



CMMI DEV / 3SM

Exp. 2019-06-08 / Appraisal #26561



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ISO9001:2015

Craft Designs, Inc. (CDI)

Huntsville, AL 35802

Software Engineering Specialist

www.craftdesigns.net

2019.04.19 CDI Capabilities Brief

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- CDI is a Woman Owned Small Business (WOSB) located in Huntsville, Alabama, founded in 1998.

- Software Engineering
 - Defense and Aerospace
 - Industrial Automation
 - Information Systems
 - Training
 - Software Security Engineering



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Company Overview

- Focus on process driven software development
 - Experienced in a wide range of applications
 - Large and small projects
 - Member of multi-disciplined team efforts
 - End-to-End software lifecycle capabilities
 - On-schedule and on-budget

Analyze

Design

Code

Test

Maintain

Train



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Partners

CDI has supported:

- The U.S. Army CCDC Aviation & Missile Center, S3I, PIF
- The U.S. Air Force
- Aviation & Missile Solutions
- CAS Group
- KBRWyle
- COLSA
- Computer Science Corporation (CSC)
- DCS Corporation
- DigiFlight
- Intuitive Research (IRTC)
- Logicore
- MSSI
- Perspecta
- QinetiQ
- QuantiTech
- Quantum
- Radiance
- S3
- SAIC
- SES
- Sigmatech
- TORCH
- Yulista/RDS/DSS
- Commercial Vendors



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Capabilities

- Application Security Assurance
- C, C++, C# VB.NET, and .NET framework
- DO 178C Development Techniques
- Embedded Systems Programming
- Fuzz Testing
- Mission Planning
- Modeling and Simulation
- Software Project Management
- Software Safety
- Source Code Structural Coverage Analysis
- Training
- Verification and Validation
- Weight and Balance



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Flight Performance Models

- Digital models of aircraft performance flight capabilities and limitations
- Used for U.S. Army, U.S. Airforce, Special Operations (SOMPE, AFSOC) Mission Planning
- Applies data obtained from OEM, flight tests, and aircraft manufacturers
- Utilizes advanced numerical methods, standard mathematical techniques, and physics based modeling



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Flight Performance Models

CDI has supported multiple customers through FPM training sessions

- Five training sessions are organized that elaborated on the following topics:
 - Architecture of an FPM
 - Libraries
 - Development Processes
 - Collection Files
 - Data Digitization Process
 - Requirements Development
 - Construction
 - FPM and Data Design
 - Integration



U.S. AIR FORCE



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Mission Planning

Platforms

- Apache
- Blackhawk
- Chinook
- Kiowa warrior
- JCA
- Sherpa
- Citation
- UAS
- 3 Commercial Customers



Solutions

- Performance Banding
- Interactive Charts
- Performance Awareness
- Route Planning
- On-Board Performance Planning
- Desktop Performance Planning

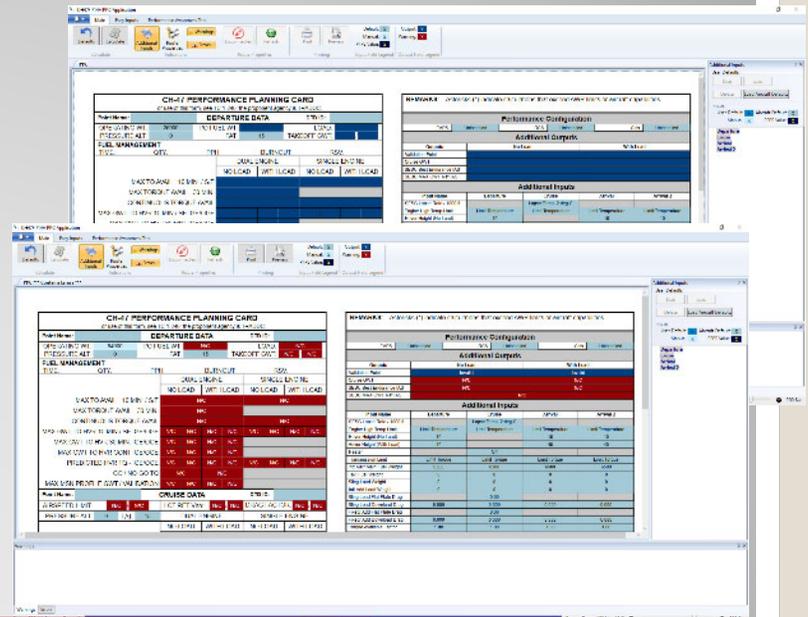


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Desktop Mission Planning

- Desktop Planning for Rotary and Fixed Wing platforms
- Desktop Application with FPM integration that supports XPLAN, PFPS, and JMPS
- On screen card matches the printed card the pilots are accustomed to using
- Plug-In support for added capability with reduced impact to primary application



NOTE: Images have been compressed to save size and distort data.

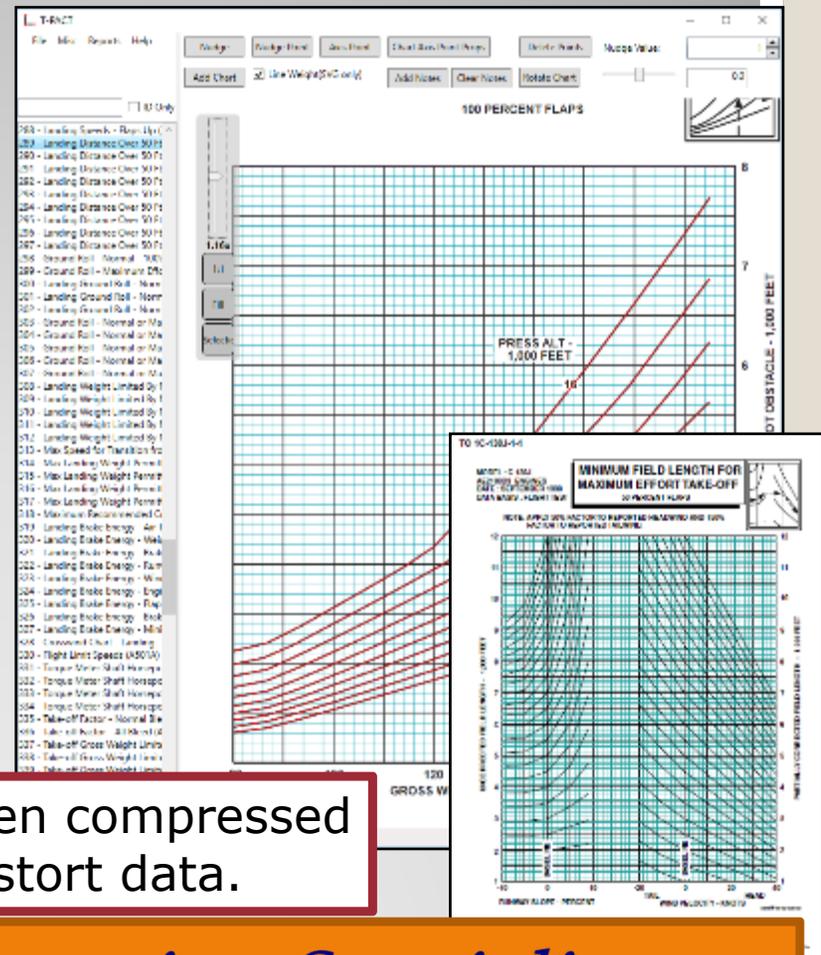


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Operator's Manual Charts

- Graphical Representation of Specific Aircraft's Performance and Limitations
- Charts Include
 - Takeoff/Landing
 - Optimum Cruise Speed
 - Max Range Cruise Speed
 - Fuel Flow
 - Airspeed Conversion
 - Maximum Gross Weight for Takeoff/Landing
 - Service Ceiling
- Charts are reproduced using FPM's



NOTE: Images have been compressed to save size and distort data.

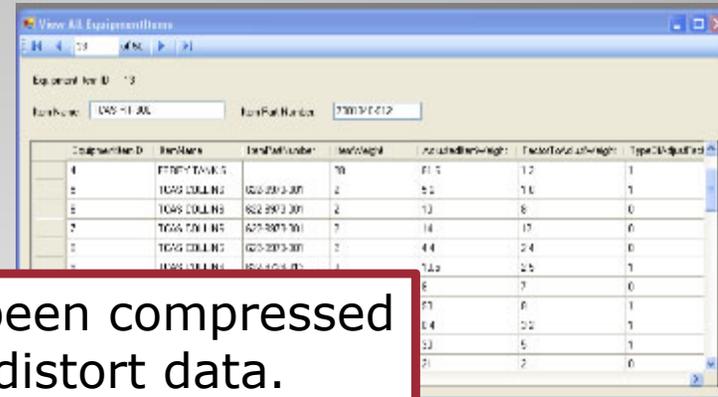


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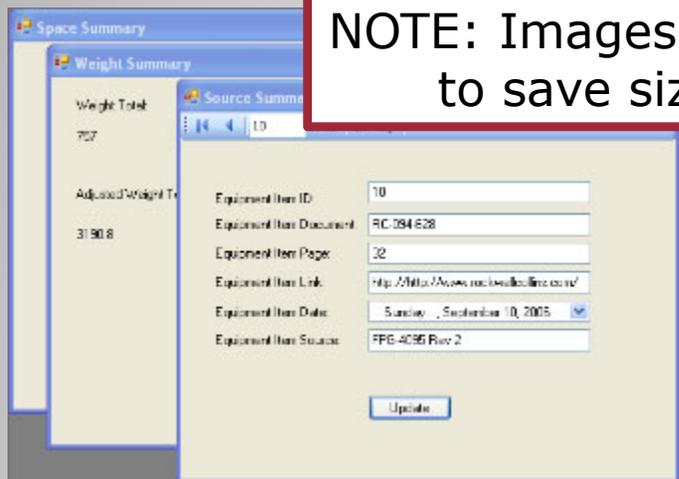
Avionics Equipment Database

- Tracks space, weight, cooling & power
- Tracks data sources



Component ID	Item Name	Part Number	Weight	Installed Weight	Factored Weight	Type/Status
4	FRONT TANKS		10	10	10	1
5	TGAS COLLING	620-200-300	2	2	1.6	1
6	TGAS COLLING	820-200-300	2	13	8	0
7	TGAS THERMINS	620-200-300	7	14	17	0
8	TGAS COLLING	620-200-300	1	4.4	2.4	0
9	TGAS COLLING	620-200-300	1	7.6	2.5	1
10			8	7	0	0
11			17	0	1	1
12			1.4	10	1	1
13			12	5	1	1
14			21	2	0	0

NOTE: Images have been compressed to save size and distort data.



Space Summary

Weight Summary

Source Summary

Weight Total: 707

Adjusted Weight Total: 31908

Equipment Item ID: 10

Equipment Item Document: RC-084-628

Equipment Item Page: 02

Equipment Item Link: <http://www.craftdesigns.net>

Equipment Item Date: Sunday, September 10, 2005

Equipment Item Source: FPG-4096 Rev 2

Update

- Assists engineers in planning aircraft capabilities
- Maintain Source Data Substantiation



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Data Loaders

- ARINC 615A / 665
- One software solution for numerous protocols:
 - Ethernet UDP
 - Ethernet TCP
 - Serial 422
 - MIL-STD-1553
 - ARINC-429
- Data transmitted is safeguarded
- Full GUI
- Multiple LRUs supported
- Customer Owned Solutions



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Airworthiness Assessment

CDI directly supports the US Army

- Qualification, review and analysis of aircraft systems
- Integration Testing and Certification Support
 - Certificate of Net-worthiness (CoN)
 - Certificate of Conformance (CoC)
 - FAA DO-178C Type Certificate
- Software Engineering
 - Flight Performance Group Procedures
 - Industry Standard Processes (IEEE)
 - Federal Aviation Administration (DO178C)
 - Secure Development Lifecycle
 - Static Source Code Analysis



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Data Science / Machine Learning

Expertise in the development of and iteration on the entire Data Science Pipeline

- Big Data Development, Management and Cleansing on local, HPC or cloud based hardware stacks.
- Expertise in statistical methods in data analysis and large scale data visualizations such as real-time visualizations of KPIs.
- Machine Learning model development for predictive analytics and decision making on targeted goals.
- Full communication and translation of this stack into actionable insights towards your objectives.



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Technology Insertion

Portable Flight Performance Models are being inserted into fixed and rotary wing cockpits.



Developed pilot symbology for guided rockets using/updating existing source code.



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Application Security Assurance

- Generate specific security requirements
- Review and analyze software design
- Generate threat model
- Build software risk assessment off of threat model
- Conduct manual and automate security vulnerability scan on developed code
- Perform Fuzz testing of pre-release application
- Document and develop a plan for vulnerability remediation (stemming from risk assessment, manual and automated code scan, and software Fuzz



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Certificate of Networthiness Preparation

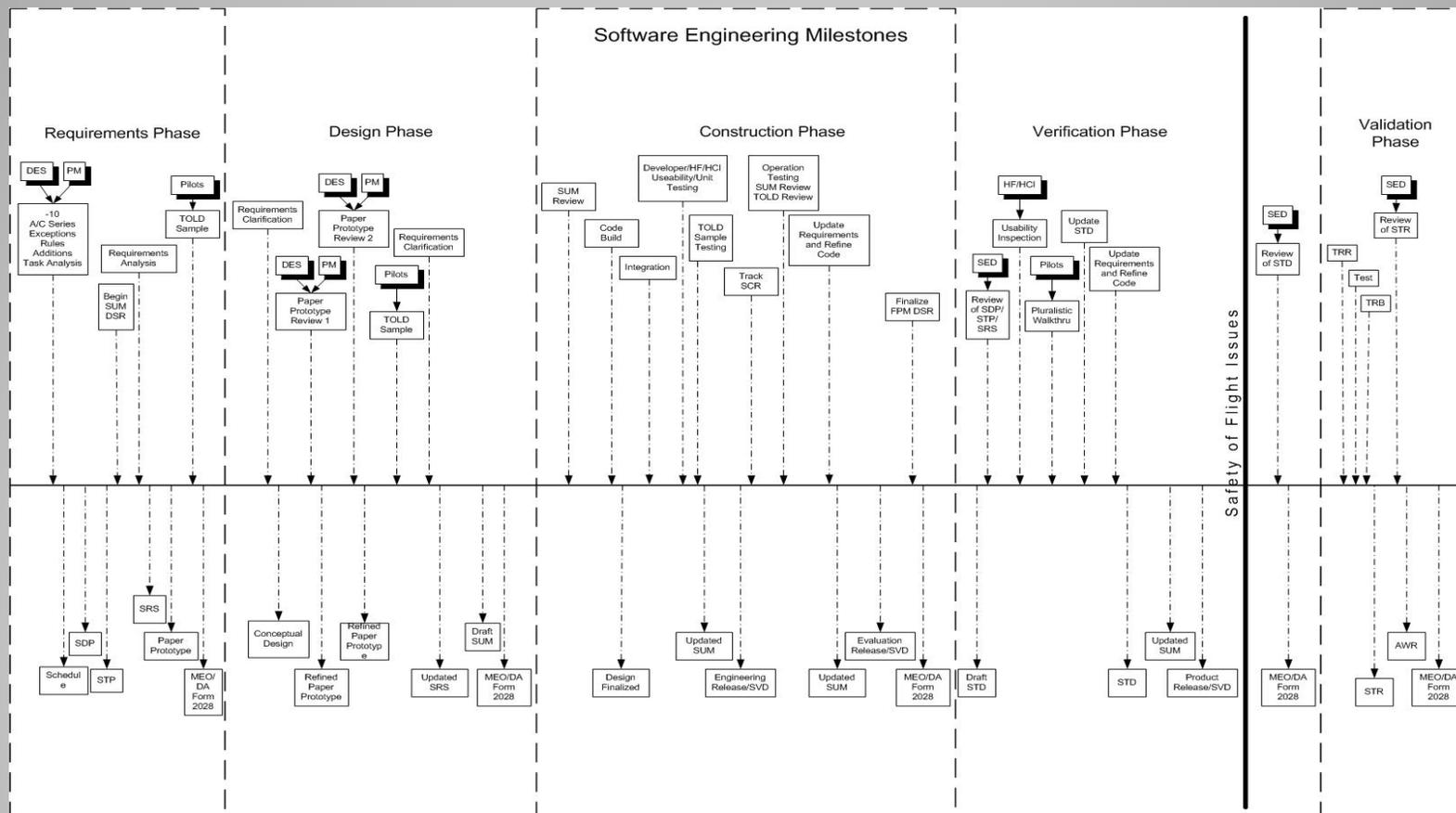
- Statement of Work
- Review test plan
- Review requirement compliance
- Gather
 - List of user driven inputs
 - Internally passed inputs
 - Outputs
- Identify data stores
- Evaluate
 - Effectiveness of secure data stores
 - Application design
 - Control Coupling
 - Data Coupling
 - Source Code
 - Software Maintenance Plan
- CoN Submittal
 - Prepare submittal application
 - Submit application to Netcom
 - Follow through with Netcom support



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Software Engineering Milestones



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Weight and Balance Mass Properties

- Compliant with Industry and Government Standards
- SAWE RP-7, SAWE RP-8
- TM 55-1500-342-23, AR 95-1, AR 95-20, FAA Pubs / Directives
- Provided field training for weight and balance principles, as well as weighing aircraft
- Developed weighing procedures
- Weighed numerous Rotary and Fixed Wing Aircraft (Platform and Load Cell methods)
- Operator's Manual Chapter 6 Development
- Developed automated software
- Fluent with AWBS
- Meet all Airworthiness Qualification Plan requirements:
 - Weight Reports
 - Airworthiness Qualification Statement
 - Mass Properties Control Management Plan Process
 - Mass Properties Database



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Summary

- Simulation
- Modeling
- Application Security
- Requirements Analysis
- Fuzz Testing
- Verification and Validation
- Diverse Applications
- Automated Testing
- Embedded Systems
- Exceed Customer Requirements
- Work Within Project Constraints
- On-time Completion and Delivery
- Within Budget
- Satisfied Customers
- Quality Product
- Secure Product
- Sustainable Product



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Conclusion

CDI strives to exceed Quality in all aspects. Quality is not an accident when dealing with Safety of Flight (SOF), it is CDI's main driving factor to ensure Customer Satisfaction, SOF, and make sure the War-Fighter comes home.



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