

Lean Aerospace Initiative

Enterprise Value: The New Lean Horizon

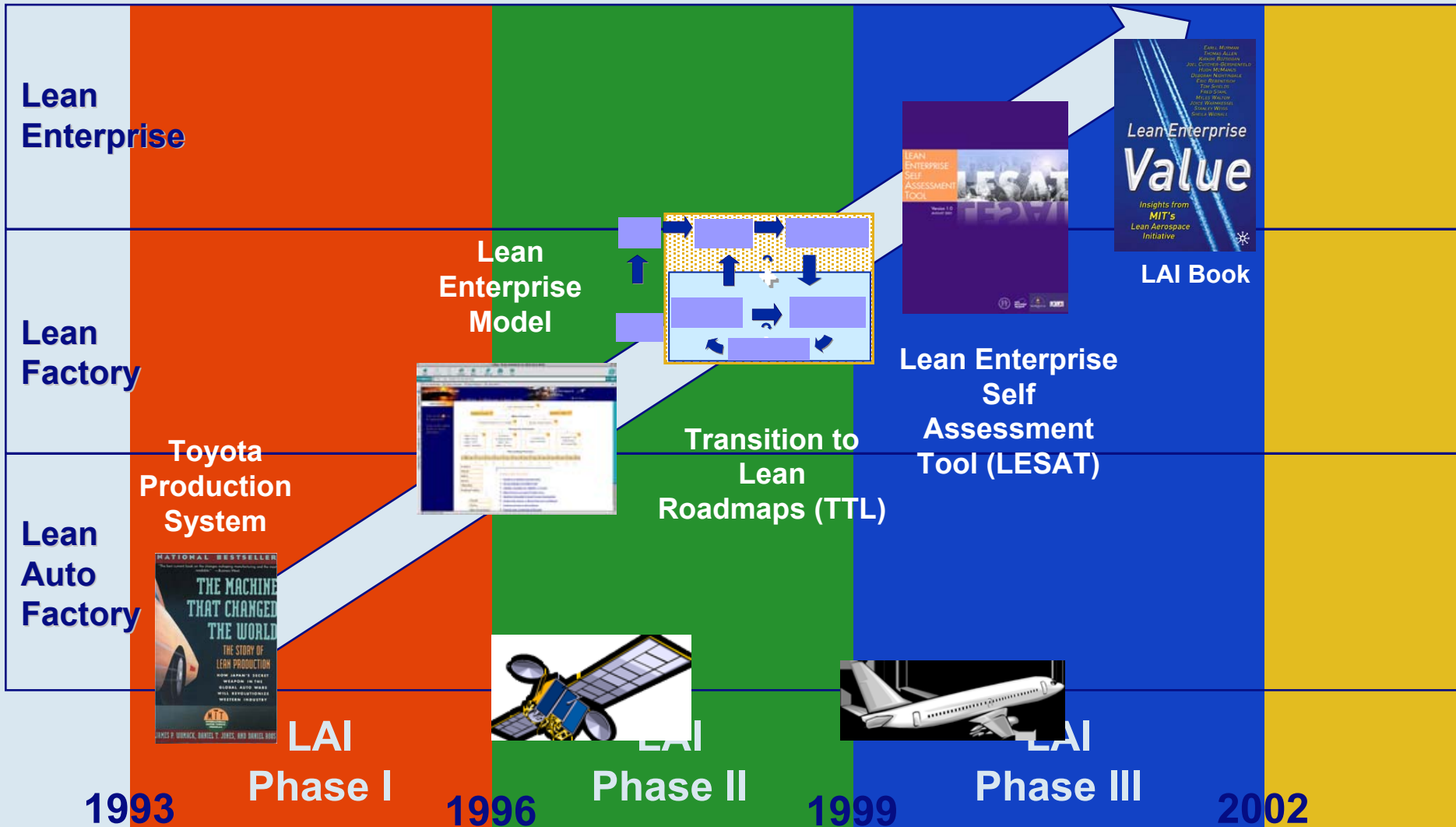
March 26, 2002

Presented By:
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LAI Co-Director





The Lean Aerospace Journey: A People, Process, and Product Evolution



C-130J production

- Throughput of extrusion shop from 12 days to 3 minutes

Automatic code generation

- 40% reduction in time
- 80% improvement in quality

Military electronic modules from commercial lines at TRW

- 73% cost reduction

F-16 Build-to-Print Center

- 75% cycle time reduction

777 floor beam

- 47% assembly time reduction

P & W General Machining Center

- 67% reduction in lead time

Delta IV launch vehicle

- 63% reduction in floor space

GE Lynn aircraft engine facility

- 100% on time deliveries

Joint Direct Attack Munition (JDAM)

- 63% reduction in unit cost

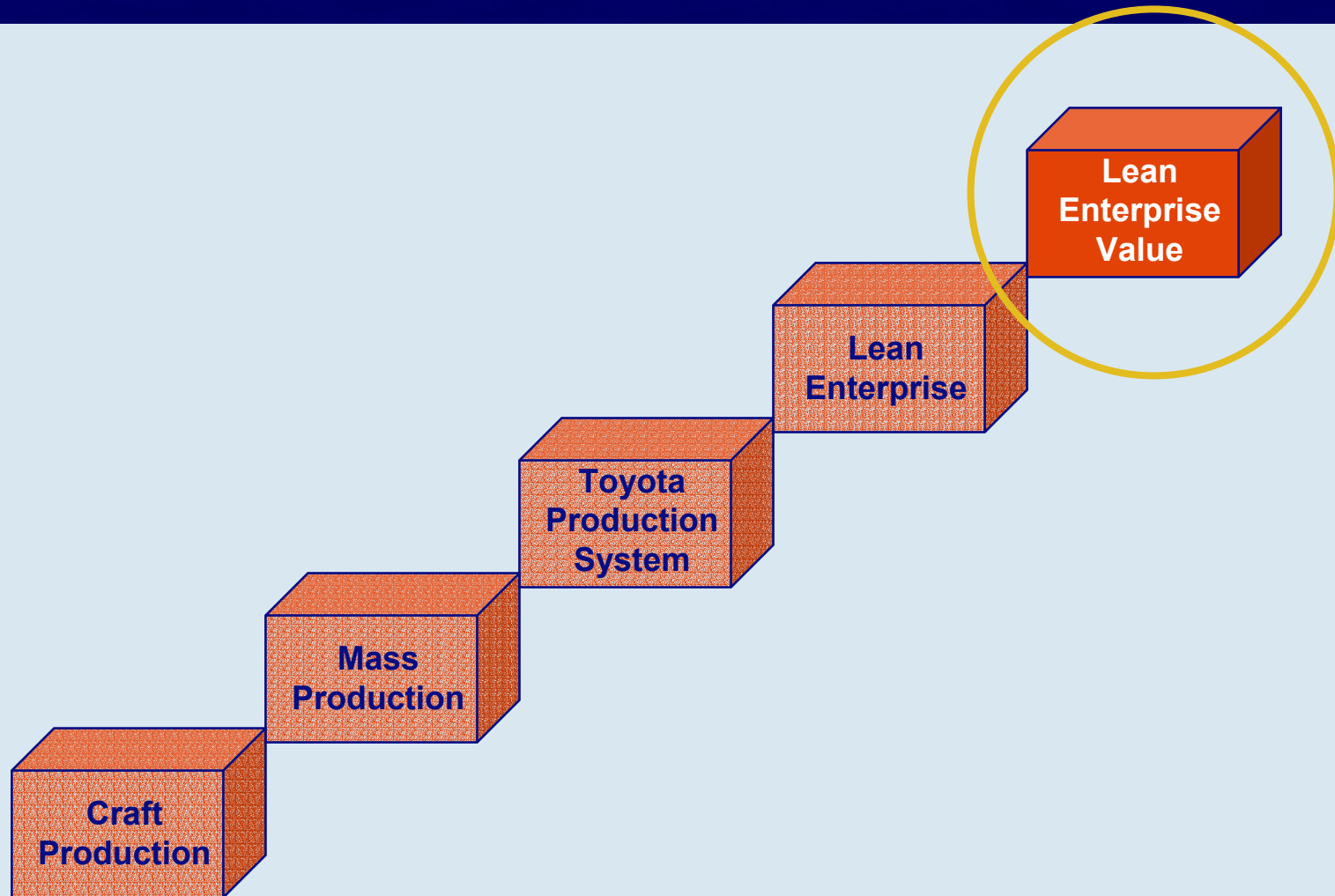
- **Transformation is continuous and takes years, not months**
- **Senior executive leadership, commitment, and involvement are critical success factors in enterprise transformation**
- **Biggest challenges is institutionalizing lean and sustaining the change**
- **Focusing on time forces everyone to think of the “enterprise”**
- **Enterprises must be viewed as a holistic system**
- **Substantial Potential in Enterprise**

Evidence of Lean Potential in An Enterprise

- **F-16 maintained sales price and decreased order-to-delivery time by up to 42% while production rate decreased 75%**
- **C-17 unit priced decreased from \$260M to \$178 M for final 80 aircraft of 120 aircraft buy.**
- **Northrop Grumman ISS lean enterprise implementation reduced throughput times for major systems by 21 to 42%.**
- **F/A18-E/F EMD completed on time, within budget (without rebaseline) while meeting or exceeding performance requirements.**
- **Raytheon realized \$300M FY 2000 bottom line benefits from its enterprise wide Six Sigma program**

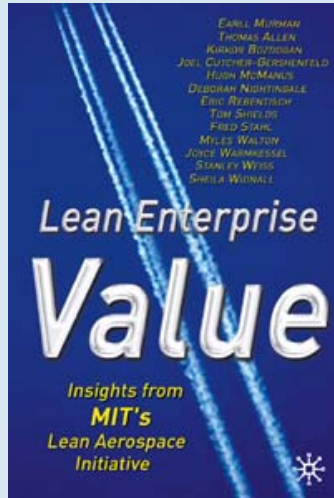
Lean is not just a matter of eliminating waste, rather becoming lean is a process of eliminating waste with the goal of creating value for enterprise stakeholders.

Lean Enterprise Value, Palgrave Publishing



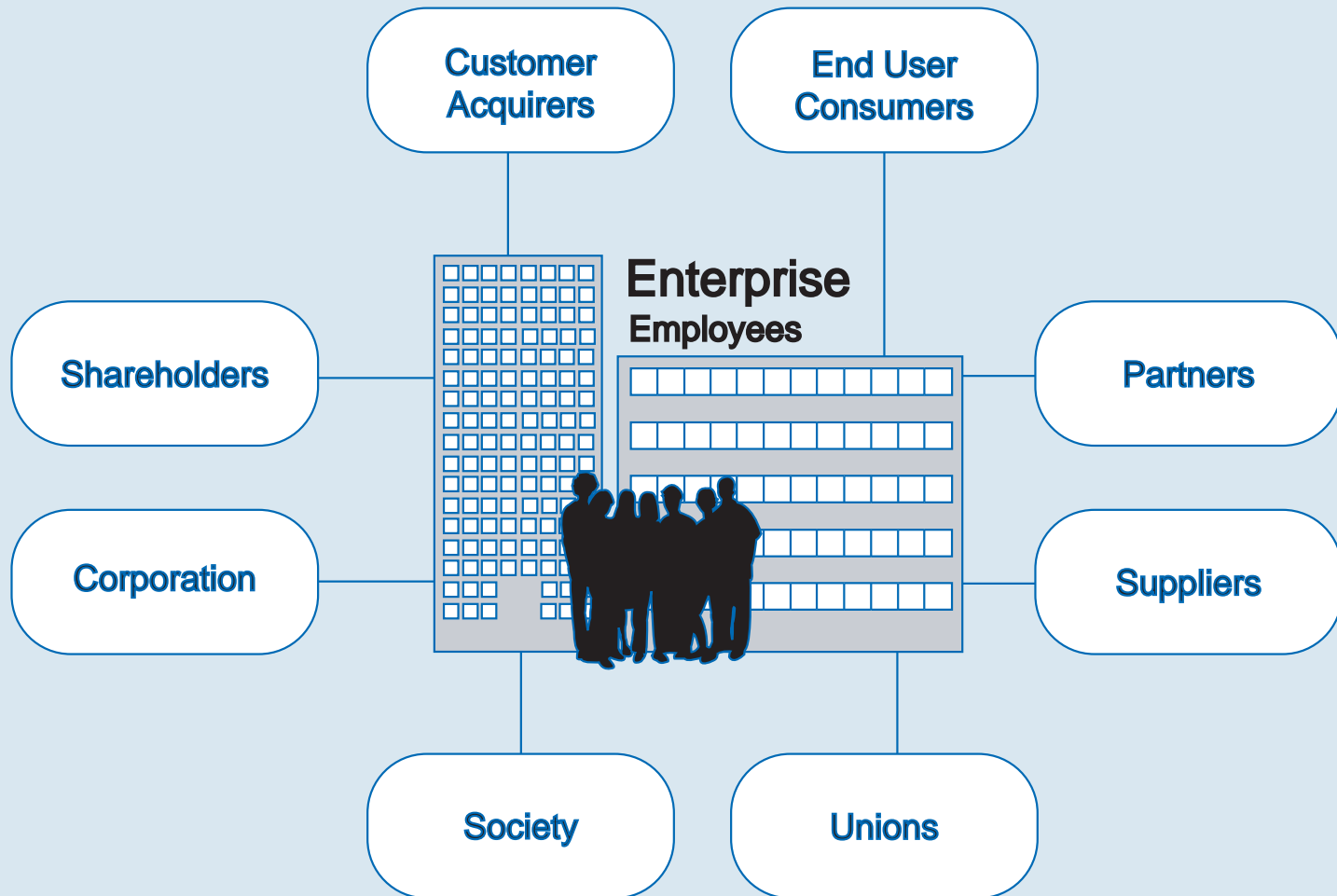


Lean Enterprise Value Concepts



“The core challenge for industry in the 21st century involves identifying and delivering value to every stakeholder. Meeting that challenge requires lean capability at the enterprise level.”

- Stakeholders
- Creating Value
- The Three Levels of Enterprise
- Value Creation Framework
- Enterprise Level Lean Principles

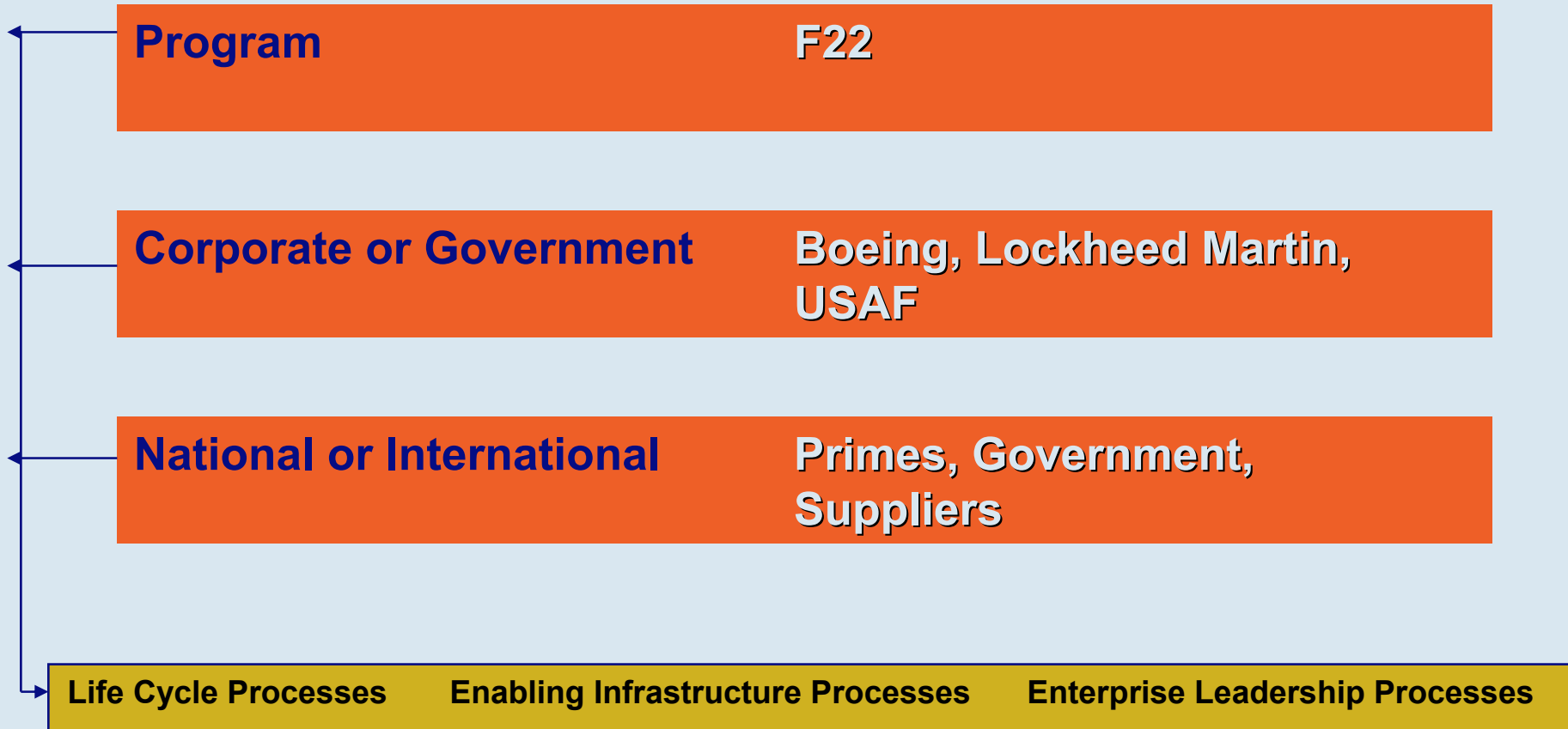


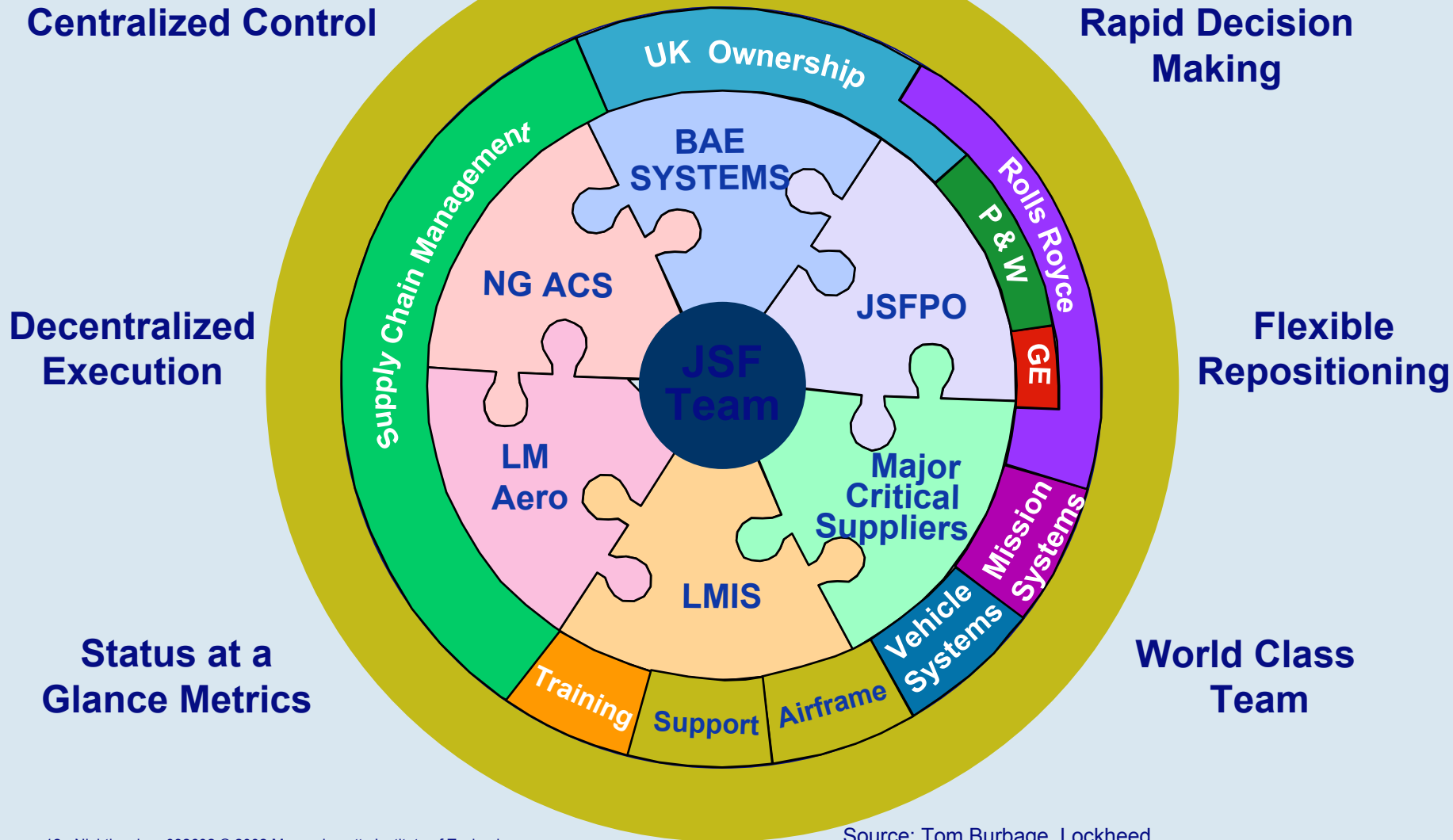
Delivering what stakeholders want and need.

For example:

- **Timely, quality products at a reasonable price to customers**
- **Competitive returns on investments to shareholders**
- **Rewarding work environment, stable jobs for workforce**
- **Environmental and civic responsibility to the public**

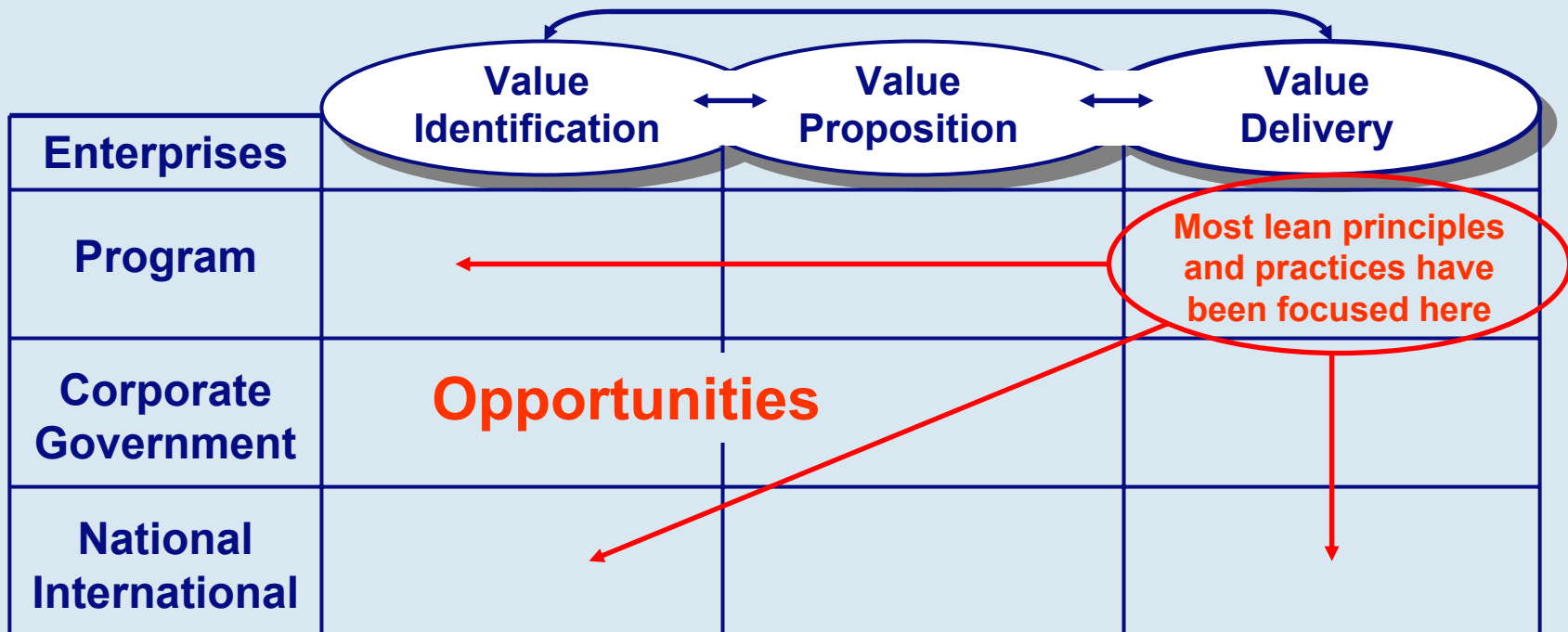
Three Levels of an Enterprise





A Value Creation Framework

Value Phases



- **Create lean value by doing the right job and doing the job right**
- **Deliver value only after identifying stakeholder value and constructing robust value propositions**
- **Fully realize lean value only by adopting an enterprise perspective**
- **Address interdependencies across enterprise levels to increase lean value**
- **People, not processes, effectuate lean value**

**Bob Nelson, Corporate Vice President Business Strategy,
Northrop Grumman Corporation**

**Heidi Wood, Executive Director, Senior Aerospace & Defense
Analyst, Morgan Stanley**

Tom Allen, Professor MIT Sloan School of Management

**Carolyn Corvi, Vice President-General Manager- Boeing
737 Program**

Mike Fortson, Director, Joint Strike Fighter Affordability

**Mike Gass, Vice President, Atlas Program Lockheed Martin
Astronautics**

and

Nine Break Out Sessions



Realizing Our Potential

