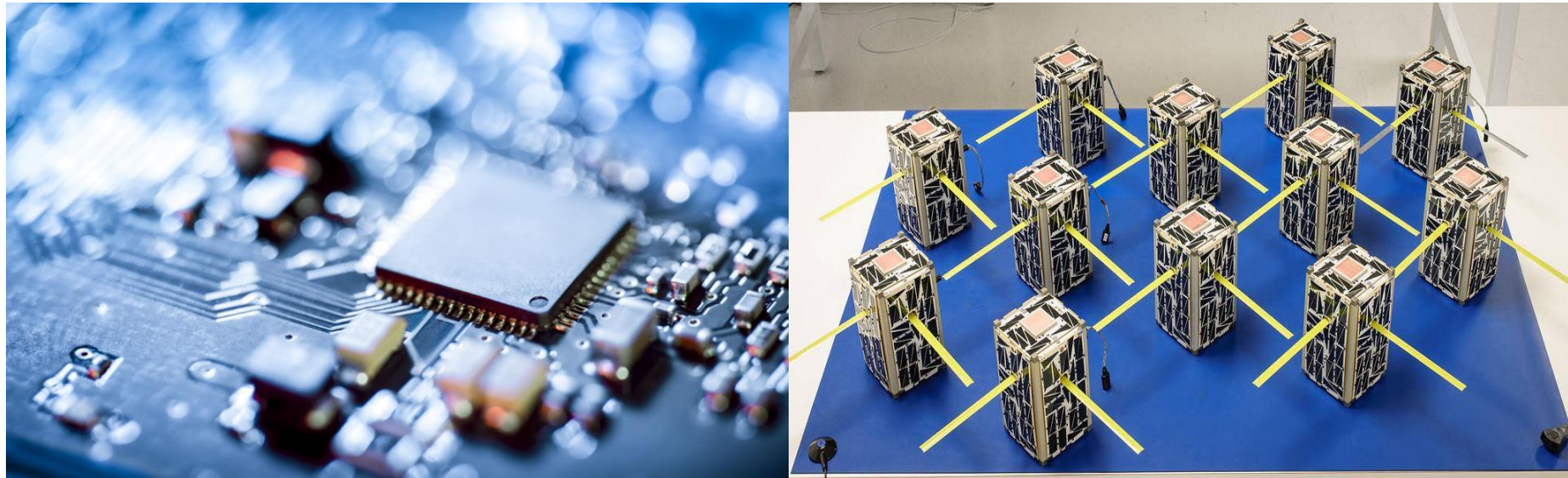




COMTECH



COMTECH SPACE COMPONENTS AND ANTENNAS CUSTOM SUPPLY CHAIN SERVICES



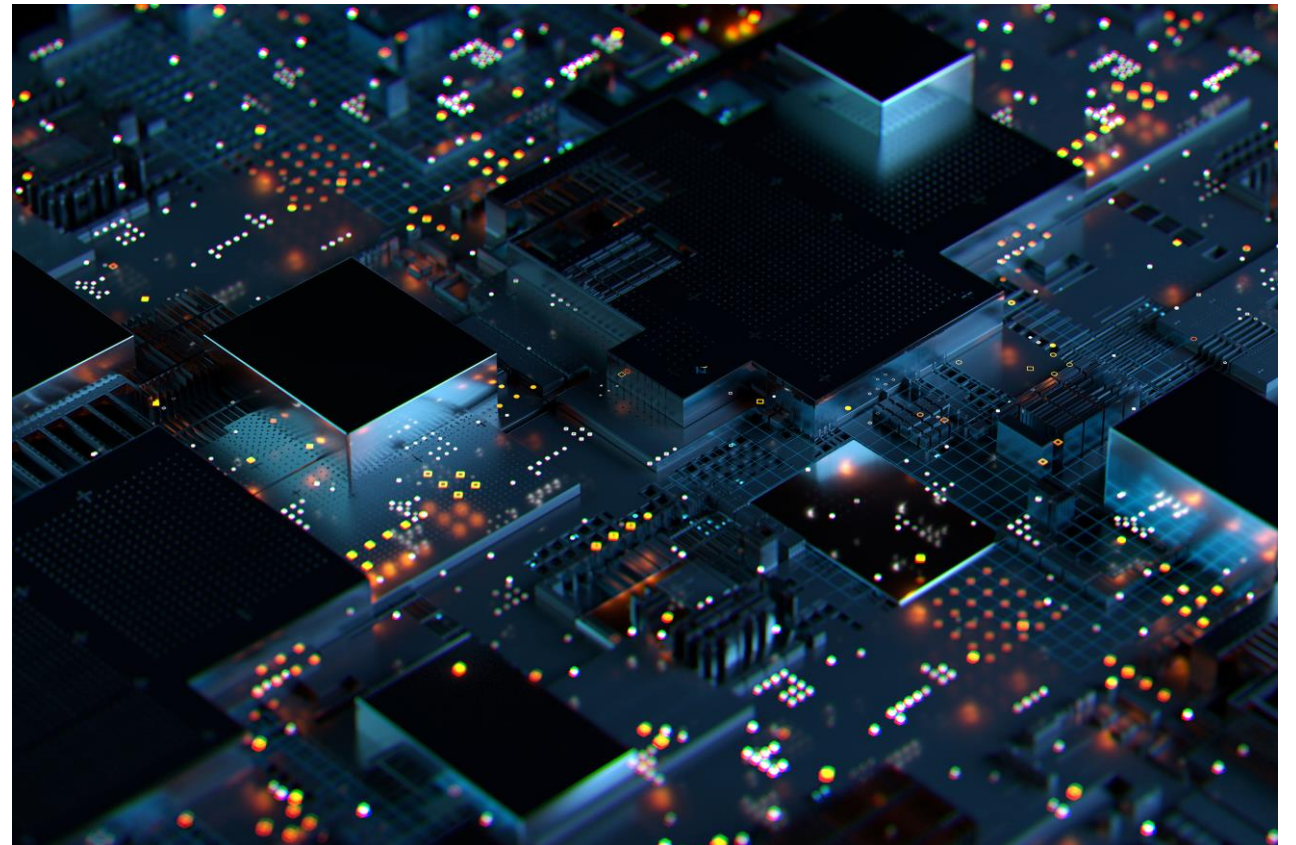
Serving the global space hardware community since 1976

ABOUT US



At Comtech, we provide **custom supply chain solutions** to our global space customers allowing them to focus on design and execution.

Our experienced team ensures that the components we deliver meet all customer requirements and arrive ready for assembly with full traceability to the manufacturer. As a value-add supplier, we are service-oriented problem solvers with customer-first mindset. Our services have supported hundreds of successful missions.



PROBLEM SOLVERS

MARKET GAP

We bridge the gap between manufacturers/authorized distribution and our customers by ensuring compliance to all manufacturing, test and qualification requirements. We assist in component selection for the intended space environment and can define custom test specifications if required

CUSTOMERS

Our customers range from prime and sub-prime manufacturers supporting government contractors (i.e. NASA, JAXA) to commercial space manufacturers in the NEW SPACE market

EFFICIENCY

We are an extension of our customers' supply chain organization providing a single source for consolidated procurement. Instead of placing orders and following up with multiple suppliers, our customers value the simplicity of placing a single or reduced number of orders with us. Our Program Managers provide periodic, detailed delivery status to facilitate production schedule development

COST CONTROL

We provide firm-fixed quotations for our services. Once defined in our system, re-ordering parts simply requires an updated quotation. We provide consistent, repeatable delivery to our customers' selected manufacturing location. Long term storage is available

OUR HISTORY

TRW COMPONENTS
INTERNATIONAL

1976 - TRW Components International (TRWCI) Formed by TRW to supply parts management, engineering services and custom packaging solutions to the international space and military communities

VERTICAL
CIRCUITS, INC

1999 - TRWCI merged with Cubic Memory to form Vertical Circuits, Inc. (VCI), partial Northrop Grumman ownership

TRIDENT SPACE &
DEFENSE

2007 - The space and military arm of VCI became Trident Space & Defense, LLC

TELECOMMUNICATION
SYSTEMS, INC

2011 - Trident Space & Defense is acquired by TeleCommunication Systems, Inc.

COMTECH
TELECOMMUNICATIONS CORP.

2016 - TeleCommunication Systems Inc. is acquired by Comtech Telecommunications Corp.

PROGRAM HERITAGE



USA

TOPEX
 FTS
 TITAN IV
 SHUTTLE
 OMV
 F-22
 ASTROLINK
 EOS
 LANDSAT-7
 NOAA
 ASVS
 SPACE STATION
 OCO-3
 CST-100
 SLS
 AURORA
KOREA

KOMPSAT-2
KOMPSAT-3
KOMPSAT-3A
KOMPSAT-5
KOMPSAT-6
GEO-KOMPSAT

EOS
 EMDS
 SMTS
 NMP
 CASSINI
 THAAD
 AEHF
 EO1
 SAGE
 AEP
 LRLAP
 ORION
 SM3
 ISS
 STPIII
 HALO

- N-LAUNCHER
 - H1-LAUNCHER
 - HIIA/B-LAUNCHER
 - HIII/LAUNCHER
 - INTELSAT
 - J1/GX LAUNCHER
 - MOS-1
 - ETS 1 THRU 9
 - JERS-1
 - BS-2, 3
 - CS-2, 3
 - NEC XPONDERS
 - SFU
 - PLANET SERIES
 - DRTS
 - SUPERBIRD
 - LUNAR SERIES
 - ASTRO SERIES
 - MUSES SERIES
 - SOLAR-B
 - GCOM
 - QSZZ
 - GOSAT
 - ADVANCED RADAR
 - ADVANCED OPTICAL
 -
 - JAXA DRS
 - BEPICOLOMBO
 - HSFD
- S-7000
 - A-2100
 - X-BAND
 - EPSILON
 - TURKSAT
 - MTSAT
 - ARABSAT
 - INSAT
 - COMETS
 - JEM - ISS
 - OICETS
 - ASTER
 - GLOBALSTAR
 - ALOS
 - USERS
 - ADEOS
 - MATRIX
 - SERVIS
 - TRMM
 - HTV
 - AMSR2
 - ALOS-2, 3
 - SM3
 - SLIM
 - GVST

JAPAN

EUROPE

OTS	EUTELSAT	MAROTS	ISPM
	AZUR	ESRO-2	
ARIANE	UNIPEX	ESRO	
SKYNET	ITALSAT	ERS-1	
OLYMPUS	MARECS	NATO IV	
TELECOM	ROSAT	ISS	
INMARSAT	SPOT	ASMSU-B	
ERS-2	HELIOS	HIPPARCOS	
SPOT-4	TELE-X	ECS	
EUROSTAR	METEOSAT	TELECOM-2	



WHAT WE DO

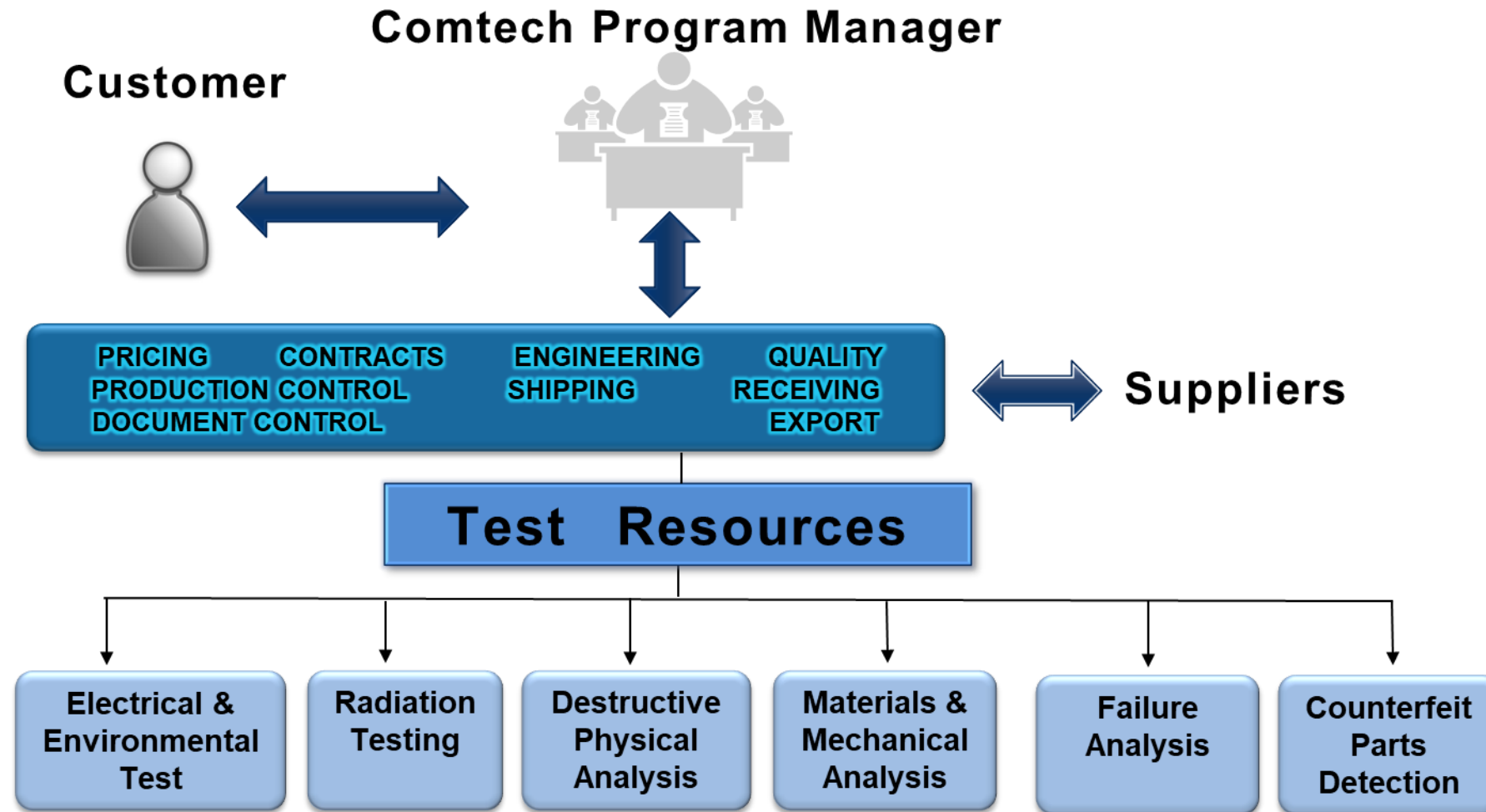


- **EEE Component Supply Chain Management, Component Engineering Services and Consolidated Procurement**
 - LEO, MEO and GEO parts list development and
 - Consolidated procurement of multi-user parts lists
 - Compliance review, Quality Assurance
 - Component engineering services including:
 - Specification generation
 - Screening\Upscreening
 - Qualification,
 - In process Quality Assurance Services
 - Pre-cap
 - Source inspection
 - Supplier data review and data pack preparation with full traceability to the manufacturer
 - AS9102 FAI Reports
 - Kitting Services





Comtech utilizes a network of authorized suppliers, manufacturers, qualified laboratories and test facilities to support your EEE parts, services and supply chain management needs. Each customer is assigned a Comtech Program Manager as a single point of contact.



SERVICES OVERVIEW



Supply Chain Solutions

- Firm-Fixed Quotations
- Procurement services
- Export compliance
- Quality assurance services
- Supplier qualification and management
- Single Point of Contact - Dedicated program manager assigned to coordinate schedule, cost objectives and issue resolution
- Order expediting, status reporting
- Bill of material kitting
- Receiving inspection
- Tape and reel service
- Long term storage solutions

Engineering Services

- BOM review/Obsolescence management
- Component/RF/Mechanical Engineering
- Specification preparation
- Screening, Qualification and DPA testing
- Pre-cap\Source inspection
- Failure analysis
- Counterfeit parts detection program
- GIDEP review
- Prohibited Materials analysis (XRF testing)
- PIND

CUSTOMER PROFILES



Existing BOM

Customer requirement exists

- This customer will usually have an existing component engineering group with defined SCD requirements. We establish a procurement profile to mimic our customers requirements and ensure compliance. This customer primarily needs supply chain services and quality assurance assistance

Develop BOM

Customer requires screening definition

- This customer requires assistance in component selection, test/qualification development and SCD preparation in order to satisfy program requirements. Our experienced engineers assist in developing a final BOM for the customer approval. Comtech procures components and ensures compliance to the requirements

Combination

A mix of requirements

- This customer may have multiple requirements (for example)
 - An existing LEO product that they want to “upgrade” to GEO or vice versa
 - Existing component lead-times are too long
 - Alternate components are available but require “up-screening”

FACILITY INFORMATION



- QA labs
 - All labs are certified as ISO class 8
 - Temperature is controlled from 65°F – 82°F
 - Humidity limits are set from 30% – 70%
 - Misters installed in air ducts introduce moisture in the event humidity levels drop below 35%
 - De-humidifiers utilized in the event humidity levels rise above 60%
 - Real time humidity and temperature monitoring recorded multiple times per day and alerts are sent to QA staff of any out of tolerance condition
- Storage of parts
 - Nitrogen purged; heat sealed ESD bags with desiccant
- Workstations
 - Certified annually to comply with ANSI/ESD 20.20 Guidelines
 - Dissipative surfaces and 1 ohm to ground connections on all benches
 - All benches equipped with constant monitors
- ESD Controls
 - Based on ANSI/ESD 20.20 guidelines
 - All personnel trained and recertified every year
 - All parts processed and handled as if they are ESD sensitive
- Calibration controls
 - Equipment calibrated and NIST traceable

CERTIFICATIONS



- **Comtech Quality\Compliance**
 - AS9100:2016 Certified (OASIS member)
 - ISO9001:2015 Certified
 - ITAR Registered





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