Logistics & Sustainment Enterprise
2040 (LSE 2040)
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Branch Chief, AFSC/ENSI

Delivering Combat Power for America
2011: The USAF Scientific Advisory Board and National Research Council published two reports identifying findings & recommendations for sustainment technology

- NRC: “The Air Force should develop a “technology for sustainment” plan that identifies processes, technical agendas, workforce needs, and required funding resources.”
- SAB: “Increase AF Research Laboratory (AFRL) research efforts oriented to legacy aircraft maintenance needs and plan … for transition”
Goal
Logistics and Sustainment 2040

- A 30-year, “Art of the Possible” vision of the Logistics and Sustainment Enterprise, with a
- A coherent strategy to guide the enterprise toward the vision

Attributes
1. 100% Data Availability
2. 100% Parts Availability
3. Environmentally Compliant
4. Efficient Depot
5. Effective Workforce
6. 100% Process Control
7. Strategic Sustainment Management
8. Resilient Mission-Ready Software Sustainment
9. Energy Efficacy
LSE 2040 Strategic Alignment

AFMC Strategic Goals

Goal 1 (Agility): Increase agility of AFMC support to the Air Force Enterprise
Goal 2 (Trust): Bolster trust and confidence of those we serve, by meeting our commitments
Goal 3 (Cost): Drive cost-effectiveness into the capabilities we provide
Goal 4 (People): Recruit, develop and retain a diverse, high-performing and resilient team

AFSC Strategic Goals

Goal 1: Perfect our processes and accountability for the Nuclear Enterprise
Goal 2: Meet warfighter commitments
Goal 3: Health of the organization
Goal 4: Optimize infrastructure and reduce utility consumption
Goal 5: Functional LOG/NAF/AOC
Goal 6: Implement a strategic technology roadmap
Goal 7: Deliver more capability at less cost
## Attribute Overview

<table>
<thead>
<tr>
<th>Attribute</th>
<th>Major Success Characteristics</th>
<th>Attribute Owner/Co-Owner</th>
<th>Execution Group</th>
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</thead>
<tbody>
<tr>
<td>1. 100% Data Availability</td>
<td>All Data Sources are Digital (Digital Thread) Common Software Tools to Manipulate the Data Tail Number Weapon System/Commodity Digital Twins Data Fusion and Linkage to SME on Production Floor</td>
<td>AFSC/EN AFRL/RX</td>
<td>IEG</td>
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<tr>
<td>2. 100% Parts Availability</td>
<td>100% On-Time, Cost Effective Parts Availability Rapid Certification of New Parts &amp; Sources Accurate Parts Forecasting Agile Local Manufacturing</td>
<td>448 SCMW/ DLA AFRL/RX/RQ</td>
<td>SCMEG</td>
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<tr>
<td>7. Intelligent Sustainment Infrastructure</td>
<td>Single AFSC Entry Point for Workload Common MRO Toolsets Across The ALCs Enterprise Loading of Common Production Capabilities Planning Tools That Optimize Workloads Between ALCs</td>
<td>AFSC/LGX AFRL/RX</td>
<td>SCMEG</td>
</tr>
<tr>
<td>8. Software Sustainment</td>
<td>Resilient software development, tools, and processes Cyber-secure software development environments High fidelity WS simulations for val/ver/test/training Technology driven cross complex collaboration/innovation</td>
<td>AFSC/EN AFRL/RI</td>
<td>DMEG</td>
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“100% Data Availability”

- Optimize repair data collection, archiving and access to enable accurate forecasting, process analysis, and repair execution
- Digital Thread, Real Time Display, Digital Twin
- Maintain electronic Technical Orders
“100% Parts Availability”

- JIT parts – print on demand parts
- Tracking & delivery
- Counterfeit detection
- Agile manufacturing – additive manufacturing
- Data-driven models to predict future demand
- 3-D models for reprocurement
“Safe & Environmentally Compliant”

• Move from control & protection to elimination
• Proper hierarchy of controls in all process engineering
• Target cadmium, hexavalent chrome, beryllium, lead, RDX (explosives) and OSHA “Watch” chemicals
• Execute environmentally compliant processes
  • Solid waste recycling/recovery
  • Hazardous air emission reductions
“Efficient Depot Operations”

- Delivery is on-time, every time
- Flexible, optimized processes--accurate, actionable metrics
- Wide-spread automation & robotics
- Standard work across the enterprise
- One-pass, whole weapon system assessment
- Scripted networks; condition based PDM
 Effective Workforce

• Workforce trained for current & future workloads
  • 8 for 8, 8 hour work expectation, effective/efficient training, hands-free digital info

• Right people with right skills

Complexity driving higher skills

Tech
Super Tech
Professional S&E

Robust K-12 STEM outreach

Leaky STEM “Pipeline”
“100% Process Control”

- Controlled, optimized process sequencing
- Process config mgmt - tip-to-tail product traceability
- Rigorous accept/reject criteria
- Process engineering expertise incorporated in manufacturing
“Strategic Sustainment Management”

- AFSC is the gateway to the Sustainment Enterprise
- Common IT tools across ALCs – interchangeable/optimized
- Agile manufacturing – additive manufacturing/material substitution, improved local manufacturing velocity

Shared/Collaborative resources can create virtual “manufacturing centers” & “jumpstart” innovation
“Resilient Mission-Ready Software Sustainment”

- Assure resiliency for AFSC software development environments (SDEs) against current & future threats (Characteristic A: Resiliency)
- Improve effectiveness of requirements validation, test and training capabilities of AFSC software resulting in 100% error free fielded software (Characteristic B: Effectiveness)
- Employ collaborative tools & techniques to address increasing AFSC software complexity where innovation is leading industry (Characteristic C: Innovation)

<table>
<thead>
<tr>
<th>Millions of Source Lines of Code</th>
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<tbody>
<tr>
<td>30.0</td>
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<tr>
<td>20.0</td>
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<tr>
<td>10.0</td>
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- F-4
- F-16 Block 15
- A-10
- F-16 Block 25/30
- F-16 Block 40/50
- F-22 (est.)
- F-35 (est.)
“Energy Efficacy”

- Industrial Energy (IE) Efficiency: Reduce Year-Over-Year (Y-O-Y) IE consumed, achieving near NETZERO status by 2035
  - Electricity
  - Fossil Fuels
  - Energized Waters
- Energy Resiliency/Assurance (100% Energy Availability)
  - Secure from Interruptions, using renewable sources
  - Mitigations to Price Volatility
- CBM Monitoring of All Industrial Equipment
  - Sensors and Industrial Control Systems (ICS)
- Leadership Governance Formalized
- Balancing Act
  - Energy Reductions/Savings
  - Alternative Energy
  - Technology Insertion
  - Production improvements
- Foundational Energy Management System
- Certified Facilities, improving energy performance up to 40% over 10 years
Outcome/Results
Logistics and Sustainment 2040

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Some Near-Term Efforts Driven by LSE 2040:

- PIT/AO
  - Robotic Laser Coating Removal System

- Logistics and Sustainment 2040
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Dangerous/Costly Cyber Scenarios
- Malicious damage to aircraft
  - Laser Depainting C-130s and F-16s
  - Laser Shotpeening F-22s
- Engine overtest
- Faulty NDI results
- Overspinning RCS Turntable
- Fault injection of 3D printed part
LSE 2040
Questions?