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UAV Stakeholder & Community Engagement are Critical to the Deployment of Unmanned Aerial Vehicles (UAVs) for Public Health Transport: A Case Study from Malawi

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Starting at the Last Mile



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Introduction and Background



Dowa communities observing a UAV during sensitisation

- Emerging UAV Technology already in use for commercial and recreation purposes in Malawi
 - ✓ RPA = Remote Piloted Aircraft
 - ✓ UAV = Unmanned Aerial Vehicle
- Humanitarian/Drones for health are being considered in some countries for integration into traditional delivery systems
- Malawi's UAV background:
 - One of Africa's only drone testing corridor
 - Supportive UAV regulatory framework
 - Supportive and coordinated government & stakeholders
 - Conducted several UAV studies

Unmanned Aerial Vehicle (UAVs) in Malawi



- Grand Challenges Canada (GCC) funded study on potential use of UAVs to transport blood and oxytocin for maternal health emergencies
- Led by Ministry of Health with Malawi Blood Transfusion Services (MBTS), Pharmacy, Medicines and Poisons Board (PMPB), VillageReach and Vayu (an UAV company)
- Study objectives:
 - 1) Assess product (Oxytocin and blood) quality
 - 2) Conduct cost analysis and develop business case
 - 3) **Assess stakeholder perceptions and attitudes to conduct robust community sensitization**



Captain Hastings Jailosi (Chief Flight Operations Inspector for Malawi Department of Civil Aviation) conducts community sensitizations in Dowa and Lilongwe districts, April 2018; PHOTO CREDIT: Charles Matemba for VillageReach



Drones for Health in Malawi

□ Cargo UAVs - test flights

- ❖ Lab sample transport (EID) study, UNICEF/Matternet & VillageReach (cost analysis), 2016
- ❖ Cold chain transport of blood and oxytocin for maternal health emergencies, VillageReach, Vayu, MoH, MBTS, PMPB, funded by Grand Challenges Canada, 2018

□ Other initiatives

- ❖ Aerial mapping in Salima (flooding) and Lilongwe (cholera), UNICEF, 2018
- ❖ Network assessment & system design for transport of EID samples and test results - four network options, UNICEF and JSI, 2018
- ❖ Various flights (beyond health) at one of Africa's only Drone Testing Corridors



UAV Stakeholder Landscape

- ❑ Ministry of Health (MoH), Department of Civil Aviation (DCA), Defense, Councils, Community members and leadership
- ❑ By Level
 - ❖ National level
 - ❖ District level
 - ❖ Community level
- ❑ By Role:
 - ❖ Regulators – provide authorisations
 - ❖ DCA, MoH(relevant parties and boards)
 - ❖ Operators
 - ❖ Local stakeholders
 - ❖ Council and Community Leadership
 - ❖ Community members and special interest groups





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Stakeholder Engagement

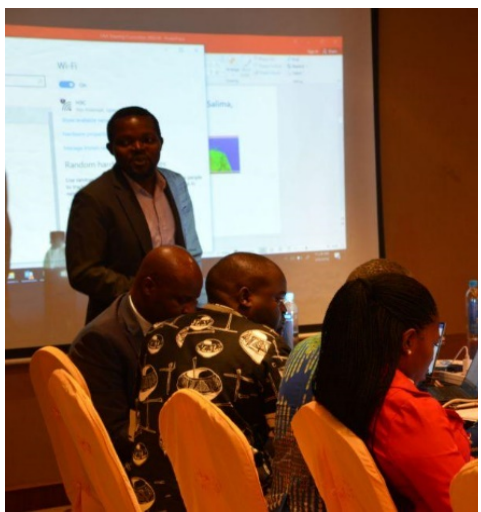
- Step 1: Steering Committee (national level)
- Step 2: Focus Group Discussion (multi level)
- Step 3: Community Sensitisation Strategy development (internal)
- Step 4 : Community Sensitisation Strategy implementation (community level)



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Step 1: UAV Steering Committee Meeting





Step 2: Stakeholder Focus Groups Discussions

- ❑ 10 focus group discussions (FGDs) conducted
- ❑ Total of 130 stakeholders
- ❖ 1 national level FGD including government, private and multilateral organizations
- ❖ 3 District/Council level FGDs in Lilongwe and Dowa Districts
- ❖ 2 Health Facility level FGDs
- ❖ 2 Community Leaders FGD
- ❖ 2 Women FGD



Stakeholder Assessment – Methods



National FGD conducted during the first RPA Steering Committee meeting in Lilongwe, February 2018; PHOTO CREDIT: Anna Shaw for VillageReach

- Focused on UAV knowledge, perceptions and attitude:
 - ✓ UAV use in general
 - ✓ UAV to transport medicines and other medical supplies
 - ✓ UAVs utilisation to transport blood for transfusions in emergencies (as a socio-culturally sensitive product)



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Step 3: Community Engagement Strategy

Guided by FGD findings:

- Coverage: 1 km radius
- Government-branded
- Government led: District Health Promotion teams, Civil Aviation, local theatre groups



Multi-media road shows;

- Drone demonstrations
- Theatre, acrobatics
- Posters distribution
- PA systems announcements
- Q&A sessions with communities



Step 4: Area 25 and Dowa Sensitizations





Stakeholder Engagement: Flight Day Implementation

- ✓ Lilongwe airport - flight schedule in hand
- ✓ Ministry of Defense & Embassies informed
- ✓ Local police & traffic police present
- ✓ District ambulance on standby
- ✓ Oxytocin from Central Medical Store on hand
- ✓ Potassium Point of Care from Central Hospital on hand



Stakeholder Engagement Value

- Stakeholder engagement helped with the following:
 - ✓ identify contextual issues, awareness gaps and socio-cultural sensitivities to take into consideration
 - ✓ inform a **sensitization strategy** that addressed real and contextual issues on the ground
 - ✓ ensure stakeholders gained a balanced view of the research process, which led to trust and support at all levels when study did not go as planned (UAV crash)
 - ✓ Create platform for expectation management
 - ✓ Supported stakeholder identification and network establishment



Key Findings & Strategy Implications

Assessment Aspect

Awareness of RPAs (drones)

Summary of Findings



Sensitization Approach

- Low awareness at community level compared to health workers, community leaders and district teams
- Higher awareness in urban (Area 25) than rural area (Dowa)
- Fully explain drones, study, research process, including potential benefits and risks
- Reach out to women and children (schools)
- Spend 3 days sensitizing in Dowa vs. 2 days in Area 25



Key Findings & Strategy Implications (2)

Assessment Aspect

Perceptions and Acceptance

Summary of Findings

- Generally positive about using RPAs to transport emergency health products
- Biggest potential benefit: time saved in delivering life-saving health products
- Risks: disruption of daily activities, technology safety, privacy concerns, associations with the supernatural
- District teams concerns about sustainability of integrating RPAs into ground transport system



Sensitization Approach

- Leverage potential 'time saved' by RPA in sensitizations
- Highlight the need: maternal deaths
- No flying on weekends
- Involve police during test flights



Key Findings & Strategy Implications (3)

Assessment Aspect

Summary of Findings



Sensitization Approach

Potential misconceptions

- History of rumors spreading ('blood suckers', elections rigging)
- Be sensitive, proactive and prevent misconceptions from developing, rather than attempting to manage them after public opinion is stirred

- Engage community/district structures, health workers
- Blood and medicines flown are 'study products'; will not be given to patients
- Products handled by gov't health experts (MBTS, PMPB, health workers)

Privacy concerns

- Drone 'spying' on people

- No camera on board
- Show drone up close



Key Findings & Strategy Implications (4)

Assessment

District and national issues

Summary of Findings

- Limited payload, distance
- Cost of UAVs
- Poor weather conditions



Sensitization Approach

- Technology will continue to advance over time
- Costs being investigated
- Business case underway
- Flights authorized by DCA

Guidance

- Branding: Gov't of Malawi
- Remind crowds of safety around drone
- Traffic safety (crowds especially children and drivers/cyclists)

- Local ownership
- Secure perimeter
- Traffic police
- Sensitize all

Conclusions

- For new technologies, community sensitizations are worth the time and cost- they are necessary!
- Community Sensitisation should include interactive sessions for feedback
- Understanding awareness gaps and perceptions helps shape effective sensitization strategies for new and highly visible innovations
- Different stakeholders = need for customized messaging and approaches
- Honest stakeholder engagement guarantees support even when research does not go as planned
- Gov't leadership, championship and ownership is critical



Community sensitizations and drone demonstrations in Lilongwe and Dowa districts;
PHOTO CREDIT: Luciana Maxim and Charles Matemba for VillageReach



Acknowledgements: UAV Malawi Study Team

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Malawi Blood Transfusion Services (MBTS)	<ul style="list-style-type: none"> ▪ Dr. Stephen Njolomole ▪ Mr. James Palapandu 	<ul style="list-style-type: none"> ▪ Medical Officer ▪ Chief Laboratory Officer & Head of Lilongwe Blood Transfusion Centre
Pharmacy, Medicines and Poisons Board (PMPB)	<ul style="list-style-type: none"> ▪ Mr. Steven Chapima 	<ul style="list-style-type: none"> ▪ Chief Drug Analyst and Head of Laboratory
Vayu	<ul style="list-style-type: none"> ▪ Mr. Daniel Pepper ▪ Ms. Julie Bateman 	<ul style="list-style-type: none"> ▪ Founder and CEO ▪ Director of Operations
VillageReach	<ul style="list-style-type: none"> ▪ Ms. Carla Blauvelt ▪ Mr. Charles Matemba ▪ Ms. Luciana Maxim ▪ Mr. Matthew Ziba 	<ul style="list-style-type: none"> ▪ Country Director (Co-PI) ▪ Supply Chain Program Officer ▪ Sr. M&E Advisor ▪ Sr. Program Manager, Supply Chain
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Malawi UAV (RPA) Regulatory Milestones

- ❑ **Jan 2016:** Remote Pilot Aircraft (RPA) Regulations Technical Committee formed (Department of Civil Aviation)
- ❑ **Dec 2016:** Issuance of Aeronautical Information Circular (AIC) on RPA
- ❑ **May 2017:** Training and licensing of Technical Committee by Federal Aviation Administration (FAA) in USA
- ❑ **Jun 2017:** RPA regulations drafted (learning from South Africa, Zimbabwe, Kenya, Rwanda and USA) & Launch of Kasungu Drone Testing Corridor
- ❑ **Oct 2017:** Placement of public notice in print and electronic media calling for interested parties to comment on the draft regulations
- ❑ **Dec 2017:** Nationwide consultation meetings with the public
- ❑ **Feb 2018:** First meeting of the multi-sectoral UAV Steering Committee
- ❑ **Apr 2018:** Second ad-hoc meeting of the UAV Steering Committee
- ❑ **Jun 2018:** RPA regulations submitted to Ministry of Justice for gazette



National UAV Steering Committee Membership

- ❖ Department of Civil Aviation (chair)
- ❖ VillageReach (secretary)
- ❖ Ministry of Health (RH, HTSS, Diagnostics, Preventive, Clinical, KCH)
- ❖ Malawi Blood Transfusion Service (MBTS) – study partner
- ❖ Malawi Pharmacy, Medicines and Poisons Board (PMPB) – study partner
- ❖ Ministries of Home Affairs, Defense, Justice, Education (Dept. of Science and Technology)
- ❖ Departments of Information, Surveys, Disaster Preparedness
- ❖ District/City Councils and Police
- ❖ UNICEF
- ❖ Drone operators
- ❖ Lilongwe University of Agriculture