



# U.S. ARMY COMBAT CAPABILITIES DEVELOPMENT COMMAND SOLDIER CENTER

PIA Second Regular Meeting Government Systems Committee  
Personnel Airdrop Science and Technology

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# INTRODUCTION



- **Discussions today by Government officials involved in the 3<sup>rd</sup> Party Collections Services Acquisition should not be considered a guarantee of the Government's course of actions in preceding with the requirement**
- **The information shared today reflects current Government Intentions and is subject to change based on a variety of circumstances. The formal solicitation, when issued, is the only document that should be relied upon in determining and responding to the Government's requirements**
- **Any costs incurred prior to receipt of a contract signed by the contracting officer is at your own expense**
- **No recording devices are allowed during this presentation**



# PERSONNEL AIRDROP



- **Static Line Enhancements (SLE)**
  - Explore technologies to support modernization of T-11
  - Knowledge transfer to support requirements development and future efforts



- **Combination High Altitude JPADS and Personnel Airdrop**
  - Increase safety of combination airdrop, through mission planning, communications and training



- **Personnel Infiltration/Exfiltration System (PIES)**
  - Personnel Insertion in Anti-Access/Aera Denial (A2/AD) Environment
  - Powered Paraglider, single Soldier & equipment, 75-500km



- **Canopy Flight Assistance**
  - Develop technologies to assist users with canopy flight

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		PROJECT MILESTONES	FY20	FY21	FY22	FY23	FY24
IRF	SLE		3	[Green bar from FY20 to FY24]			6
	SLE Phase 2/Advanced Materials					3-4	
Small Unit	Combination Airdrop		5	[Green bar from FY20 to FY22]		6	
	PIES		4	[Green bar from FY20 to FY24]			6
	Canopy Flight Assistance					4	

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# STATIC LINE ENHANCEMENTS



- **Purpose:** Develop personnel airdrop enhancements that save lives while enabling rapid Warfighter insertion for the Joint Forcible Entry and personnel infiltration missions
- **Why:**
  - Combined size/weight of Soldiers and Individual Equipment have increased, resulting in a reduction of combat power
  - Desire for reduced exposure through more rapid deployment/stabilization and lower exit altitude
- **Description:** Research and development focused on the following
  - Alternative deployment methods (main & reserve)
  - Reduction of altitude loss before main deployment
  - Reduction of the system weight and size
  - Improved harness comfort/weight distribution
- **Status:**
  - Market Research: Industry Demonstration and Industry Day/Request for Information in FY21
  - Seating and Harness Studies: data collection to characterize loss of paratroopers and current harnesses
  - Concepts to inform future systems: deployment methods, modification/control of parachute during descent, alternative materials for harness/canopy construction

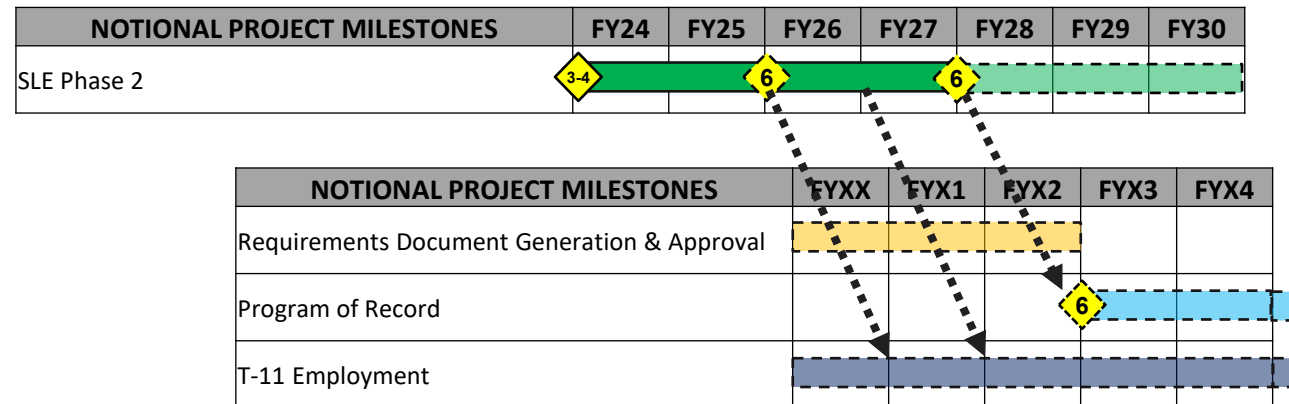


# STATIC LINE ENHANCEMENTS – PHASE 2

## NOTIONAL PROJECT PLAN

- **Purpose:** Follow on effort in support of A-CDD/CDD development for T-12
- **Why:** Address TBD A-CDD Desired Capabilities, mature to Technology Readiness Level 6
- **Expected Effort:**
  - Year 1: Concept Development (Whitepapers)
  - Year 2: Main Canopy Development and Experimentation
  - Year 3: Reserve Canopy Development and Experimentation
  - Year 4: Integration/Full System Development and Experimentation

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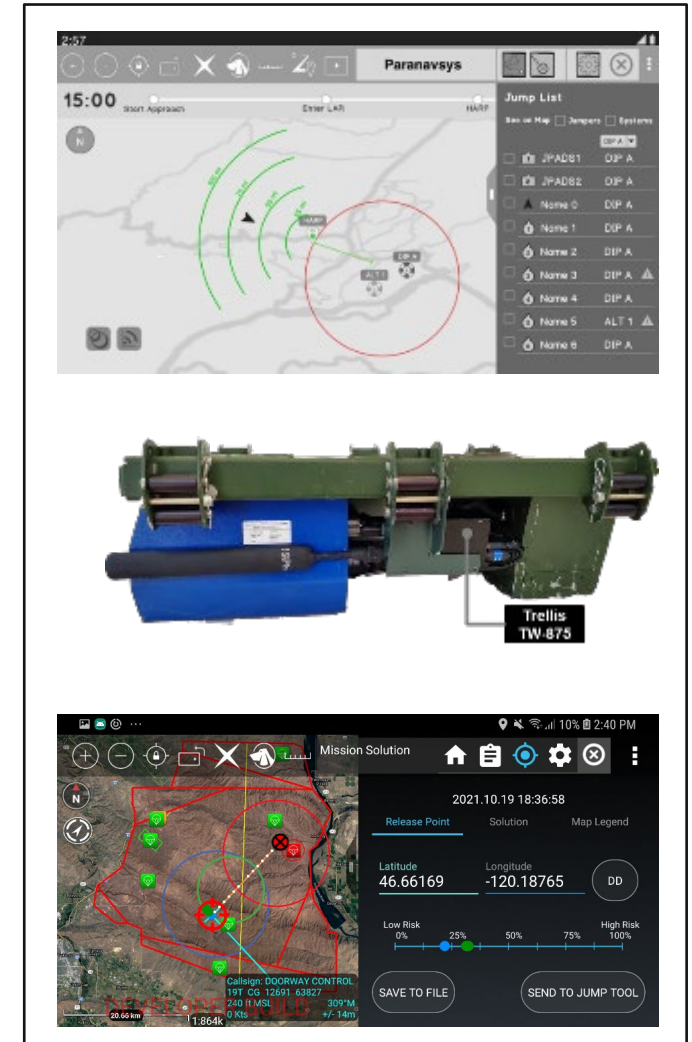
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# COMBINATION AIRDROP



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- **Purpose:** Increase safety and effectiveness of combined cargo and personnel insertions
- **Why:**
  - Mission planning uses different platforms/calculations; requires manual computation of the release point
  - No communications for programming, tracking and retargeting cargo systems
- **Description:**
  - Develop simplified, offline mission planner; available at the unit level on current user hardware/software
  - Enable communications and teaming
- **Status:**
  - Project complete and transitioned to PdM SCIE in FY22
  - May have follow-on Technical Maturation Initiative funded effort in FY25-26



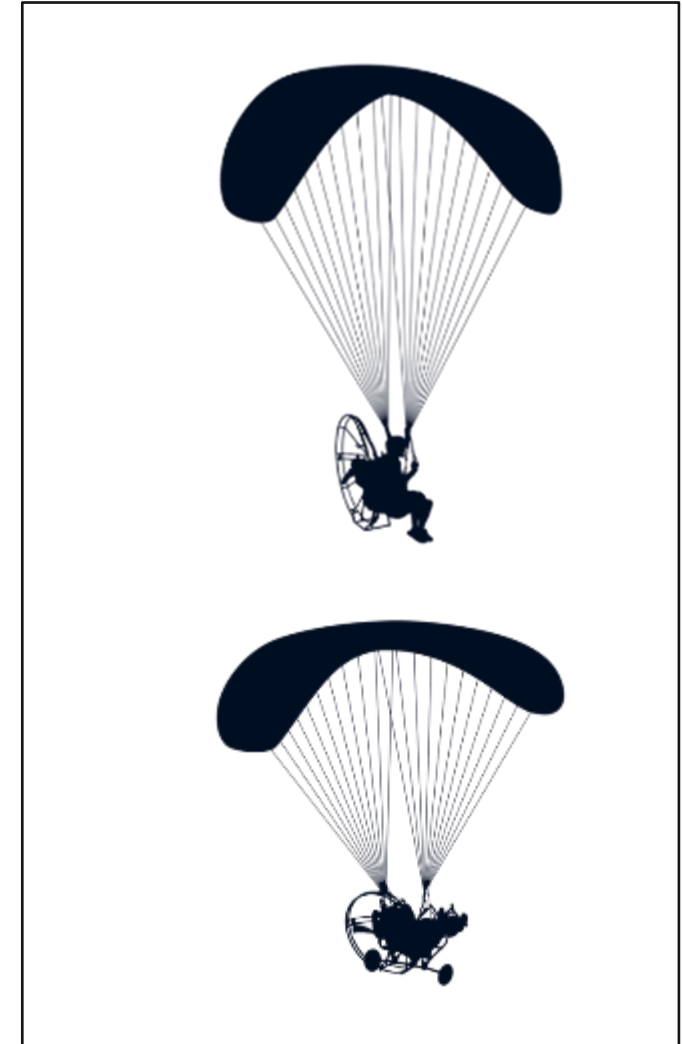
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# PERSONNEL INFIL/EXFIL SYSTEM (PIES)



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- **Purpose:** Provide a unit organic, high offset/standoff capability for personnel infiltration, battlefield mobility and/or exfiltration in an Anti-Access Area Denial environment
- **Why:**
  - Significantly increase the range over traditional ram-air infiltrations (over 75 kms)
  - Improve probability of mission success and safety of flight with assistive technologies to augment or replace user actions to deploy, navigate and land
- **Description:**
  - Develop/employ commercial off the shelf based prototypes to demonstrate capabilities and support Tactics Techniques and Procedures development
  - Develop mission planning and navigational tools to support threat identification, mission analysis and execution
- **Status:**
  - Modeling of development vehicle to predict performance: ~ 300 kms range at 300 lbs
  - Demonstration of optional piloted controls and waypoint-based navigation
  - Operational demonstration at Army Expeditionary Warrior Experiment



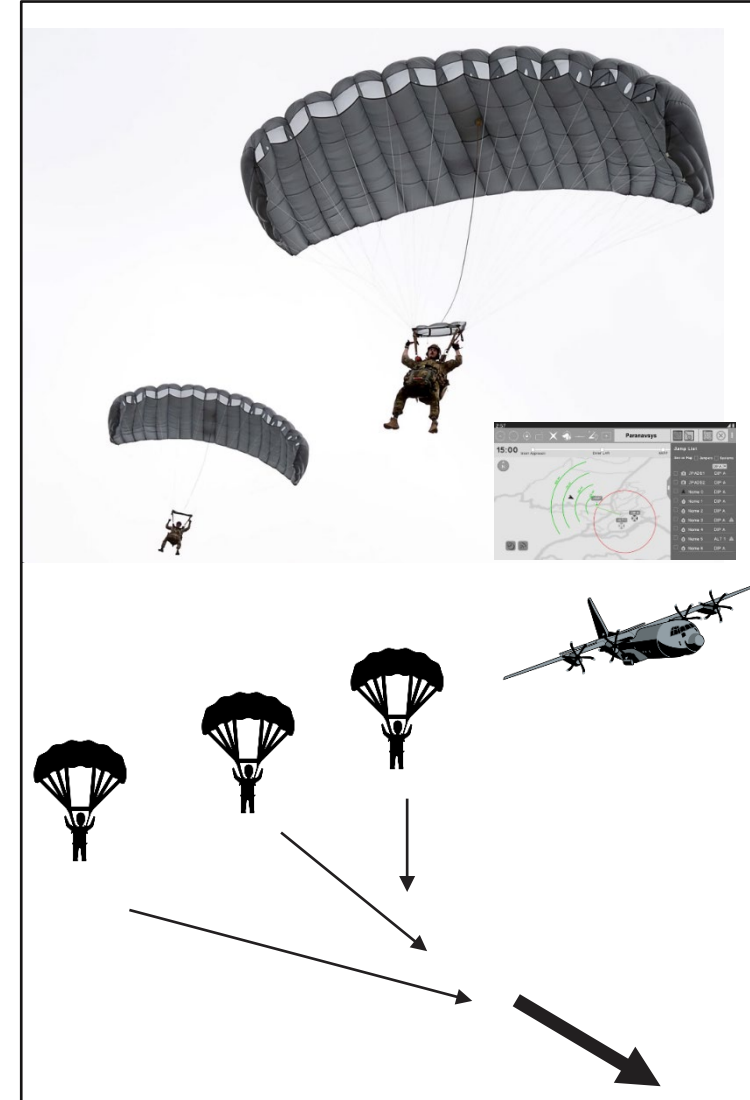
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# CANOPY FLIGHT ASSISTANCE



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- **Purpose:** Develop technologies to assist/automate canopy flight for course navigation and stack management
- **Why:** Improve performance of small unit high altitude infiltration teams
  - Increase offset by automatically orienting all jumpers in direction of dropzone immediately after deployment and reducing user input/corrective actions during flight
  - Mitigate jumper exposure (hands above head, poor circulation, etc.) by reducing need for active canopy control starting immediately after canopy deployment
- **Description:**
  - Integrate automated control mechanisms into RA-1 main canopy for demonstration
  - Initial assessment of feasibility of concept/performance, failure modes, emergency procedures, etc.
- **Status:**
  - Planning and initial concept development FY23
  - Feasibility assessment FY24



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# HIGH LEVEL INTEREST AREAS (FUTURE)



## ▪ **ADVANCED CANOPY AND HARNESS MATERIALS**

- Lightweight and/or low bulk canopy material to reduce weight and pack volume/depth
- Harness comfort and jumper performance, lighter weight harness/hardware components:
  - Modular design common to low altitude and high altitude parachute systems
  - Reducing open shock load requirement for harness and or equipment attachments points
  - Improved sizing/fitment, lighter weight
  - Increased serviceability/maintainability: replaceable components, rigging and JMPI visual indicators, one way connectors

## ▪ **CONTROLLED DEPLOYMENTS**

- Develop technologies or methods for increasing reliability of higher aspect ratio canopy deployments
- Controlling canopy opening based on jumper position (open at beneficial orientation)
- Openings at higher and lower deployment altitudes (e.g. up to 35,000 ft for high offset, below 500 ft for mass tactical)

## ▪ **JUMPER SA**

- Heads-up display (HUD) and/or chest mounted, integration with full face mask/O2
  - O2/Biometric monitoring
  - Communications and proximity tracking
- Incorporate GPS denied technologies when available at SWAP-C
- Low observable technologies