PTC® Live Global

CUST322 -
Migration Pains and Why You Want to Stay Current

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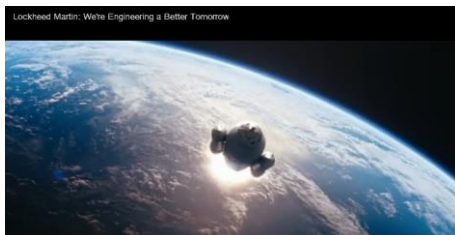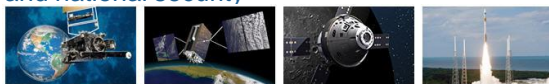
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Who Are We

- Headquartered in Bethesda, Md., Lockheed Martin is a global security and aerospace company that employs about 112,000 people worldwide and is principally engaged in the research, design, development, manufacture, integration and sustainment of advanced technology systems, products and services.

- **Our Mission:** We solve complex challenges, advance scientific discovery and deliver innovative solutions to help our customers keep people safe and provide them essential services.

- **Our Vision:** Be the global leader in supporting our customers to strengthen global security, deliver citizen services, and advance scientific discovery

Lockheed Martin: We're Engineering a Better Tomorrow

Organization

- Lockheed Martin's operating units are organized into broad business areas.

  - **Aeronautics**, with approximately $14.9 billion in 2014 sales which includes tactical aircraft, airlift, and aeronautical research and development lines of business.
  - **Information Systems & Global Solutions (IS&GS)**, with approximately $7.8 billion in 2014 sales that includes C4I, federal services, government and commercial IT solutions.
  - **Missiles and Fire Control**, with approximately $7.7 billion in 2014 sales that includes the Terminal High Altitude Area Defense System, Joint Light Tactical Vehicle, PAC-3 Missiles as some of its high-profile programs.

  - **Mission Systems and Training** with approximately $7.1 billion in 2014 sales, which includes naval systems, platform integration, simulation and training and energy programs lines of business.

  - **Space Systems**, with approximately $8.1 billion in 2014 sales which includes space launch, commercial satellites, government satellites, and strategic missiles lines of business.

Space Systems

ENGINEERING A BETTER TOMORROW

- Space is where the future takes flight

- Global communications, weather forecasting, space exploration and national security

| Climate Monitoring | Satellites | Space Exploration | Launch Vehicles |

A2100 · Advanced Extremely High Frequenc... · Defense Meteorological Satellite... · Defense Satellite Communications... · GeoEye-2 · Global Positioning System (GPS) · Global Positioning System (GPS) ... · Mobile User Objective System · Space Based Infrared System
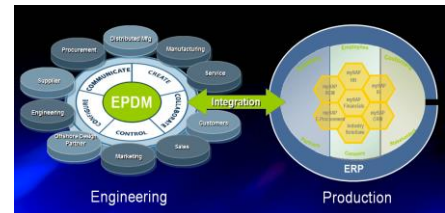
Lockheed Martin Location Map
Major Business Area Represented in Each Location

- Stay Current

- Minimize Customizations

- Participate in Tech Committees and PTC User Communities

- Identify Tool Gaps/Needs, Build Alliances, Work with Product Managers

- Minimize your Risks and Maximize Efficiencies thru Upgrade in Place

- Consolidate tools across Delivery Centers, LOBs and Programs

- Consolidate business practices

- Support Disciplined-Based Engineering Teams

- Reduce Total Cost of Ownership via out-of-the-box approach

- Elimination of Windchill customizations

- Single, more robust EPDM to ERP integration
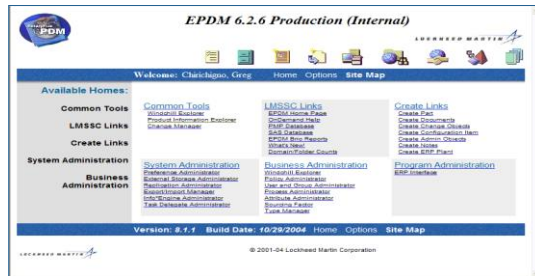
- Facilitate work-share across all of LMSSC

- LMSS PDM Solutions Feels like we have Grown Up with PTC Windchill

- Began with PTC Windchill 4.0 as Prototype

- 1st Production Deployment Windchill 5.1(1999-2004)
    – Doc Management
    – Change Management
    – BOM Management

- Highly Customized PTC Windchill 6.2.6 Platform(2004 – 2012)
  - Doc Management
  - Change Management
  - BOM Management
  - BOM Notes
  - Limited CAD Integration
  - ERP Integration
  - Parts Management Integration
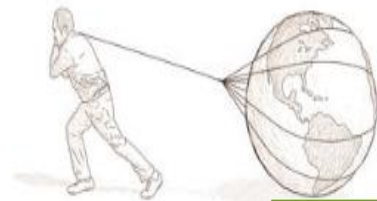
- Bridged GAPS needed by the Business

Don't Get Stuck in the Past by Heavy Customization

- EPDM PTC Windchill 6.2.6 solution reached "end of life" in 2006
  - Operated in Unsupported mode for 6 more Years
  - Stuck on Unsupported versions of Java, Browser, Oracle
  - Security Risk

Environment	Programs	Users		Parts	Doc's	CAD Doc's
		LM	Non-LM			
epdm-sv	88	3,741	329	1,083,292	1,315,163	2,466
epdm-fbm	1	1,545	49	320,849	489,644	0
epdm-tcm	1	254	39	76,875	9,224	73,266
epdm-prod (ULA)	1	1,930	57	503,428	223,257	N/A
PDMLink Pathfinder	1	1,583	842	NA	153,388	98,000
Total	92	9,053	1,316	1,907,569	2,190,676	173,732

- Worked with PTC and other A&D Contractors to ID GAPS
  – Participated on PTC Board of Customer Advisors (BOCA)
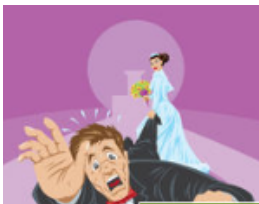 – LMSSC Identified GAPS were slowly Incorporated

- Over 300 Customizations Retired Migrating to 9.1
  Sampling
  – Extension of the PTC Windchill Data Model for Part, Part Usage, Document and Change Objects to enable CAGE code to drive Uniqueness and Implement IBA or Soft Attributes
  – Search using IBA or Soft Attributes
  – Alternate/Substitute
  – Administration Tools
    • Enable bulk Move, Delete, Reassign Lifecycle, Reassign Team, Reassign Work List operations on multiple objects
  – Custom Packaging Data Sheet (PDS) System – MIL-STD 2073
  – Custom CDRL and SDRL object
  – Custom GUI – Part HTML
  – Custom Standard, Template and BOM Note Implementation
  – Custom Reference Designator Implementation
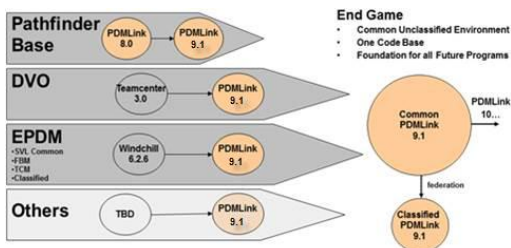 – Custom Item Find Number Implementation

- PDMLINK 8 Pathfinder (Orion Program) Proof of Concept (2008)
  - Allowed Replacement of Customization with Configuration
  - Proofed Business Processes

- Have an Executive Champion in your Corner
  - Willing to drive change of behavior in the business
  - Enforce Use of Configuration, Not Customization
  - One Tool, One Process
  - The business will be hesitant

Entice the business to Move Forward

- Prototype Business Process in Latest PDM Tools
  - Shape Current Business Processes
  - Show them it can be done

Flexlble

- Migrations Required

End Game
- Common Unclassified Environment
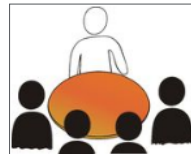- One Code Base
- Foundation for all Future Programs

- Document Scope/Agreements
  - Stake Holders tend to have Short Term Memory Issues

- Organize a Steering Committee
  - Executive Champion Chairs
  - Designate Empowered Reps

- Migration Strategy
  - Only Bring Latest Released and Working Copy Data to PDM
  - Historical Data Left in a Data Mart
    - Includes Workflow History
    - Drastically Reduced Migration Time

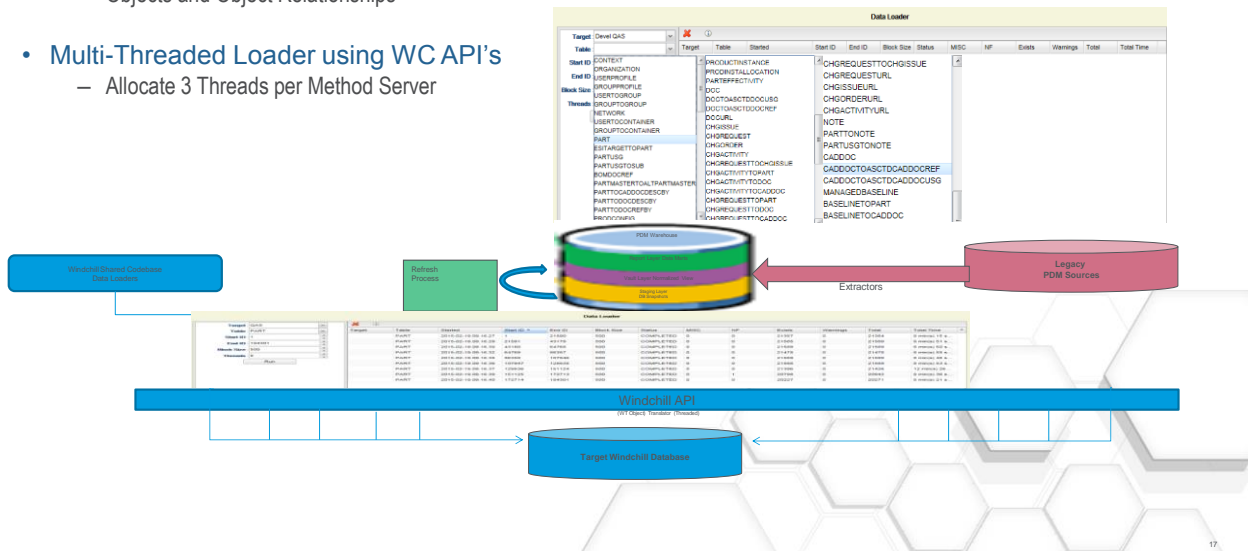**DATA MIGRATION**
JUST AHEAD

- Develop a Data Map
  - Needed to Support Load/Validation
  - Must Map Every Object, Attribute and Link
  - Managed in WC using Review/Approval Routing for Stakeholder Buy-In
  - Enables Validation Scripts
  - Minimizes Scope Creep during Acceptance Validation

Custom Data Loader

- **Complex Staging Tables**
  - Objects and Object Relationships

- **Multi-Threaded Loader using WC API's**
  - Allocate 3 Threads per Method Server

Migration Resources/Timelines

- **Migration Resources, Timelines and Limitations**
  - Develop/Refine Data Map, 9-12 Months per Source System

  - 5.1 to 626, 20 SE/DEV's, 10 Loader Machines, 10 days Run Time
  - 626 to 9.1, 10 SE/DEV's, 1 Loader Machine, 5 days Run Time
  - 10-15 Work Day Validation Cycle/Run Typical
  - No Lifecycle and Workflow History can be Migrated to Target
  - Expect Extensive Cycle times to Rinse and Repeat

- Practice, Practice, Practice
  - Average of 4-5 Full Scale Migrations, Plan for it
  - 1st Migration ID's un-anticipated Migration/Load API issues
    - Discovery of Legacy Data you never knew you had, Refine mapping of Staged Data
  - 2nd Migration for retest of Modified Map w/ Adjustment of Loaders
  - 3rd - N Migrations for Refinement of Process and Timing

- You won't think of Everything

- The Data Owners won't find everything in Testing

- Expect Higher Number of Trouble Tickets
  - Users won't understand Data Map and Rules used
  - Be Prepared to Perform Mass Updates if mapping was incorrect

- No data map required
  – Save Man Years of Labor

- Work Flow History is Preserved

- No Content Vault Relinking Required

- Timeline Shorter
  – 3 Test UIP Performed
  – 3 SE/Dev Resources Needed
  – 24-36 hours Run Time to perform actual UIP
  – Typically 5 day User Acceptance Validation Cycles

- LMSS Upgraded 2 Production 9.1 PDM Systems to WC 10.2 within 3 week window

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- Use Configuration over Customization
  – PDMLINK 10.2 Provides Powerful Capabilities
    - Operate in the API Framework
    - Configurable Links
    - Validation Classes for Data Integrity
    - Web Services
    - Listening Services

- Work with PTC and PTC User Community
  – ID GAPS
  – Get Involved
  – Make PTC Windchill Better for ALL

- Keep Pace with PTC through Upgrade in Place
  – Faster, Better, Cheaper

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- Your feedback is valuable

- Don't miss out on the chance to provide your feedback

- Gain a chance to win an instant prize!

- Complete your session evaluation now