

NASA/MARSHALL SPACE FLIGHT CENTER

JOINT COUNSELING SESSION



June 16, 2020



Introduction

30 years in space flight experience brings cutting edge design, build and development of next generation EGSEs, HILs, FPGAs and Flight Software solutions into the market.

Mission

Engineering Intelligence Beyond Earth

Core Values

Inspired by Ingenuity

Driven by Excellence

Reliable to the Core

Devoted to our Relationships

Customers

Over 30 Years of Space Flight Solutions



Projects



Quality Systems



Jet Propulsion Laboratory
California Institute of Technology

Approved
Supplier
List

Key NASA Design and standard requirements

- JPL DocID 35120 Electronic Packaging Cabling Design & Fabrication
- JPL DocID 35596 Drawing Practices
- JPL DocID 57653 Software Development
- JPL DocID 68532 FPGA/ASIC Hardware Development
- JPL D-5703 Reliability Guidelines





Skills & Processes

Challenges of the in-house built test systems

Systems are not adapting fast enough for rapidly changing requirements

Systems are developed with only prototype or DUT requirements

Systems lack modularity and scalability for use in various departments

Systems have large footprints and faced portability issues

Systems need redundant testing for quality assurance

Systems are not replicable from mission to mission



Skills & Processes

Commercialization of Space Trends

Rapidly Changing Requirements

Tighter Deadlines

Lower Budgets

DUT Specific Requirements

Pre-certified COTS solutions

Engineers Engaged in Multiple Projects

Limited Access to Resources

Smaller Teams

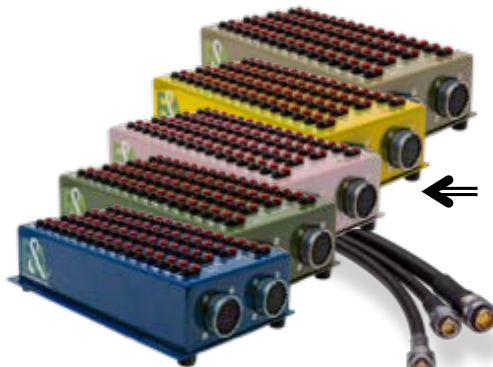
Greater Competition

Lower Tolerance For Errors

Skills & Processes (Cont.)

- Custom
- Configurable COTS (C-COTS)
- COTS

Break-Out-Box



Flight
Certified
Cables

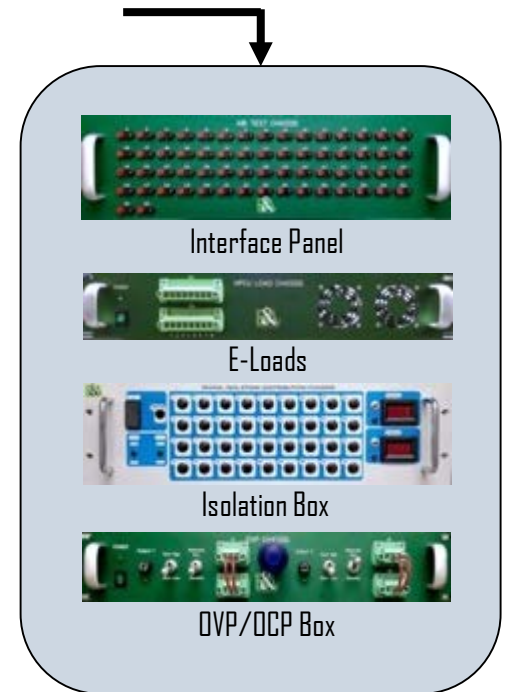


Isolated I/O



FPGA Signal Analyzer

EGSE I/O



Skills & Processes (Cont.)

Gen 1: Custom Legacy System



Gen 2: Configurable-COTS System



Gen 3: SLSC Integrated COTS System



3-6 Months Delivery
Standardized Parts



30% Reduced Footprint

Plug & Play Modules

1-2 Months Delivery

Portable

Quality Assured



Skills & Processes

Over 30 Years Of Space Flights Innovations

Designed for rapid adaptability

Built using scalable technologies

Substantially reduced the footprint

Standardized numerous protocols

Delivered pre-certified FMEA solutions

Mitigated sustainment risk

Improved modularity

De-risked equipment failure

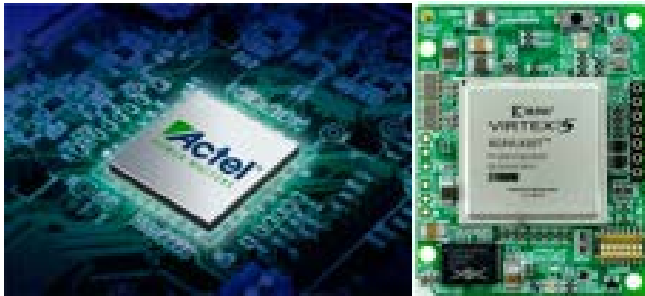
Reduced time to delivery

Improved human capital resources

Skills & Processes

Complementary Services

Space Flight Design



Embedded Software Programming



System Integration and Test



Worst Case Analysis & FMEA



Areas of Expertise

Deliverable Products	Product Lifecycle				
	Preliminary Design, Requirements Flow Down	Design, Analysis, Modelling	Fabrication	Integration, Assembly	Qualification, Testing, V&V
Communications, Tracking, & Radar Systems					
Flight and Ground Communication Systems	Yes	Yes	Yes	Yes	
Electronics and Software Systems					
Guidance & Control Systems	Yes	Yes	Yes	Yes	
Power & Sensor Systems			Yes	Yes	Yes
Mobility & Robotic Systems	Yes	Yes			
Flight Software & Avionics Systems	Yes	Yes	Yes	Yes	Yes
Flight Electronics	Yes	Yes	Yes	Yes	Yes
Instrument Electronics & Software	Yes	Yes	Yes	Yes	Yes
Printed Circuit Boards	Yes	Yes	Yes	Yes	Yes
Hypertronic Connectors			Yes		
Flight-Qualified FPGA Socket		Yes	Yes	Yes	
EGSE (Cabling, Break-Out Boxes, Relay Modules, Racks)	Yes	Yes	Yes	Yes	Yes
Mechanical Systems					
Cabling and Harness	Yes	Yes	Yes	Yes	Yes
Instrument Systems					
Scientific Instruments		Yes			
Cryogenic Systems		Yes			

Corporate Information

CLASSIFICATIONS:	Yes/No
SMALL BUSINESS	Yes

CAGE CODE:	4 D Q 2 2	DUNS NUMBER:	0 9 2 2 6 3 8 1 8
TOTAL EMPLOYEES:	30	NAICS CODES:	334511 334515 541330 541380 541511 541512 541715

NAME	TITLE	PHONE	EMAIL
Bardia Ganji	Biz Dev Manager	(949) 287-1831	BGanji@baengineering.com
Kim Whitson	Regional Ambassador	(256) 5855150	KWhitson@baengineering.com
Tom Markel	Managing Director	(949) 697-9753	TMarkel@baengineering.com
Ali Bakhshi	Principal	(949) 284-9041	ABakhshi@baengineering.com

1575 Corporate Drive, Suite 100 | Costa Mesa, CA 92626 | (949) 335-9707 | www.baengineering.com