

TRW

Communicating Lean

Jim Everett
Robert Such
October 15, 1998

LAI Communications Involvement

- 2 members on Communications IPT
- Industry co-chair for IPT



LAI Employee Communications

- InfoLink Article - July 1997



LAI Employee Communications

- Information Session: Creating a Lean Enterprise



ASD **Brown Bag** *July 29, 12:00 Noon*
Training Center RC2/2268

Creating a Lean Enterprise
**Lean Manufacturing:
From Tractors
To Telecommunications**

Presented by
Fred Stahl
Director of Production Transition at McDonnell Douglas Aerospace in St. Louis

Fred's speech describes the successful effort of John Deere Inc. to establish a Lean Enterprise system at one of their plants, and their experiences in radically changing the way they design.

The poster features a blue tractor in the foreground and a large mobile phone floating in the air to its right. The background is a light blue gradient.


LAI Employee Communications

- “Quality Day” Presentations



LAI Employee Communications

- Poster detailing LAI practices



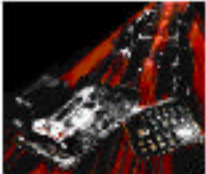
Optimal Quality Responsiveness to Change
Waste Minimization Continuous Improvement

Overarching Lean Practices

1. Identify and optimize enterprise flow
2. Assure seamless information flow
3. Optimize capability and utilization of people
4. Make decisions at the lowest level possible
5. Implement Integrated Process and Product Development
6. Develop relationships based on mutual trust and commitment
7. Continuously focus on the customer
8. Promote lean leadership at all levels
9. Maintain the challenge of existing processes
10. Nurture a learning environment
11. Ensure process capability and maturations
12. Maximize stability in a changing environment

Cost Saving


Advanced Systems and Processes



Lean manufacturing techniques create significant cost reductions in the production of DNI modules.

Learn at TRW

Visit our website:
http://www.trw.com/home_page/LAI4a.html

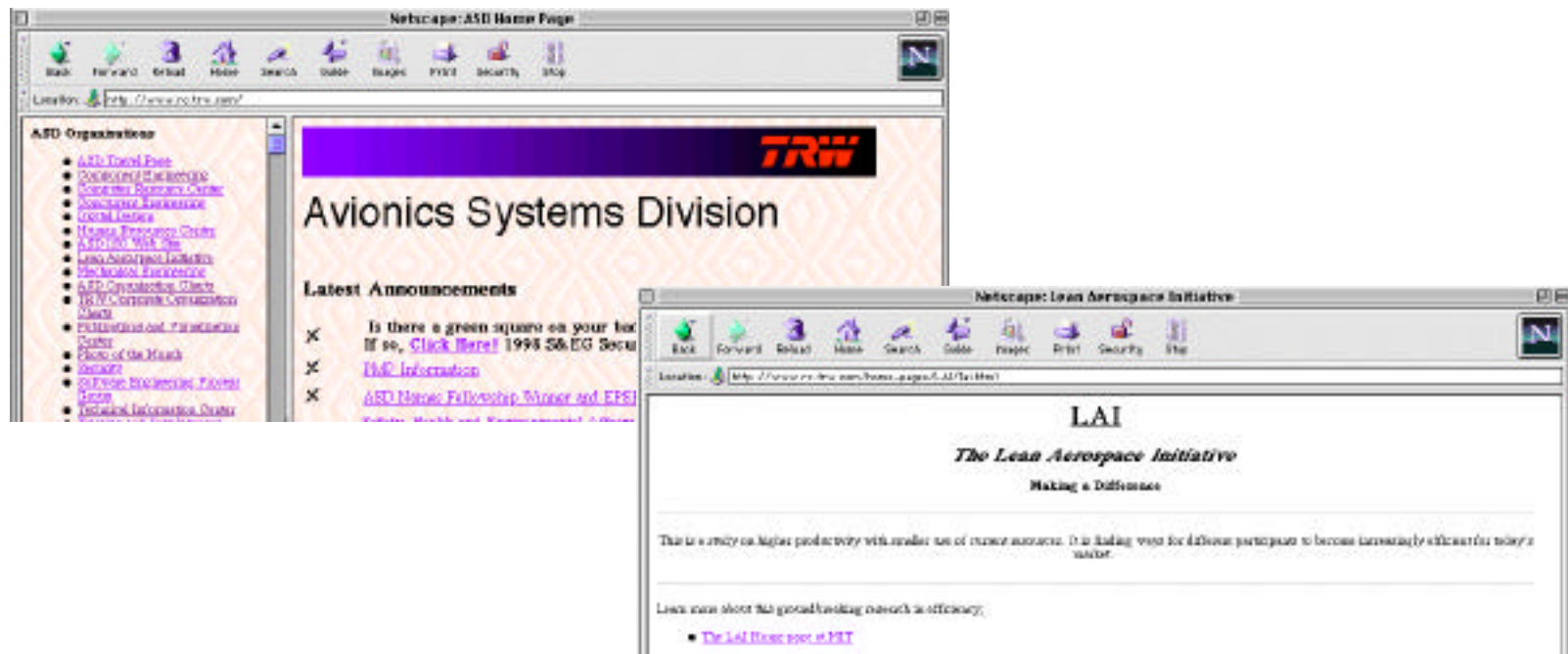


Lean America Initiative

For more information call: Jim Everett 336-45

LAI Employee Communications

- Internal TRW WWW page



LAI Employee Communications

- ARPS Program Article Detailing 60% Price Drop

Original ASD Program Still Delivering The Goods

In 1982, a small group of dedicated TRW employees moved down from Space Park to Rancho Carmel to start a new division, the Military Electronics Division. Through the years, the division has gone through numerous name changes before arriving at it's current moniker: the Avionics Systems Division (ASD). Despite the name and personnel changes over time, many - including some ASD veterans - may be surprised to know that one of the original programs brought down to Rancho Carmel, the Advanced Radar Processing System (ARPS), is still going strong.

In a nutshell, ARPS is essential in the connection path of a radar to a computer. The high speed system converts the analog signals generated from the radar signal into digital "words" that aircraft computers can understand. The main platform for the technology has been the Navy's E2-C Hawkeye, the "flying radar" that is the eyes of the U.S. aircraft carrier fleet. The technology, when first delivered for production in 1976, was considered very innovative for its time. Even today, it is considered a high-performance "workhorse", and the basic design has changed little since it

LAI External Communications

- Participation Identified at Trade Shows



LAI External Communications

- Brochures Display LAI Logo


Avionics Systems

TRW is a world class supplier of superior, cost-effective avionics systems, engineering support, test and training systems, antennas, simulation and modeling tools for unmanned aerial vehicles to a wide range of customers. These systems are critical in the delivery of mission-critical real-time intelligence to the men and women on the front lines - helping them to analyze, dominate and succeed on today's demanding digital battlefield.

TRW Mission	TRW Values	
Leadership	Customer	People
TRW is a global company focused on providing superior products and services to customers in the space, defense, and automotive markets. Our mission is to achieve leadership positions in these markets by serving the needs of our customers in innovative ways - by being the best in everything we do. We will create value for our shareholders by balancing short-term performance and long-term financial strength.	Customer satisfaction is essential. We will deliver superior value to our customers through quality, reliability and technology. We grow and prosper by serving the needs of our customers better than our competitors, while effectively controlling costs.	The men and women of TRW make our success possible. We encourage the involvement and reward the contribution of each employee. We value open and honest communications. We create a workplace where every employee can share a sense of ownership for TRW's success. We provide equal opportunity in our employment and promotion practices.
	Integrity	Quality
	We pursue our business interests worldwide in a socially responsible manner. We conduct our business in accordance with the highest standards of legal and ethical conduct. We encourage every TRW employee to participate in and support community activities.	Quality is important in everything we do. Quality is everyone's responsibility, and achieved through continuous improvement. We continually seek ways to do things better.


TRW Avionics Systems Division is proud to be:

- ISO 9001 Certified
- Recognized as Level 3 using the Software Engineering Institute (SEI) Capability Maturity Model for software development
- A proud member of the Lean Aircraft Initiative



LEAN AIRCRAFT INITIATIVE
Massachusetts Institute of Technology

With headquarters in San Diego, California, TRW's Avionics Systems Division has facilities in eight other locations in the U.S., including engineering offices in Arizona, California, Florida, Georgia, Ohio, Oklahoma, and Utah. Nationwide, the division employs more than 1,000 people. TRW Avionics Systems Division is one of five divisions in the TRW Space & Electronics Group.



TRW Avionics Systems Division

LAI External Communications

- Data Sheets Detail LAI Participation

Cost-effective Integrated Modular Avionics

TRW is a leader in the development of the next generation of affordable, cost-effective integrated avionics products for communications, navigation and identification (CNI). These modular avionics systems are smaller, more powerful, and more reliable than ever before - enable lighter planes to reliably communicate with friendly forces, identify foes, designate to and from targets, and detect and avoid threats.

The common shared receivers, transmitters and processors required to perform the various CNI functions are contained into a single, integrated "back" system, cutting size, weight and life cycle costs in half. These size and weight savings gained are crucial in today's equipment-crowded military aircraft, where increased demands mean tradeoffs in aircraft performance and capability.

The system is further improved by reconfiguring its core architecture to allow for a wide range of functions to be added to the through-firmware software updates.

These updates are made possible by built-in redundancy - enabling pilots to continue their mission and return safely.

One of the plug-in modules contained in the Cost-effective Integrated Avionics System (CIAS) is the...



Leading Weapons Systems Development

As part of a team of industry leaders, TRW led the development and demonstration of the U.S. Government's In-service (CNI) Integrated Communications, Navigation and Identification Avionics program. The team demonstrated the ability of a reconfiguring, reprogramming and data processing system to achieve:

- The implementation of more than 14 CNI functions within a single common module set.
- Simultaneous operation on a large number of CNI functions for varying mission requirements.

TRW has the ability to provide the next generation of integrated CNI avionics to the Joint Strike Fighter (JSF) program. Embodying commercial success in an open architecture, TRW CNI delivers greater improved interoperability and commonality within the program, significantly reducing lifecycle costs to these advanced aircraft of the 21st century.

F-22's CNI avionics products are the model for future avionics upgrades.

Automatic reconfiguration abilities to respond to failed modules and established system priorities.

Advanced Systems and Processes

As a founding member and active participant in the Lean Aerospace Initiative, TRW is using lean principles to eliminate waste and all non-value added functions and facilities in manufacturing, lowering production times and creating improved, less costly avionics products.

Furthermore, through its Industrial Based Plant Program, TRW is proving that commercial assembly lines and processes can be used to build high-quality, shippable military aircraft products, including CNI modules. Embodying proven, lean production techniques at TRW's non-aeronautics manufacturing facility, these products can be produced at significant cost savings.

Lean manufacturing techniques create significant cost reductions in the production of CNI modules.

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TRW Avionics Systems Division

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Because of their innovative design, TRW's avionics modules can be easily fault-isolated and replaced.

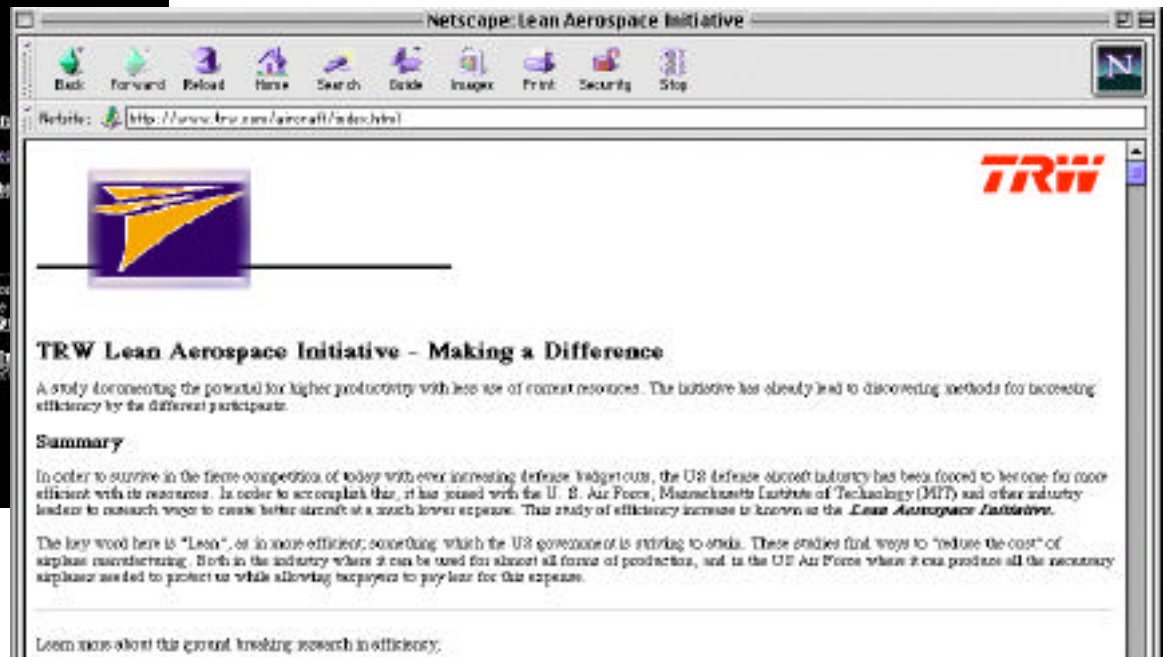
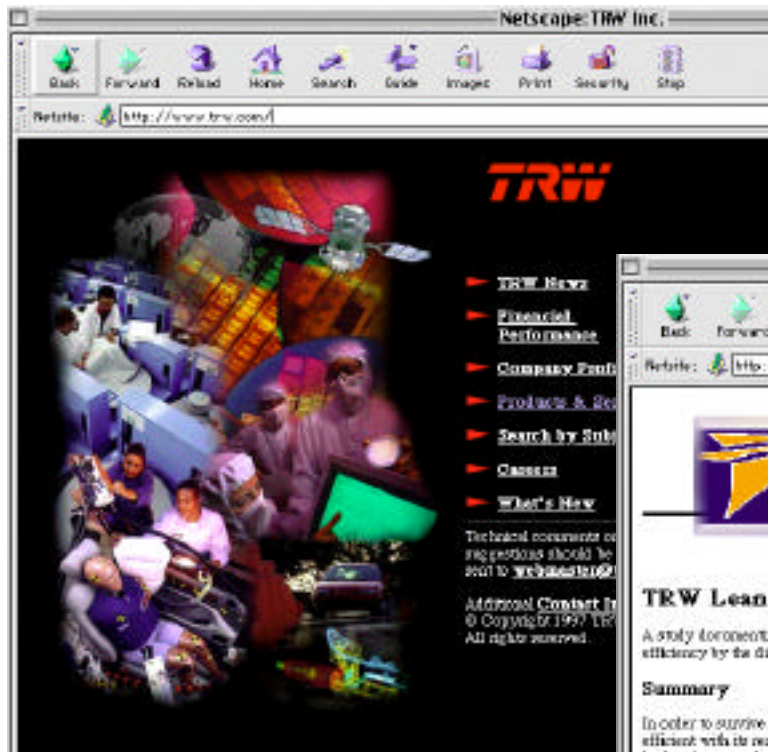
LAI External Communications

- Contributor to LA Times Article



LAI External Communications

- TRW External WWW Page



LAI Future Communications

- Continue participation on IPT
- Participate more actively in workshops -
- bring stories back to employees
- Employee article detailing how ASD has implemented LEAN practices
- Introduce LEAN in our advertising
- Expand WWW presentations