



**TECOLOTE
RESEARCH, INC.**
BRIDGING ENGINEERING AND ECONOMICS
SINCE 1973

*O&S Capabilities
Brief for the
ASN (RDA)
Acquisition Reform
Office
March 2002*

- Santa Barbara ■ Los Angeles ■ Boston ■ Washington, D.C. ■ Chantilly ■ Huntsville ■ Dayton ■ Albuquerque
- Montgomery ■ Ogden ■ Cleveland ■ San Diego ■ Colorado Springs ■ Vandenberg AFB ■ Denver ■ Silver Spring
- Tacoma ■ Oklahoma City ■ New Orleans ■ Patuxent River ■ Charleston ■ Rosslyn ■ Ft. Monmouth ■ Ft. Meade ■ Pensacola

Outline

- **Corporate Background and Capability**
- **Tools and Models**
- **O&S Program Experience**
- **Workforce**
- **Summary**

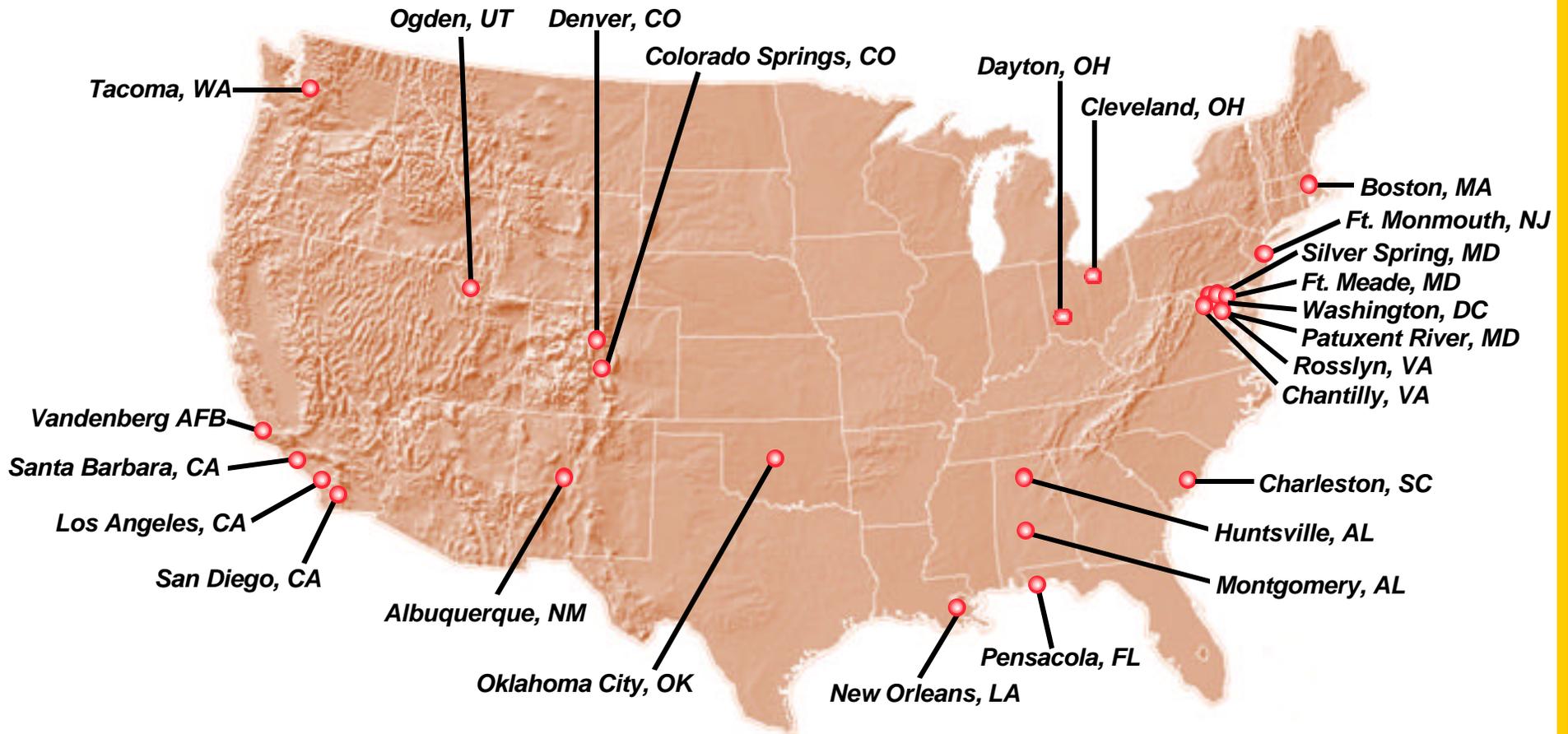


*Corporate Background
and Capability*

Profile

- **Privately owned small business founded in 1973**
- **Extensive management consulting support to DoD and other Government agencies**
- **Cost, schedule, risk, financial analyses, and system acquisition/ sustainment support for Government procurement of high technology systems**
- **Desktop, network, intranet-based software solutions promoting efficient execution of all facets of project management**
- **Over 400 professional staff located nationwide in 25 cities**

Locations

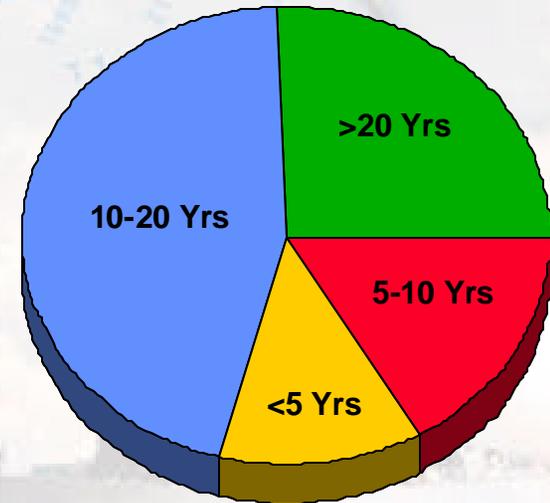
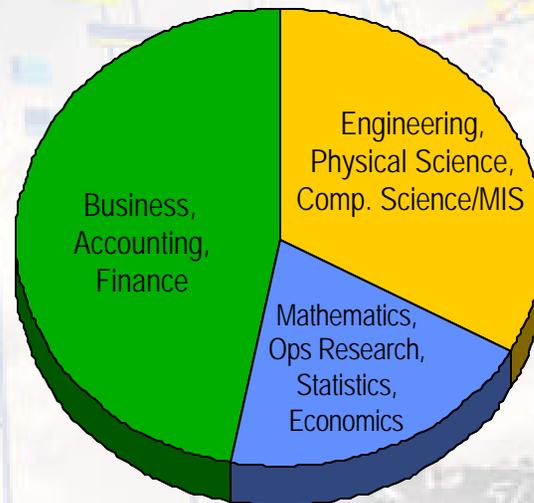


Skill Mix

- **Academic backgrounds enable seamless bridging of engineering with economics**
- **Experience depth provides credible and defensible systems acquisition support**
- **Staff breadth ensures cost effective solution to the customer**

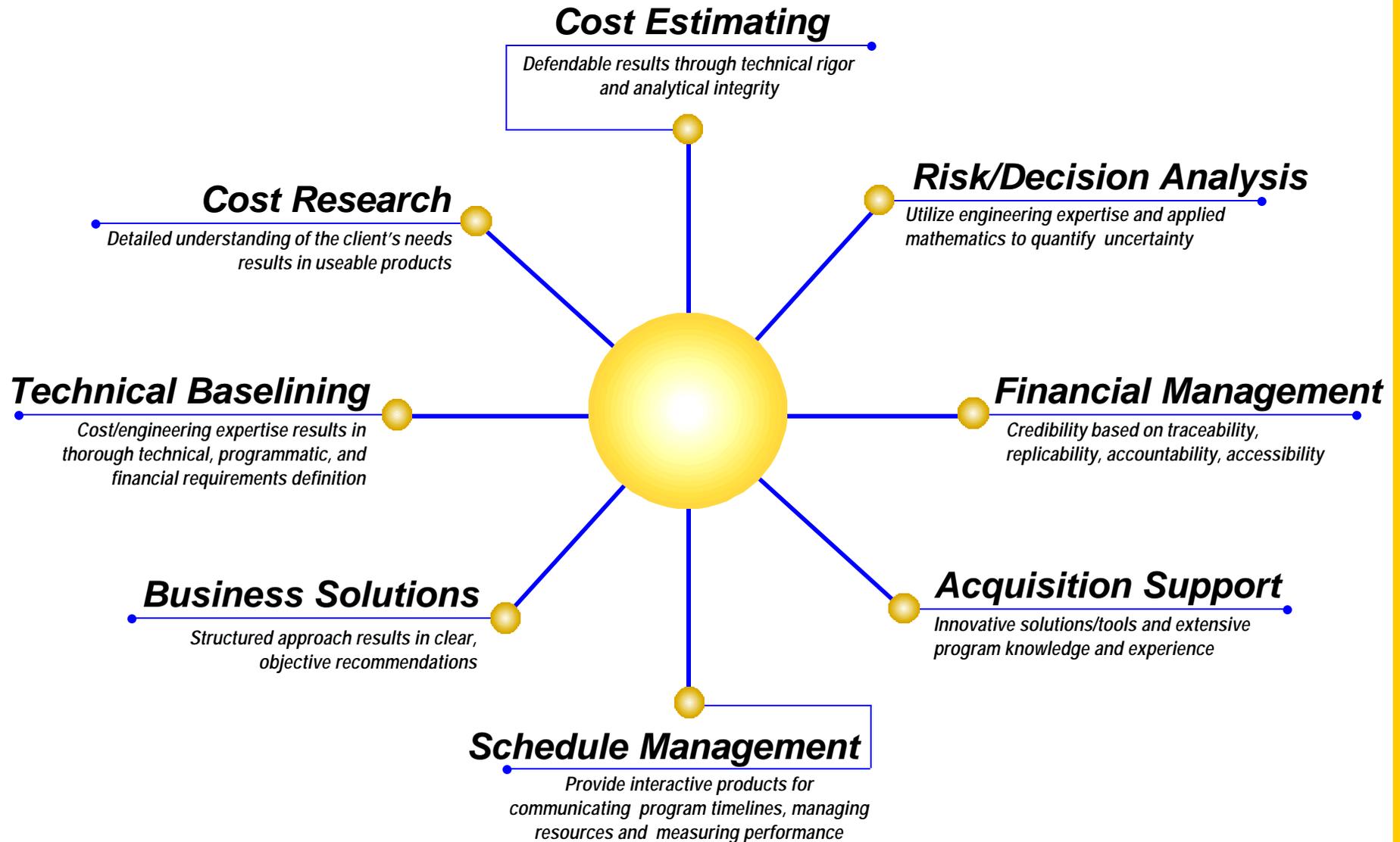


Education



Experience

Integrated Services



Core Competencies

Cost Estimating & Economic Analysis

- Life Cycle Cost Estimating
- Program Office Estimates
- Cost Engineering & Modeling
- Trade Studies
- Cost As an Independent Variable
- Total Ownership Cost (TOC)
- Analysis of Alternatives (AOA)
- S/W Tool Development & Support

Cost Research

- Data Collection
- Data Normalization
- Database Development
- Cost Methodology Development
- Model Construction & Maintenance

System Acquisition & Sustainment

- Earned Value Management
- Major Proposal & ECP Evaluation
- Source Selection Support
- Acquisition Strategy Planning

Financial Management

- Contract Financial Reconciliation
- ULO/NULO Identification
- Resource Tracking
- Unit Cost Analysis
- Cost-Budget Interface
- "What-If?" Budget Exercises
- POM/BES Support
- SAR/MAR/DAES Support
- Foreign Military Sales Support

Business Solutions

- IT Solutions & Program Management
- Performance Measurement
- Business Case Analysis
- IT Investment Management (ITIM) Assessments
- Business Process Analysis
- Web-based Software Solutions
- IT System Implementation
- A-76 Studies

Technical Baselineing

- System Definition
- WBS Development
- CARD Development
- Process Modeling
- Integrated Tool Development

Risk/Decision Analysis

- Risk Driver Identification
- Risk Modeling
- Decision Tools
- Analytic Hierarchy Process (AHP)
- Affordability Analysis

Schedule Management

- Integrated Master Schedules
- Web-Based Schedule Management Systems
- Cost/Schedule Trade Studies
- Cycle-Time Reduction
- Source Selection Support



Tools and Models

Cost Estimating Tool Developer

ACEIT ACDB
automated cost database

ACEIT Inflation Utility

ACEIT ACE
automated cost estimator

ACEIT CO\$TAT
cost analysis statistics package

ACEIT AIM
ace information manager

ACEIT Executive

ACEIT
cost modeling
work breakdown structure
cost estimating
structure
specify methodologies
inflation/adjustments
learning
documentation
traceability
sensitivity analysis
AOA, LCC, TOC analysis
risk analysis
custom reports

ACEIT
cost-if
normalized BY or TY
model integration
engineering
risk
static and phased cav
force analysis
histogram/plots
verification/
ation

ACEIT
inflation
base year
raw indices
then year
weighted indices
spend profiles
BYtoBY
BYtoTY
TYtoBY
TYtoTY

ACEIT
scatter plots
hypothesis criteria
statistical analysis
univariate linear
loglinear
non linear
learning curve
beta curve
sampling analysis
prediction intervals
tabular/graphical
reports

ACEIT
CBR libraries
custom variable names
(parameters)

ACEIT
FCHR, CDSR,
CPR, C/SSR
cost, technical,
programmatic data
raw cost reports
standard work
breakdown structure
mapping and normalization
normalized cost reports
attach supporting
documents

Copyright © 2001 Tecolote Research, Inc.
This program is protected by US and international copyright laws as described in Help About.

Copyright © 1987-2001 Tecolote Research, Inc.
This program is protected by US and international copyright laws as described in Help About.

Copyright © 2001 Tecolote Research, Inc.
This program is protected by US and international copyright laws as described in Help About.

Copyright © 1992-2001 Tecolote Research, Inc.
This program is protected by US and international copyright laws as described in Help About.

Copyright © 1992-2001 Tecolote Research, Inc.
This program is protected by US and international copyright laws as described in Help About.

Copyright © 1992-2001 Tecolote Research, Inc.
This program is protected by US and international copyright laws as described in Help About.

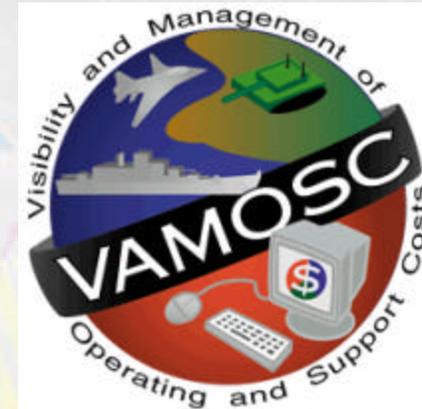
Automated Cost Estimating Integrated Tools (ACEIT)

- Designed for Cost and Economic Analysis
- Supports O&S models and estimates at system and force levels
- Adopted for use by Air Force, Army, Navy, DoD
- Over 4000 Trained Users at 200+ Sites

External Tools and Models

External O&S Tools

- **COMET Model**
- **OSCAM**
- **VAMOSC**
- **OARS / 3M Database**



Navy VAMOSC Reporting System

External Related Tools

- **COCOMO**
- **SEER**
- **REVIC**
- **@Risk**
- **Crystal Ball**



COCOMO Model

Tools and Models

O&S Related Tools and Model Development Efforts

Title	Client Name
Force Level Economic Effectiveness Trade (FLEET) Model	NAVAIRSYSCOM Headquarters
International Submarine Total Ownership Cost (TOC) Estimating Model	Office of Naval Intelligence
USASMDC Ground-Based Interceptor Model	US Army Space & Strategic Defense Command
OSCAM CER Development *	ONR / NCCA
SSN 21 TOC O&S Baseline *	SEAWOLF Program
Ship Construction Model	CVN 77 and CVN(X) Programs
Operations and Support Model *	CVN 77 and CVN(X) Programs
Defense Costing Database for the Defense Intelligence Agency *	Defense Intelligence Agency
Logistics Engineering Model	Electronic Systems Center USAF/AFMC/ESC
Operations and Support (O&S) [Cost Research, Data Collection and Factor/CER Development]	US Army Space & Strategic Defense Command
Space Systems Operations & Support (SSOS) Cost Model	USAF Space and Missile Systems Center
Specialized Cost Services for O&S Estimating Methodologies and Tools and Development	Electronic Systems Center USAF/AFMC/ESC

* Further discussion in the slides to follow

O&S Model Development Efforts

OSCAM CER Development (ONR / NCCA)

- **Derived approximately 60 CERs that model maintenance costs associated with various Navy systems (Radars, Sonars, FCS, etc.)**
- **CERs are used by OSCAM to assist in deriving the O&I Maintenance requirements**
- **CERs have been integrated into latest release**

SSN 21 TOC O&S Baseline

- **Established TOC O&S baseline**
- **Estimate based on ship costs, manpower and activities directly allocable to the SSN 21**

O&S Model Development Efforts

CVN(X) / CVN77 O&S Model

- **Used to estimate costs of alternatives during Part II and III of the CVN(X) AoA**
- **Provided O&S estimates used to support LCC Estimate for Milestone I Review**
- **Consists of linear CERs that estimate Maintenance and Support and manpower costs (rates from by the COMET Model)**

Defense Costing Database for Defense Intelligence Agency (DIA)

- **Top-level model for major weapons systems including ships**
- **Average annual O&S costs developed for further allocation in accordance with CAIG guidance**



O&S Program Experience

O&S Program Experience

Navy Program Support - Last 10 Years

ACINT 21 Information System Development Program
AV-8B Weapon System Program Office
CV(X) Aircraft Carrier Project
CVN 77 Aircraft Carrier Project
Fixed Distributed System (FDS)
NAVAIRSYSCOM Headquarters
Naval Sea Systems Command
Naval Space Surveillance System (NSSS)
Office of Naval Intelligence
Program Executive Office (PEO) Theater Surface Combatants-F1 (TSC-F1)
Service Life Assessment/Service Life Extension Program (SLAP/SLEP)
Space and Naval Warfare Systems Command – San Diego
SPAWAR Digital Modular Radio (DMR)
Submarine Communications Programs Office
SURTASS Development
Surveillance Long Range Planning Study (SLRPS)
Test Program Sets (TPS)
DD-21 Program
LPD-17 Program / Avondale Shipbuilding
SSN-21 SEAWOLF

Marine Corps Support - Last 10 Years

Data Automated Communications Terminal (DACT)
Mobile Electronic Warfare Support System (MEWSS) Product Improvement Program (PIP)
Predator Short Range Assault Weapon (SRAW)
SHF Triband Advanced Reliable Tactical Terminal (START-T)
Program Analysis and Evaluation Directorate (PA&E)
Medium Tactical Vehicle Replacement (MTVR)



O&S Program Experience (Cont'd)



Army Program Support - Last 10 Years
AVENGER Air-to-Air Missile (ATAM)
Aviation Electronic Systems (AES) Project Management Office (PMO)
Aviation Electronic Systems/ Redstone Arsenal
Cargo Helicopters Program Manager's Office
Medium Extended Air Defense System (MEADS)
Demilitarization and Disposal Costs of Missile Systems
Future Scout and Calvary System
Ground Based Radar (GBR)
Theater High Altitude Area Defense (THAAD)
US Army Space & Strategic Defense Command
CCAWS Project Office

Air Force Program Support - Last 10 Years
Air Force - Chief of Information Office
Air Force Cost Analysis Agency
Air Force Integrated Satellite And Launch Control Planning Support To Air Staff
Airborne Laser (ABL) System Program Office
Defense Meteorological Satellite Program (DMSP) SPO
Global Combat Support System (GCSS)
GPS Joint Program Office
Joint Air to Surface Standoff Missile - Extended Range (JASSM-ER) Missile
MILSATCOM Joint Program Office
Multi-Function Information Distribution System (MIDS) Program
NAVSTAR Global Positioning System (GPS) Joint Program Office
Satellite and Launch Control Systems Program Office
Titan Launch Vehicle and Inertial Upper Stage (IUS) Program Office
USAF Space and Missile Systems Center



Summary

- **Full range of integrated O&S cost estimation and research in support of various DoD programs.**
 - **Extensive experience in weapon systems estimation and Navy ship platforms**
 - **Proven ability to support O&S aspects of higher HQ review processes (Milestone Reviews, AoAs, etc.)**
- **“Bridging Engineering and Economics” with a team of diverse, motivated, and experienced staff**

Nationally Recognized for Quality Products and Consistent Customer Satisfaction