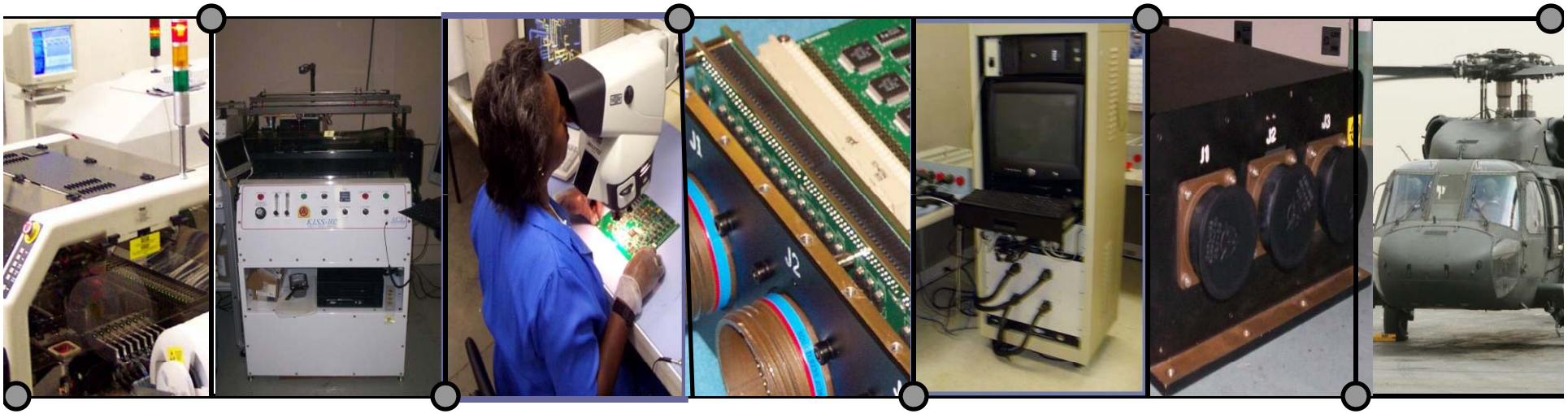
Esterline

BVR Technologies

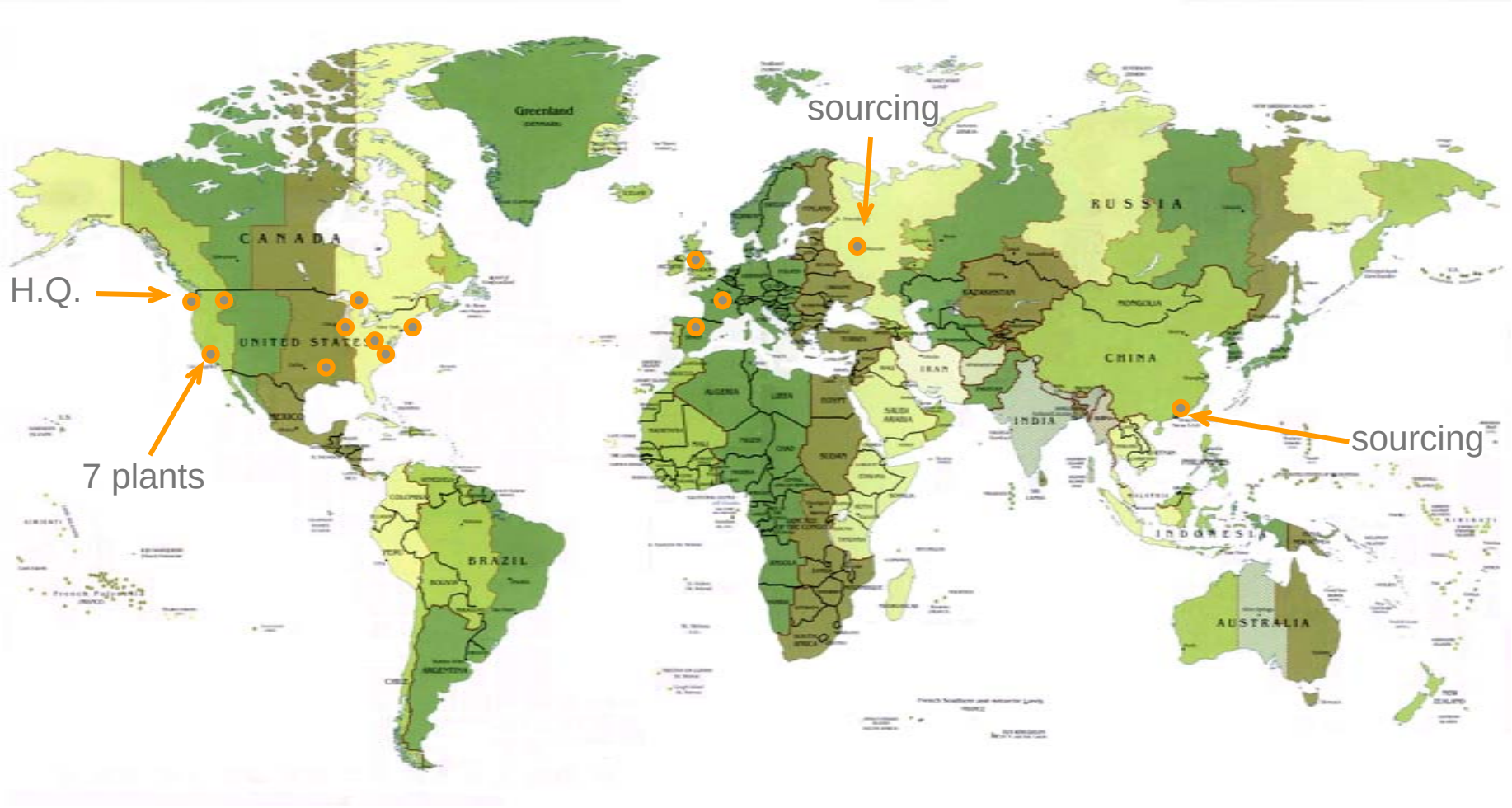


aras corp®

crucis TECHNOLOGY

Esterline (NYSE: ESL) Overview

- Global Aerospace & Defense
- $1.2 Billion Annual Revenues
- More than 10,000 Employees Worldwide



BVR Technologies

Operations

- 1944 founded as Beaver Gear Works, a precision gear cutting company
- 1960's Production of the first aircraft indicators
- 2003 Esterline Technologies Corp. acquired BVR Aero Precision

Product Offerings

- Avionics Computers
- Actuation Systems
- Digital Position Sensors
- Precision Gears and Gear Assemblies
- Select Build to Print

BVR Technologies is a wholly owned subsidiary of Esterline Technologies Corporation headquartered in Bellevue Washington.

Esterline Technologies Corp. is a specialized manufacturing company serving principally aerospace and defense markets. Approximately 80% of total revenues are generated from aerospace/defense markets.

BVR is located approximately 1 hour 15 minutes drive via interstate highway from O'Hare Airport (ORD) and 15 minutes from Chicago Rockford International Airport (RFD). RFD is serviced by select major airlines .

BVR Technologies

- 24,000 square foot facility
- BVR Technologies employs 81 personnel
- Providing design and DO-178B flight critical software
- Supported by vertically integrated mechanical, electromechanical manufacturing and assembly
- Driven by a strategic, lean enterprise environment.
- BVR has invested heavily in product development, new facilities and equipment, and personnel
- FY 08 revenues $18M and growing

BVR Technologies - Capabilities

Mechanical, Electronic and Software Design

- SolidWorks
- COSMOSWorks
- COSMOS FloWorks
- COSMOSMotion
- CodeWarrior
- CodeWright
- PADS
- PSpice
- NI MULTIS

Prototyping & Production

CNC

Grinding

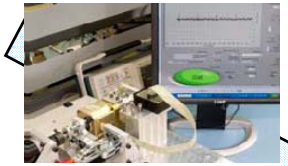
Gear Cutting

Certifications and Registrations

- AS9100 REV B Achieved: 14 April 2005
- Other certifications and registrations... FAA Approved Repair Station Number BPPR794K

ESD Positive Pressure Room

Progressive Assembly



Automated Cal. & Test

Electronic Product Testing ATP, ESS, HALT

Pick & place

Selective Soldering

Applying ARAS PLM BVR's Objectives

- Introduce a Consistent Part Numbering System
  - Previous system based on a mix:
    - Supplier part numbers
    - Internal part numbers
    - Customer part numbers
    - Mil-Spec numbers
  - All Documents have a sequentially assigned item number
  - All* Parts have a sequentially assigned item_number
- Eliminate Paper-based Change Management System
  - Introduce search capability
  - Take advantage of (and organize!) the mix of data items

Planning is Key to Success

"I have always found that plans are useless, but planning is indispensable." - *Dwight D. Eisenhower*

- If you wait for a "Perfect Plan" you'll never start
- Develop an Idea of what "DONE" looks like
- High level list of the major tasks and dates
  - Revisit and re-scope as needed
  - Tactical freedom to adapt and rework ideas as needed
  - Keep eye on what "DONE" looks like
- Needed Help, Got Help
  - Hired Crucis Technologies to assist in implementation

Phased High Level Planning

		BVR Technologies - Aras Implementation							
		PHASE 1		PHASE 2		PHASE 3		Phase 4	
	Deliverables	Planned	Actual	Planned	Actual	Planned	Actual	Planned	Actual
1	New BVR Part Numbering Specification	x		QCP PR					
2	Part Attribute Mapping and Classification Doc.	x	partial	Flatten?					
3	Transition Plan to new part numbering scheme	x		x	x				
4	Installation and Workstation turn up	x	x			x			
5	System Management Plan (Backup, Security and Survivability)	x		x	x	x			
6	Zoll Prototype		x			x			
7	GUI overview		x						
8	CAPA enhancement to Change Management Process		start	~~finish~~				x	
9	Custom Reports for CAPA		start			finish		x	
10	Metrics Web design for CAPA		start			x		x	
11	Enterprise and Engineering Change Identity Mapping		start	finish		x			
12	Characterization and Mapping of Engineering Change process		**start**	x	x	x			
13	Phase Training			x	x				
14	Rework of classification scheme			x					
15	Go Live Preparation (clean of db design)			x	x				
16	Preliminary Project Management					x	?	?	
17	Project Management					x	?	?	
18	FMEA							?	
19	Solid Works / PDM Works integration (Specification, Design & Implementation)			x	x				
20	Epicore / Vantage integration (Specification, Design & Implementation)					x	?	?	
21	Extra mural access to Innovator - Employee							?	
	E-mail notifications (PR, ECN, ECR)		**start**	x	x				
	CRM (quote process)					x			
22	Extra mural access to Innovator - (Customers and Suppliers)							?	

Current Execution Efforts

- Validating and Releasing Designs in Innovator
  - All parts were entered in Innovator as Preliminary at Rev +1
  - Documents and Parts are being tied together prior to release
  - Creating the AML from scratch
  - Added NFND flag to tag duplicate or obsolete parts
- Using Change Management for the last 2 months
  - PR was first
  - ECN was next
  - ECR used heavily to compile Engineering response to RFIs
- Entering piece part families in preparation for use of Publish2Innovator for SolidWorks from Design2Enterprise

Current Development Efforts

- Opportunity ItemType Development
  - Contains all information for Customer requests of any type
  - Requires lifecycle and workflow very similar to ECR process but with a different permission and notification model
  - Requires the creation of supporting ItemTypes, platform, market and end user
  - Reports and an Opportunity Dashboard
- Adding “bad entry” detection to Part, PR, ECR and ECN ItemTypes
- Change Management Dashboard
- Interface to Vantage ERP

Future Development Efforts

- Investigating creation of the Manufacturing BOM
- Rework the Meeting ItemType and process to match BVR specific needs
- Investigation and use of DFMEA, Program Management
- Reports and Dashboards to track business process performance

Key Learnings

- Advantages
  - Little or no finger pointing
  - Willingness to dig in and invest time and effort to make improvements
  - Adoption and adaptation to changes high

A “git’er done” attitude!

- Challenges
  - Minimal IT support adds challenges on unrelated, but necessary items like general networking
  - Initially lacked complete understanding of CMII
  - Lacked full understanding of Aras’ implementation of CMII
    - Error conditions created from incomplete understanding of implementation
  - Created our own complex Part classification for organizing, implication was overhead to maintain