with 2016 baseline*	*2. % of pre- or post-natal DAUs of PHC facilities following deployment of e-Health solutions in target communities.*	2a. Baseline assessment of relevant daily users of PHC facilities 2b. Quarterly CliniPAK analysis report 2c. Mid-line and end-line assessment	● Governments in the 3 States will ensure minimum level health system support (ensure availability of family planning commodities and of ANC services) to complement connectivity enabled innovation.
	3. 3. By 2019, ≥113 of 126 (or >90%) health facilities in target LGAs generate and report data to the LGA for onward transmission to national HMIS systems (DHIS) resulting in greater use of reliable, accurate and timely data [KPI-3]	*3. % facilities generating and reporting data to LGA for onward report to into DHIS*	3a. Track № of facilities reporting data using InStrat systems in real time. 3b. Quarterly CliniPAK analysis report	
	4. 3. By April 2019, attain global reach for results of the project by disseminating knowledge products (articles, case studies, policy briefs etc.) on research gateways.	*4. № of knowledge products that attract interest of users of research gateways.*	4. Independent research gateways data for published products from the project	● Assumes policymakers and users of research gateways are willing to accept evidence in knowledge products and utilize products

	5. X organisations and Y people have increased capability to utilise space expertise in Nigeria	*5. No of organisations receiving capacity building from Inmarsat*		
	6. Nigeria drives demand for space expertise of £X	• *Value of export for Inmarsat from previous year (£/yr); Forecast value of export opportunity for Inmarsat at 2020 (£/yr).*		
Outputs	1. 300 health workers (210 in connectivity disadvantaged regions) receive 40-60 hours of video based training annually on MNCH [KPI-2]	• № of workers receiving 40-60Hrs of training annually	1-2. Track and measure № of staff trained, & test scores using InStrat systems in real time, supported by periodic M&E	• Government in 3 states allows FHWs to remain in selected health facilities for the duration of e-Health project
	2. At least 195 health workers trained (or 65% of workers) demonstrate marked improvements in post-training assessment scores [KPI-2]	2. Post-training assessment scores		
	3. 126 health facilities (75 in disadvantaged regions) are able to electronically generate and transmit facility level health utilization for real time aggregation to LGA Secretariat and for "onward transmission" to national HMIS systems (DHIS-2) [KPI-4].	3. № of PHC facilities transmitting data to LGA for onward transmission to the national HMIS system (DHIS-2)	3. Track facility data management using InStrat systems in real time, supported by periodic field M&E (Private)	• Viable solutions with potential for scale-up identified in partnership with PSHA and others
	4. By 2021, publish two articles and attend two international conferences to disseminate findings of project	4. № of articles published and conferences attended	4. Check journals/ websites for knowledge products; check catalogues of abstracts	• Quality of products depends on asking the right questions at the input stage, which depends on close collaboration with policy makers and research community
	5. By 2021, produce and disseminate at least one each of case studies, presentations, policy briefs and blogs (should be open access).	5. № of other knowledge products produced and disseminated	5. Check №/ types of products generated and disseminated	
	6. At least 1 other application solutions emerging to leverage Satcom platform to resolve challenges within and beyond health [SDG 9 & SDG 17] [KPI-5]	6. № of last mile solution emerged and supported by stakeholders	6. Letter of support from stakeholders for new application	• The ICT environment in Nigeria fosters participation of stakeholders
	7. At least 85% availability of satellite equipment during working hours SDG 9	7. Hours of availability of equipment	7. Weekly satellite availability report	• Normal weather conditions over the measurement period.
Key Activities	InStrat's tablet devices deployed to 126 health facilities in 3 LGAs respectively in Ondo, Kano & Federal Capital Territory. 75 of the facilities are connected via Inmarsat's Broadband Global Area Network link based SatCom hardware and backhaul connectivity and 51 are connected via terrestrial coverage provided by mobile network operators; CliniPAK and VTR deployed across all 126 health facilities; and training conducted. Functional partnership established with key stakeholders.			
Summary of inputs	126 Android-based tablet devices; 75 GBAN link terminals; 150Gb monthly satellite bandwidth; Hours of resource consultants to undertake delivery support provided by Instrat, M&E and research support led by University of Leeds. Governance, Program Management and Program Administration tie led by Inmarsat			