Mission Planning Through Visualization and Integrated Tools

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Briefing Overview

- Corporate Overview
- Core Competencies
- Current and Past Programs
- JACOBS Contact Information
Corporate Overview

• One of the world’s largest and most diverse providers of professional technical services

• Full-spectrum support to industrial, commercial, and government clients across multiple markets

• In December 2009, TYBRIN, a leading supplier of mission planning solutions, systems engineering, software development, modeling and combat environment simulation, engineering and testing, range safety, and other services to the United States DoD, NASA, and other government clients became a part of Jacobs Technology Inc.
Geographic Diversity

- Global Locations
  - 200+ locations, 25+ countries
  - North America, South America, Europe, the Middle East, India,
  - Australia, Africa, and Asia.
Current & Past Programs

C-130J Block 6, Block 7 AWEs & MPEs
- Norway
- India
- Oman
- Iraq
- Canada
- South Korea
- Italy
- Qatar

C-17 AWEs & MPEs
- Australia
- NATO
- Canada
- United Kingdom
- Qatar
- India
- UAE

C-130 SCNS AWE
- Poland

KC-135 AWE
- Turkey

C-130H
- Belgium
- New Zealand

P-3
- Portugal

CAT
- Australia

CAT MPE
- JMPS based for C-130J, C-130-30J, C-27J, C-17
Core Competencies

- Software, Security, & Systems Engineering
- Software Test Engineering
- Distributed systems
- CNS/ATM Compliant Systems
- Framework and Common Component development
- Configuration Management and CMMI Level 3 Processes
- Technical Writing and Computer Based Training/Computer Aided Instruction
- Project Management and Earned Value
Visualization & Integrated Tools

Optimization
- PFPS
- JMPS
- TASM
- AWEs/UPCs
- CAT
- AANT
- GFP
- Specialized CC’s

Threats

Advisories

Weather

Navigation Data

Mission Parameters

Mission Planning
Decision
Capabilities

Data Load
To Aircraft Avionics

Mission Execution
Aerial Refueling
Airdrop & Airlift
Visualization & Integrated Tools

- Mission Planning products are used operationally across the Department of Defense
- TASM (“Tanker Airlift Special Mission”) AWE – Single install framework of mission planning capabilities for Department of Defense aircraft (over a dozen variants)
- Navigation Data Components – Provides CNS/ATM compliant navigation data to mission planning systems
- CAT (“Combined Airdrop Tool”) – provides capability to plan precision and non-precision airdrops
Visualization & Integrated Tools

- **AANT** ("Aero-Advisory NOTAM Tool") – collects and visualizes NOTAMS
- **GFP** ("Global Flight Planning") Tools – flight planning tools for TACC & units
- **RNAV CC** – Streamlined route planning with CNS/ATM parameters
- **TAWS** – Terrain Avoidance and Warning System
The Consolidated Airdrop Tool (CAT) combines the capability to plan and calculate Precision airdrop solution for guided and ICDS loads using up-to-the-minute weather data, with the ability to plan and calculate CARPs and HARP for conventional airdrops, all on a single computer.

- Conventional airdrop missions can be integrated into PFPS and TASM.
- Pre-flight and in-flight airdrop mission planning capabilities include:
  - Multiple airdrop types (Precision, Conventional and leaflets)
  - Support for C-130J, C-130 E/H/J, C-27J, and C-17 aircraft
Air Drop Planning - Consolidated Airdrop Tool

- Both precision airdrop (JPADS) and conventional airdrop (replaces CAPS in PFPS)
- Select Release Pass
- Leg Editor – CARP selection
JMPS/VPS Display

- VPS Displaying the following:
  - Drop Zone
  - DZ Axis
  - Wind Circles
  - (200 yd PI Circles)
Route and Performance Planning

- Portable Flight Planning Software (PFPS)
  - Distance, time and fuel planning

- Planning for aircraft, ground vehicles and naval vessels
- Planning for troop movements
CAT Capability Progression

• CAT V1.0 to CAT V2.1
  – Refactored CAPS, JPADS-MP, and Leaflet Tool into CAT
  – Supports both conventional and precision airdrops in one tool
  – Solution for a PFPS A/W/E, designed to be extendable to JMPS
  – Ballistic data matches current AFI11-231

• CAT 2.2
  – Adds Wireless Gate Release System
  – Terrain Avoidance for supported AGUs
  – Enhancements to Printing, Plotting, and Preferences
CAT Capability Progression

- CAT 3.0
  - Refactors WindPADS weather utility into single programming language (C#)
- CAT 3.1 and 3.2
  - Addition of Combo Airdrop and Airdrop Damage Estimation (ADE) tools
## CAT Development 2013

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| • CAT v2.0.4  
• Tab correction  
• LCADS-LV  
• WiFL.exe enhancements | • CAT v2.1  
• Migration to Windows 7  
• Approach headings  
• 30 CAT II urgent deficiency reports  
• 65 bug fixes  
• User feedback  
• Updated CBT | • CAT v2.2  
• Wireless Gate Release System  
• Initial CAT MPA integration  
• OFP chute warnings  
• Monte Carlo simulation by platform  
• DR/Bug fixes |
### 2014

#### In DT
- CAT v3.0
- WindPADS refactor
- DTED requirements
- Deficiency reports, bug fixes, user feedback

#### Apr & Aug
- CAT v3.x
  - CAT 3.1 is Ph 1
  - CAT3.2 is Ph 2
- Airdrop Damage Estimation (ADE)
- 3D planning / SA tool
- Touch Screen support
- Bundle Tracking
- Combo Airdrop
- Complete CAT MPA integration
- Tablet capability
CAT Availability

• CAT product supports multiple Windows Operating Systems
  – Legacy products: CAT 1.0 for XP and CAT 2.0 for Vista
  – CAT 2.1 for Windows 7, with CAT 2.2 currently at USAF Operational Testing and CAT 3.0 at Developmental Testing
  – CAT 4.0 planned for Windows 8 in 2015
TASM for C-130J Block 6

- Airdrops from CAT
- Routes from PFPS
- Aircraft unique data from TASM
  - Add attributes to airdrop and routes not available in PFPS
  - LZ approach data
  - Takeoff and Landing Data (TOLD)
  - Performance Initialization
  - Communication presets
TASM for C-130J Block 7

- User friendly route modifications on grid similar to CFPS
TASM for
C-130J Block 7

- All Airdrops for a mission on a single dialog
- All Landing Zones on a single dialog
FalconView plugin client and dedicated server which together provides the ability to ingest, parse, store, search for and display (textually and graphically) aeronautical advisories

US Capabilities

- Notice To AirMen (NOTAM)
- Temporary Flight Restrictions (TFR)
- Special Use Airspace Activations (SUA)
- Enhanced Traffic Management System (ETMS–Flow Evaluation Area (FEA)/Flow Constrained Area (FCA))
• International Capability
  – NOTAM only

• Situational Awareness – Aeronautical Advisory querying and visualization
  – Does not relieve aircrew from reviewing NOTAM data before flight

• Searches supported (US and International)
  – Route based
  – User defined regions
  – DAFIF ID (Airport, Navaid, Waypoint, Special Use Airspace)
  – ARTCC/FIR
Route based searches form a 4D “tunnel” of airspace around the route and return only advisories which intersect the corridor when the aircraft is on that segment of the flight. Ground based NOTAMs for locations which are overflown are ignored, other than alternate/diverts within the route.
Region based searches form a 3D “cube” of airspace and return only advisories which intersect the region based on the altitude and times specified. Ground based NOTAMs for locations which are inside the region are ignored.

North Atlantic Tracks can be displayed with any type of search, or by themselves.
GFP Tool

- GFP Tool provides the capability to interoperate with the Advanced Computer Flight Plan (ACFP) system for flight planning services. This includes the following capabilities
  - Flight Plan Request Tabular Editor
  - Structured Text Editor
  - Fixed Track Manager
  - F2 Validator.
  - Messaging interface with ACFP
GFP Tool

• Operate with the Portable Flight Plan System (PFPS)
  – Graphical flight plan display (not flight plan requests, but optimized plans)
  – Structured text & Tabular Editors
Why Choose JACOBS?

• Proven technical proficiency in developing platform independent mission planning applications to execute on either PFPS or JMPS

• In-depth avionics knowledge on numerous aircraft

• Software and system experts in providing early support for Flight Test needs and requirements

• Mission planning experts chosen by the US DoD to work the new KC-46 tanker
Why Choose JACOBS?

• Responsible for modernizing and re-architecting the legacy JPADS software for greater maintainability and extensibility

• Rapid turnaround for software deliveries based off reuse and shared component model resulting in significant cost savings

• Outstanding record for meeting customer requirements, cost, and schedules

• Competitive pricing
Contact Information

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Questions?