F-15 Worldwide Review

GE Aerospace / November 2024 / Tony Ramsaroop – Program Manager

Avionics

MILITARY 55% / **CIVIL 45%**

Navigation, control, networking and computing systems focused on security, open architecture, and sustainability.

- ● Headquarters
- ● Engineering, Manufacturing, Service
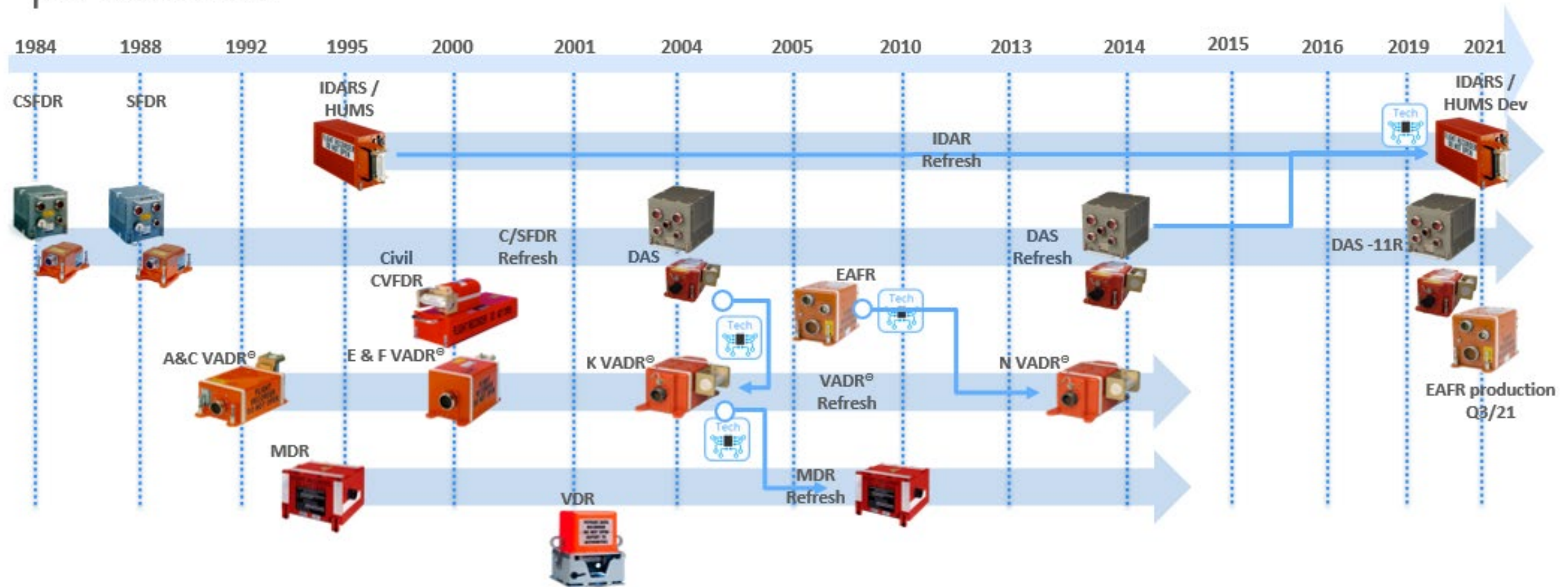- ● Customer & Field Support
- ● Research, Engineering

Map locations: Seattle, Grand Rapids, Niskayuna, Cincinnati, Clearwater, Queretaro, Cheltenham & Southampton, Warsaw, Dubai, Shanghai, Tokyo, Singapore, Brisbane

Main platforms:

Boeing 787 & 777X	Airbus A320 family
Boeing 737NG & MAX	COMAC C919
Gulfstream G500/600/650	
Bombardier Global 6000/7000	

C-130J	F-35	Fire Scout
KC-46A	F-22	UH-60
F-16	F-15	AH-64
F/A-18	V-22	CH-47

GE Flight Recorder Lineage, periodic updates, new introductions and continual performance

1984	1988	1992	1995	2000	2001	2004	2005	2010	2013	2014	2015	2016	2019	2021

CSFDR

SFDR

IDARS / HUMS

IDARS / HUMS Dev

IDAR Refresh

C/SFDR Refresh

Civil CVFDR

DAS

EAFR

DAS Refresh

DAS -11R

A&C VADR®

E & F VADR®

K VADR®

VADR® Refresh

N VADR®

EAFR production Q3/21

MDR

VDR

MDR Refresh

Product Area Focus
- 40+ years of Military and Civil Data Acquisition and Recorder Systems incorporating crash survivable memory with data acquisition, processing, recording, downloading, analysis
- Dissemination of a wide range of data and information to many user disciplines

Flight Data Recorder Product History

Descriptions		CSFDR Z8002	CSFDR DPU	Legacy PM V DAS	Refreshed DAS	JEDAI
CPU Performance	MIPS	1	3.5	140	140	3600
Program Memory		16 KB	512 KB	8 MB	32 MB	512 MB
Crash Protected Memory (CPM)		56 KB	256 KB	320 MB	5 GB	10 GB
ASIP/Diagnostics Memory		258 KB	2.6 MB	256 MB	8 GB	64 GB
CPM Record Times	hours	0.5	1.5	34	25	50
ASIP Record Times	hours	13	22	32	32	256
Interfaces	1553 MUX	1	1	5	5	5
	Analog	24	24	24	24	24
	Discrete	64	64	73	73	73
	Serial Digital			3	3	3
	Audio			1	1	1
Weight		SAU- 15 lbs.	SAU- 12 lbs.	DAU- 13.6 lbs.	DAU- 13.6 lbs.	JEDAI - 13.0 lbs.
		CSMU- 5lbs	CSMU- 5 lbs.	ECSMU- 6.8 lbs.	ECSMU- 6.8 lbs.	
	Total (lbs.)	20	17	20.4	20.4	13.0
Crash Survivability	Impact Shock (g)	1700	1700	3400	3400	3400
	Seawater Immersion	3 ft for 48 hrs.	3 ft for 48 hrs.	20,000 ft for 30 days	20,000 ft for 30 days	20,000 ft for 30 days
	Fire protection (hrs.)	½	½	1	1	1

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JEDAI – Light, fast secure with same form and fit

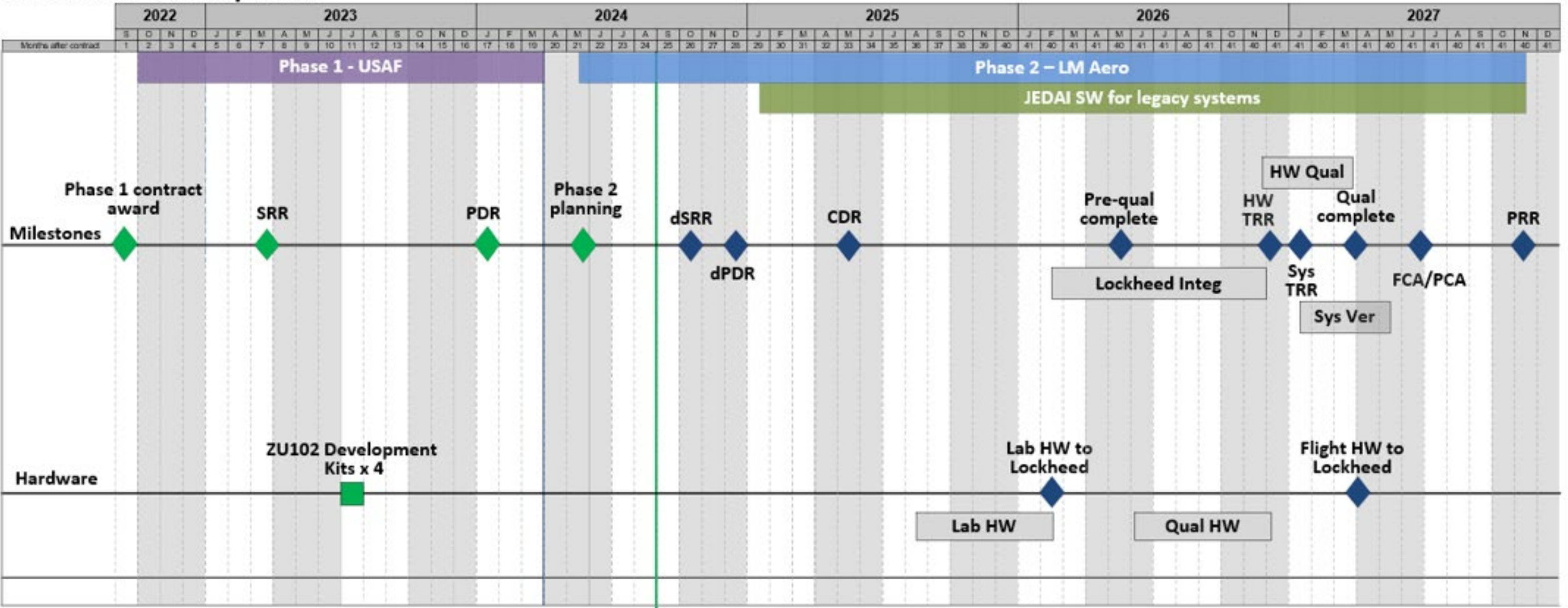**Lighter**   Consolidates DAS LRU's into single LRU
7 lbs. weight reduction

Faster   Gigabit Ethernet for rapid data download
Increased computational capacity
Larger memory

Secure   Cryptographic security unit (CSU) provides
Secure boot program authentication
AES-GCM encryption

Drop-in replacement
No aircraft interface changes needed
Maintains all DAS functionality
Mitigates obsolescence – long term
sustainability

JEDAI Design

Larger 10GB crash protected memory

Meets ED-112A

90-day Underwater Locator Beacon

Same connectors

No aircraft wiring changes

Mechanical envelope & mounting equivalent to DAU
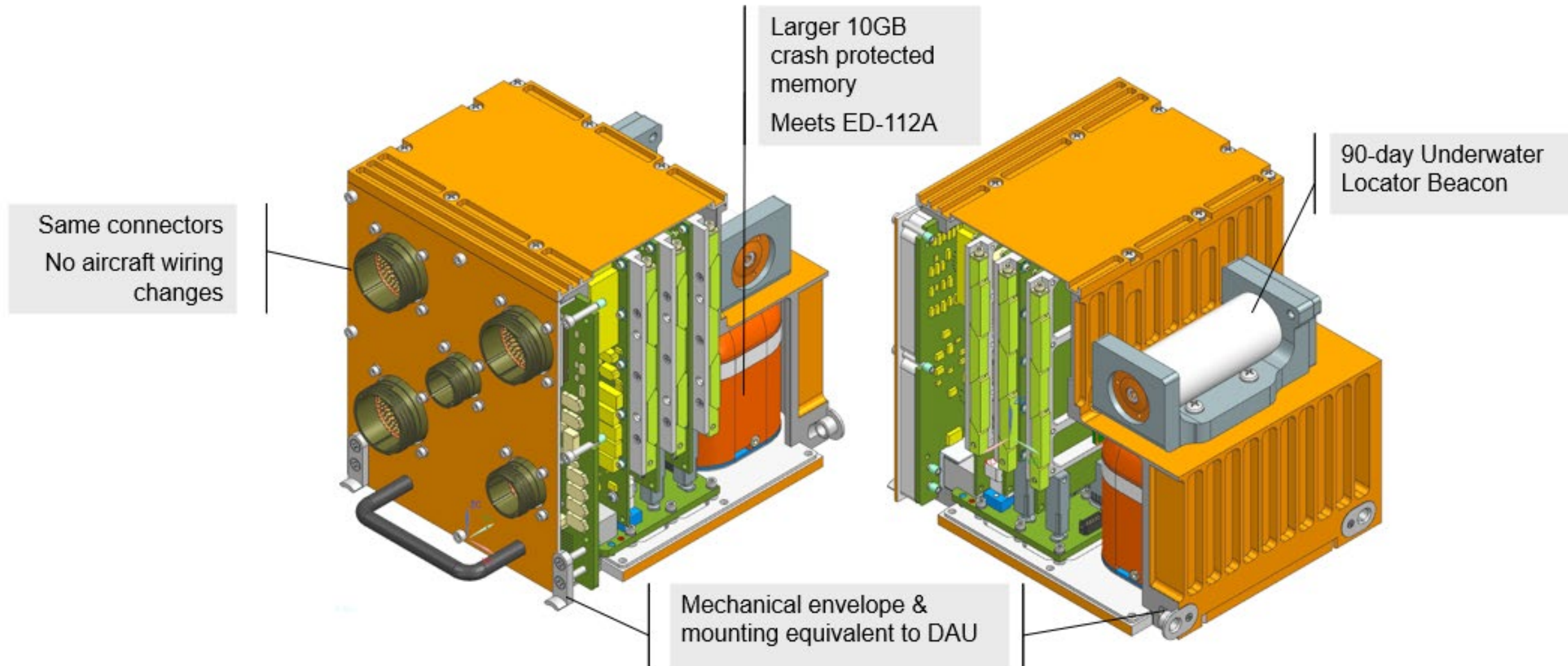
F-16 JEDAI Development

Modern data analysis tools and test equipment

UOGP

- Universal Operational Ground Program (UOGP)
  - Supports recorder data download
  - Supports at aircraft parameter viewing
  - Replaces Operational ground program (OGP)
  - Eliminates dependency on Microsoft Explorer & ActiveX
  - Standalone application for ground equipment computers
  - Compatible with both JEDAI and DAS systems
  - Regularly updated with new features and OS support

IGS

- Integrated Ground Support (IGS)
  - Provides recorder replay

- Legacy Systems Test Stations, Acceptance Test Stations, Repair Stations being replaced with contemporary systems

- Mishap Investigation Ground Stations (MIGS) – available
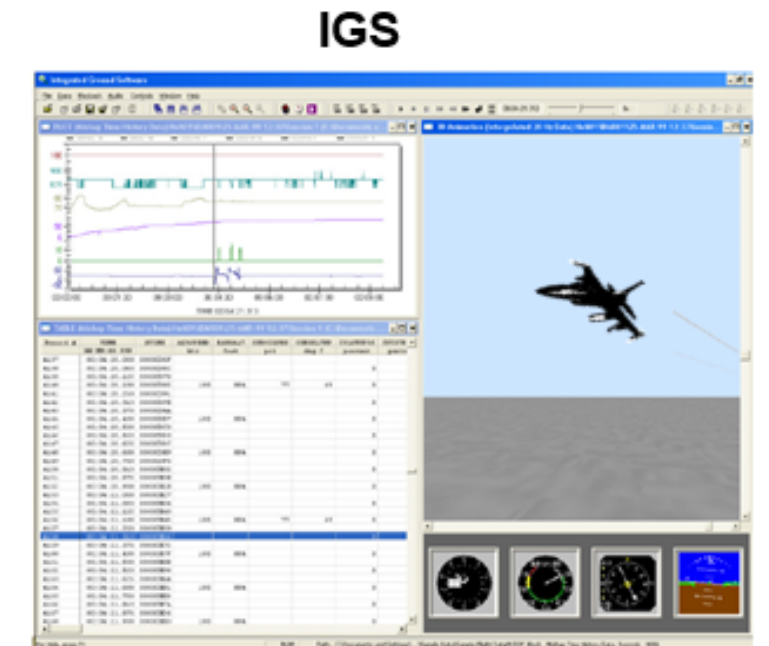
Providing readiness to deploy and fight

Light, fast, secure, drop-in replacement

- ✓ Drop-in replacement
- ✓ 7 lbs. lighter
- ✓ Improved aircraft CG
- ✓ Faster data downloads
- ✓ Increased security
- ✓ Expanded storage
- ✓ Modern ground tools
- ✓ Sustainable

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