Operational Employment of Unmanned Aerial Systems in Contemporary Armed Conflicts:



Ethiopia`s Experience



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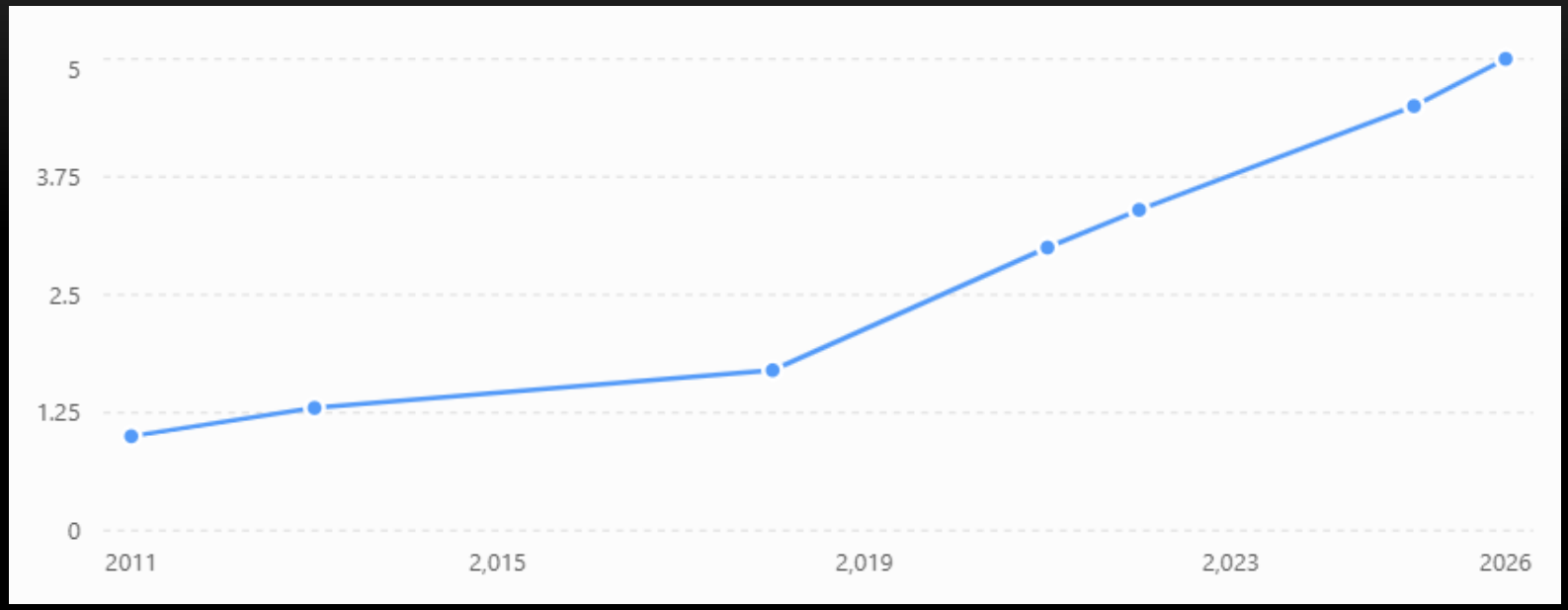
- Introduction
- Unmanned Arial assets
- Concept of operation & implementation
- Lessons to be taken

INTRODUCTION

- In contemporary armed conflicts, the speed of acquiring and processing information and making decisions is becoming increasingly critical.

- Unmanned Aerial Vehicles(UAVs) have brought a significant changes in precisely making decision process.

INTRODUCTION



- The use of drones and the capability to employ them have grown significantly.
- An asymmetric approach: involving the use of small, long-range drones.

INTRODUCTION:
EVOLUTION OF THE “UAS” TECHNOLOGY

- **External pilots – AI**

  (A significant shift in modern combat employment)

- **From standalone assets into integral components of the "reconnaissance–decision-making–strike" chain.**

- **UAV → target identification → data transmission → strike asset guidance → result assessment.**

INTRODUCTION

- **Ethiopia demonstrates UAVs mainly as:**
  - ✓ **Reconnaissance**
  - ✓ **Communications**
  - ✓ **Command and control,**
  - ✓ **Strike capabilities, and**
  - ✓ **Battle damage assessment.**

INTRODUCTION



- **Proven experience**
  - ✓ **Training (rapid pace of technological change)**
  - ✓ **Manufacturing**
  - ✓ **Battelle**

UNMANNED ARIAL VEHICLE: ASSETS

- Know how and R & D capabilities
- Production facilities, and good geographic location
- Testing polygons
- Agile Logistics and flexible marketing skims
- Combat proven experience

CONCEPT OF OPERATION (ETHIOPIA`S EXPERIENCE)

THE FPV DRONE

- Significantly altered the nature of the warfare.
- They are relatively inexpensive, small and manoeuvrable,
- Capable of real-time operator control; and
- Deployable on a large scale at the tactical level

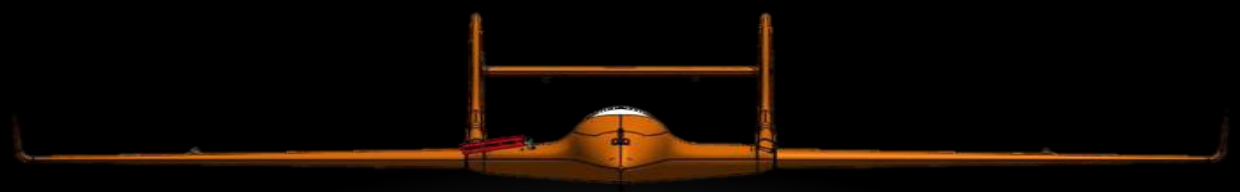
- **FPV platforms Enhances the capabilities of small units (Tactical-level strike missions)**



MANUFACTURE – TRAIN - OPERATE

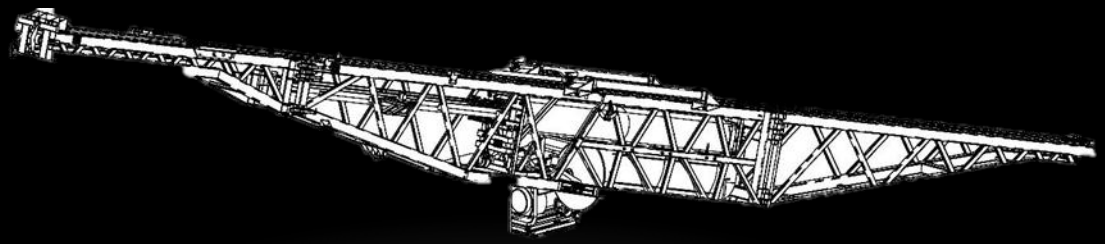
THE JET-POWERED "SHAHED" VARIANTS

- Jet-powered "Shahed" variants are faster than the earlier propeller-driven models,
- Creating additional challenges for enemy air defences.
- One-way attack and Long-range strikes





MANUFACTURE – TRAIN - OPERATE



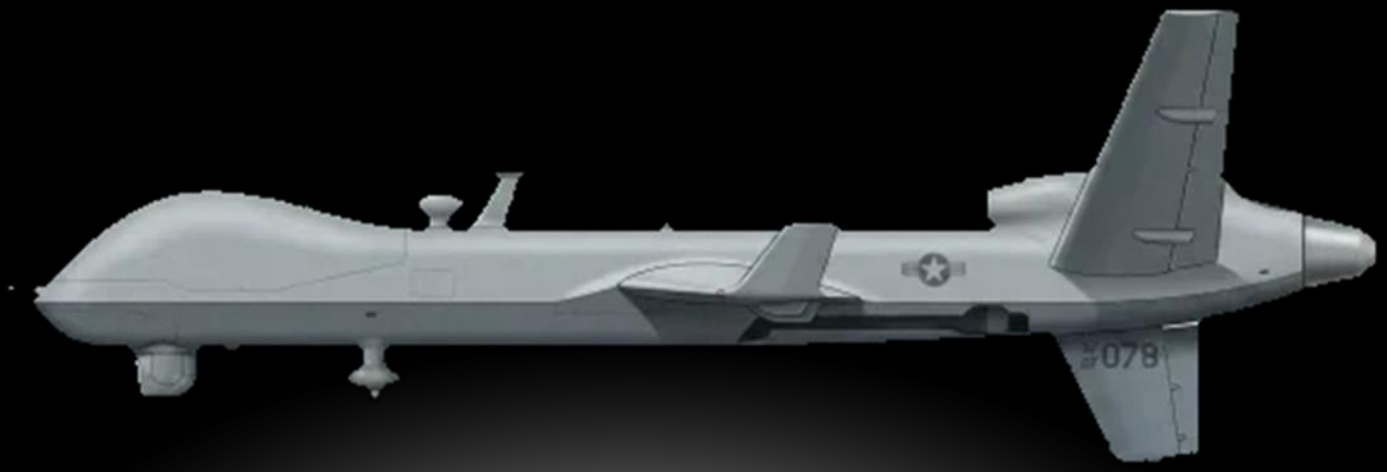
RECONNAISSANCE UAVS

- Surveillance and data collection Improves situational awareness
- Long-duration surveillance Provides information over a wide area



RECONNAISSANCE UAVS

- Autonomous/semi-autonomous systems
- Navigation and target identification elements
- Reduce operator workload



ETHIOPIA`S LONG-RANGE UAVS:
A NEW STRATEGIC DIRECTION

- **The use of UAVs is not limited to the front line.**



RESEARCH & DEVELOPMENT: A NEW STRATEGIC DIRECTION

- **Artificial intelligence and autonomy,**
- **Technologies such as: computer vision; automatic object recognition; navigation; automatic route planning; signal processing;**

RESEARCH & DEVELOPMENT: A NEW STRATEGIC DIRECTION

- **Operator decision support are being developed.**
- **Complete reliance on external supplies in the UAV sector could pose a long-term technological risk**
- **In our context, we implement a partial autonomy (realistic and advanced approach in practice).**

LESSONS TO BE TAKEN

- **The state of technology selections should be specific to the geographic, economic, and military conditions.**
- **Viewing UAVs as a system rather than a standalone asset. (Integrate UAV units in terms of information exchange with reconnaissance, communications, air defence, and electronic warfare systems.)**
- **Research and development (**it is essential to establish a National Technological Base)



Ethiopian Air Force 92th Anniversary

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Thank you !