Proposal: Portable Soldier Distress and Rescue Communication Device (PS-DRCD)

Submitted to: NASENI Research Commercialization Grants Programme (NRCGP)
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1. Project Title

Development and Commercialization of a Portable Soldier Distress and Rescue Communication Device (PS-DRCD)

2. Background and Rationale

Nigeria's security landscape is challenged by asymmetric warfare, insurgencies, and peacekeeping missions that expose soldiers to high risks of isolation, injury, or capture. Timely identification and rescue of soldiers in distress is often hindered by communication breakdowns, lack of precise geolocation, and absence of soldier-level monitoring tools.

Current battlefield communication systems are bulky, susceptible to interception, and fail to provide real-time soldier status. To bridge this critical gap, we propose the Portable Soldier Distress and Rescue Communication Device (PS-DRCD): a compact, wearable, and locally developed system that silently transmits distress signals, geolocation data, and biometric health information to headquarters for rapid rescue deployment.

This innovation supports Nigeria's quest for indigenous defense technology, aligns with the **Renewed Hope Agenda**, and strengthens self-reliance in defense manufacturing while offering spillover benefits to civilian sectors such as disaster response, mining, and oilfield safety.

3. Project Goal

To design, prototype, and commercialize a portable distress communication device that enhances battlefield survivability, strengthens Nigeria's defense capabilities, and creates new industrial opportunities through local manufacturing.

4. Objectives

1. **Design and Prototype:** Develop a soldier-wearable distress device integrating GPS, encrypted communication, and IoT sensors.

2. **Biometric Monitoring:** Incorporate sensors for heartbeat, motion, and impact detection to assess soldier well-being.

3. **Command Dashboard:** Create a secure headquarters dashboard for real-time geolocation and soldier status monitoring.

4. **Field Validation:** Conduct pilot testing with the Nigerian Armed Forces under simulated combat conditions.

5. **Commercialization:** Establish scalable production pathways through partnerships with NASENI and DICON.

5. Innovativeness and Novelty

The PS-DRCD introduces several innovative features:

- **Silent and secure signaling:** No sound or light alerts that could expose the soldier.
- **Dual communication modes:** Encrypted satellite transmission + mesh radio networking among nearby soldiers.
- **Integrated biometrics:** Continuous monitoring of vitals and movement to detect injury or immobility.
- **Compact and rugged design:** Wearable on the body or integrated into uniforms/helmets.
- **Indigenous production:** Developed and manufactured in Nigeria, reducing foreign dependency.

Unlike existing military radios, PS-DRCD is designed specifically for **emergency rescue operations**, making it a novel addition to Nigeria's defense toolkit.

6. Commercial Viability & Strategic Partnerships

The Portable Soldier Distress and Rescue Communication Device (PS-DRCD) has clear commercial and strategic potential across defense and civilian sectors in Nigeria and West Africa. The Nigerian Armed Forces, Police, Civil Defence, and private security firms represent immediate markets for deployment. Civilian applications include disaster response, oil & gas safety, and mining operations, providing a broad commercialization horizon.

Key Partnerships for Success:

- **NASENI:** To provide technical coordination, research commercialization framework, and industrial incubation support.
- **DICON (Defence Industries Corporation of Nigeria):** As Nigeria's state-owned defense manufacturer, DICON offers the ideal platform for scaling PS-DRCD into mass production.

Its existing infrastructure, distribution channels, and expertise in defense logistics will ensure rapid adoption and sustainability.

- **Telecommunications Providers:** For integration of secure communication backbones (satellite/mesh networks).
- **Nigerian Armed Forces & Security Agencies:** For pilot testing, validation, and long-term adoption.
- **Private Security & Civilian Markets:** To expand usage beyond the military, ensuring wider impact and commercial sustainability.

This **NASENI–DICON partnership** will not only strengthen Nigeria's defense autonomy but also stimulate local job creation, build indigenous technical capacity, and open export pathways to other African nations seeking affordable, reliable soldier-safety technologies.

7. Technology Readiness

- **Current TRL:** 3 (proof of concept demonstrated using IoT modules for GPS and encrypted signaling).
- **Target TRL:** 7 (field-tested prototype in operational environment).

Preliminary tests have validated encrypted GPS transmission and feasibility of integrating biometric sensors, providing a solid foundation for rapid scaling.

8. Methodology

Phase 1 (Months 1–3): Detailed design, component sourcing, and simulation.
Phase 2 (Months 4–7): Prototype development and lab testing.
Phase 3 (Months 8–12): Field trials with Nigerian Armed Forces under controlled conditions.
Phase 4 (Months 13–15): Device refinement, ruggedization, and dashboard optimization.
Phase 5 (Months 16–18): Commercialization planning with NASENI and DICON for large-scale production.

9. Expected Outcomes

- Fully functional PS-DRCD prototype.
- Secure GIS-enabled Command Dashboard.
- Patent filings and IP protection for local ownership.
- Field validation results with the Nigerian Armed Forces.
- Commercialization roadmap and production partnership with DICON.

- Expanded civilian applications in safety-critical industries.

10. Budget and Timeline

- **Estimated Budget:** ₦70 million.
- **Timeline:** 18 months (design → prototype → testing → commercialization).

11. Alignment with Renewed Hope Agenda

This project aligns directly with the **Renewed Hope Agenda** by:

- Strengthening Nigeria's **national security** and defense independence.
- Promoting **indigenous innovation** and technology commercialization.
- Creating **employment opportunities** in defense manufacturing and ICT.
- Enhancing Nigeria's role as a **regional leader in defense technology**.

12. Conclusion

By supporting the PS-DRCD initiative, NASENI will pioneer a transformative defense technology that improves soldier safety, enhances military capacity, and promotes sustainable industrial development. Through a **NASENI–DICON partnership**, this project embodies the Renewed Hope Agenda, positioning Nigeria as a regional hub for affordable, innovative soldier-safety technologies with global export potential.

13. Visual Concept Diagram

Soldier (Distress Signal)

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PS-DRCD Device

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Encrypted GPS & Mesh Network

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Headquarters Command Dashboard

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Rescue Team Deployment