



# ACM

Aerospace Components  
Manufacturers

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# ACM UPDATE

February 28, 2011  
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**Aerospace Components Manufacturers, Inc.**  
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The ACM Update & Calendar (and previous issues) are also available for viewing on the ACM website.

### Welcome New ACM Members

#### **Firth Rixson LLC**

111 Founders Plaza  
East Hartford, CT 06108

[www.firthrixson.com](http://www.firthrixson.com)

Mike Sweeney, Sales Manager

#### **Mistras Group**

16 F International Drive  
East Granby, CT 06026

[www.mistrasgroup.com](http://www.mistrasgroup.com)

Sean Byrne, Sales Manager

#### **PTI Industries Inc**

2 Peerless Way  
Enfield, CT 06082

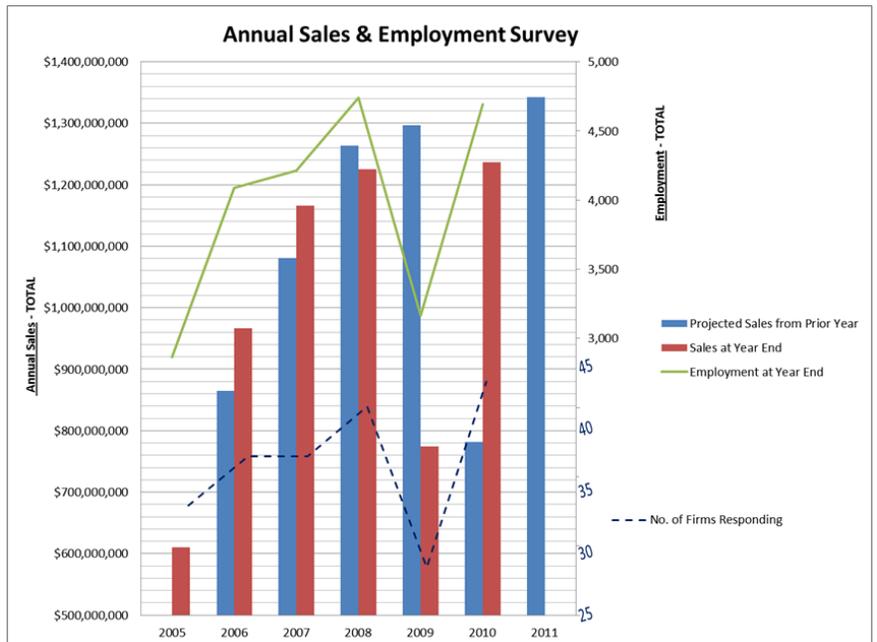
[www.ptiindustries.com](http://www.ptiindustries.com)

Chuck Osborn, Director, Business Development

### Business Development

- ACM conducted its annual year end survey of Sales Volume, Markets and Employment levels which this year, had an excellent response with 44 members providing data. Members provided CY2010 'year-end' data as well as a look-ahead to the coming year. The chart (*right*) summarizes six previous year-end surveys and this year, reflects the rebound of aerospace manufacturing business.

In summary, sales growth was projected, rising from over \$1.2 Billion in CY2010 to over \$1.3 Billion in CY2011; employment will increase from 4,200 to over 4,700 during the same period. Projecting for all of our 68 members, ACM member firms will generate CY2011 sales of over \$1.4 Billion employing more than 5,000



workers. Members also reported an 88:12 ratio of sales within the U.S. versus export; market sectors were reported as ~38% commercial aerospace, ~42% military aerospace, ~12% ground turbine and ~8% in other markets. Current facilities of over 3.2 million square feet of space were reported along with the projection of a 5% increase in floor space during CY2011.

- The Business Development Team met on February 23<sup>rd</sup>. Bruce Fiedorowicz (Volvo Aero CT), Business Development Team Leader, opened the meeting, welcomed members and introduced potential ACM members Ken Flanagan, Flanagan Industries (Glastonbury), Ed Judd, Fountain Plating (Springfield, MA) and Ed Bouquillon & Dariusz Szczepanowski, B&F Design (Newington). Bruce also introduced new ACM members who provided a brief overview of their firms: Chuck Osborne, PTI Industries (Enfield) and Sean Byrne, Mistras Services (East Granby). Members attendance at each recent Team meeting has exceeded the previous and Bruce thanked the members for their interest and support.

The guest speaker was Craig Musson, Director of the Global Supply Chain at Pratt & Whitney, who opened his remarks thanking ACM members for “all they do in providing quality parts, everyday!” Craig reviewed P&W’s roadmap for CY2011, calling this the “*Year of Delivery*”.

This was *the most upbeat* presentation offered by Pratt & Whitney in a number of years and it should be noted, did not include the added engine manufacturing in support of the U.S. Air Force’s selection of Boeing to produce the new KC-46A tanker; this aircraft will be powered by a variant of the PW4000 engine.

The following is a synopsis of Craig’s comments; as Team discussions are always candid and highly informative, the following has been abbreviated:

- Business volume is growing. “Today’s breadth of programs is the greatest ever at P&W”. Engine build volume will increase to over 1000 engines per year in 2015, a level not achieved since 1983.
- P&W purchased ~\$1.6 billion in goods during the last year and is forecasting an increase to over \$3 billion by 2014. Capacity must be added. International suppliers are coming up to speed, both technically and quality-wise, creating global competition. Last year, UTC purchased approx. 35% of its needs from overseas suppliers. U.S. suppliers will continue at no less than current levels and will likely grow as much as 25%.
- UTC Gold Level suppliers will have a definite advantage when seeking new business opportunities. At P&W, sourcing decisions reflect gold level capabilities.
- P&W will not risk single sourcing 100% of anything from a single facility (domestic or global). Performance issues and/or natural disasters (volcanoes, tsunamis, snowstorms, etc) present too great a risk at the production rates being planned. “Everything possible will be dual sourced” (which can include a single firm having two separated production facilities). “Competition will occur where current work is single sourced and therefore, opportunity will be created for others”.
- P&W is building relationships with international sources and these firms will become the hub of the procurement activity within their country. Rather than doing business with many sources within a country, P&W will look to the “hub company” to do subcontracting in country, as required.

#### Commercial Engines:

- Geared Turbofan (GTF): schedule and technical success are “absolutely critical”.
  - The PW1000G family of GTF is currently directed at 3 aircraft platforms, the CSeries regional jet (Bombardier), the MRJ regional jet (Mitsubishi) and the A320neo (new engine option) single aisle jet (Airbus). The PW800 (GTF), which is currently under development at P&W Canada, has no specific aircraft platform.
  - Engines for the CSeries and MRJ aircraft are currently in test, scheduled to be certified at the end of 2012 and will enter commercial service in 2013. Over 200 orders are currently booked.
  - The GTF engine for the A320neo will likely have international equity partners, although not IAE. Certification of this engine is scheduled for 2014 and entry into service in 2016.

--P&W's goal for the re-engined A320neo is over 50% of the market share, with GE's LEAP engine as the competing power selection.

--Engine development is taking place for indigenous Russian and Chinese commercial aircraft; both engines, slightly different, are very similar to the A320neo powerplant.

#### Other Commercial:

-Commercial O&R activity is up over 25% with significant orders being booked in the 1<sup>st</sup> quarter, 2011.

-Large diameter engine build rates have increased; PW4000 to 5 per month; GP7000 to 6 per month. This is P&W's highest build rate of large diameter engines in many years!

-Business in the ground power generation market (FT8/GG8 power-pack) remains strong.

#### Military Engines:

-F135 Engine (USAF F35 Joint Strike Fighter)

--Build rate for 2011 will be 4 engines/month for the entire year. Maintaining this schedule is critical to the program. P&W has 100% of the program's engine requirements thru 2015.

Should the competing F136 engine (GE / Rolls-Royce) *not be cancelled*, competition could occur as soon as 2015.

--All engines, including the CTOL variant, are doing well in flight testing.

--Middletown is planned to assemble 100% of engines unless an international partnership arrangement is required by the customers. With this said, "*certain work* will never be performed overseas".

-Military aftermarket business is exceptionally strong.

-F100 engine (USAF F-15 and F-16 fighters) build rate is twice that of 2010.

-F117 engine (USAF C17 transport) continues production at 4 engines per month, with strong foreign sales. With the Cheshire facility closed, O&R activity will take place at United Airlines (San Francisco) and at P&W's Georgia facility.

-F119 engine (USAF F-22 fighter) is selling spares; build rate of 2 engines/month are driven by the F-22 aircraft being based around the world. The original program design requirement of increased on-aircraft service hours prior to a major overhaul (doubling the requirement of the F100) is paying off for the USAF; the first major overhaul of an F119 isn't expected to occur until 2018.

Craig's briefing was outstanding and the Team thanked him for his candor and in sharing this information.

For additional information, Craig Musson may be contacted at [craig.musson@pw.utc.com](mailto:craig.musson@pw.utc.com).

The Team also discussed Industry Meetings and Tradeshows:

-The Power Generation Show took place in Orlando, FL last December. Attending members reported significantly less traffic than in prior years with some key industry participants not having a display booth. Business conversations, however, were reported as "upbeat" and aftermarket business was reported as strong.

-The U.S. Dept. of Commerce held a webinar regarding the Canadian aerospace market. Slides presented during the webinar are available from the ACM website; go to the Members Only page, Business Development and see [US DOC Webinar, Canadian Aerospace Business.pdf](#).

-Lockheed Martin will hold its annual F-35 Supplier Conference in Washington DC on March 9<sup>th</sup>. A report on this meeting will be provided by ACM attendees at the next Business Development Team meeting.

-MRO Americas 2011, April 12-14, Miami Beach, FL

-Off Shore Technology Conference, May 2-5, Houston

-AHS (American Helicopter Society) Vertical Flight Forum, May 3-5, Virginia Beach, VA

-Army Aviation Exhibition and Conference, June 7-8, Redstone Arsenal, Huntsville, AL

● The next Business Development Team meeting will be held on Tuesday, March 29<sup>th</sup> at 8:15am at CERC, Rocky Hill.

## Workforce Development

• The WorkForce Development Team met at Metals Testing Co. (South Windsor) on February 10<sup>th</sup>. Team members addressed the ongoing schedule of training courses currently underway. Of note is the increased need for training and, as compared to the previous two years, is a sign of renewed strength and hiring of our member businesses.

The following courses are currently being conducted and planned:

Course	Date (Start)	No. of Days	Date (End)	Host Company or Location	Participants
Use of Measurement Tools	1/19/2011	7	3/2/2011	CT Tool	CT Tool Kaman Precision Prod. Joining Technologies Stowe Machine GKN Structures
GD&T	1/17/2011	10	3/21/2011	Delta Industries	Delta Industries
GD&T	1/20/2011	10	3/24/2011	Delta Industries	Delta Industries
Use of Measurement Tools	2/17/2011	7	3/31/2011	AMK Welding	AMK Welding Har-Conn Chrome Aero Gear C&P Machine Sterling Engineering Peening Techn of CT
BluePrint Reading	3/1/2011	10	5/3/2011	Alpha Q	Alpha Q Mistras Group SPX Precision
GD&T	TBD	10	TBD	Alpha Q	Alpha Q

Geometric Dimensioning & Tolerancing, shown above without a start date, will be held at Alpha Q (Colchester) and begin shortly after completion of the BluePrint Reading course.

Team members also discussed increased hiring as local business levels increase. An informal survey was sent to ACM member firms asking about their hiring intents. With only 1/3 of our firms responding, 85% indicated their intent to hire additional employees in CY2011 (representing over 110 new jobs), 50% of those intending to hire expressed interest in workers with no specific job experience and those looking for specific skills indicated their need for experienced machinists, inspectors, N/C programmers, engineers and tool designers.

• CBIA's Education Foundation is looking for paid internship opportunities for selected juniors and seniors at Hartford's Academy of Engineering and Green Technology (AoEGT). AoEGT is part of the National Academy Foundation (NAF), which has a 20-year history of developing successful career academies.

AoEGT students take a college-prep curriculum, and most are planning to attend college. All prospective interns have been recommended by their teachers for having the AAA attributes we look for: attitude, academics, and attendance. Prior to being placed, they complete a pre-internship training program that focuses on professionalism, workplace etiquette, and team-building. Last year, 17 AoEGT students worked in Hartford-area companies in a variety of entry-level jobs, answering phones, collecting lab data, using computer-aided design software and testing fuel cells. The placements were overwhelmingly successful as measured by both the companies' and interns' evaluation forms.

For about \$1,000, your firm can hire an intern for 120 hours, the minimum recommended time for an internship. Depending upon their class schedules, interns can work during the regular work week, after school, during school vacations, weekends, or over summer break.

Please contact CBIA's Dayl Walker ([dayl.walker@cbia.com](mailto:dayl.walker@cbia.com) or 860-244-1935) for more information.

- ACM offers NO COST Job Postings on its website as a service to member firms. Recognizing the high cost of advertising, we hope this service provides an added benefit and cost savings from your ACM membership. Visitors to the ACM website's "**Job Listings**" will open to a page showing your individual job description, as in the sample, below. Clicking on your website address provides the applicant a direct link to your website.

## **JOB OPPORTUNITIES AT MEMBER FIRMS**

These jobs are listed by Company. To see jobs listed by type, [Click Here](#).

**JOB APPLICANTS:** Please DO NOT reply to this website; follow the directions for each posting to respond to job opportunities!

**Click a Job Title to View the Complete Description**

**ABCD Manufacturing Company, Inc.**  
**Management / Supervision**  
- Machine Shop Supervisor

**EFGH Precision Aircraft Components**  
**Engineering**  
- Tool Designer

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**Click a Job Title to View the Complete Description**

**Engineering**  
- Tool Designer

**Management / Supervision**  
- Machine Shop Supervisor

Job postings for this website are created by completing the ACM Job Posting Template and forwarding to the ACM Office. The Template is available on the website in the Members Only section, Workforce Development folder; download [ACM Website JOB POSTING Template.doc](#).

- The next WorkForce Development Team meeting will take place on Thursday, March 17<sup>th</sup> at 8:00am at Aerex Manufacturing Co, Inc., South Windsor. This meeting will include a discussion with John Murphy, an educational consultant working with the Connecticut Vocational Technical High Schools as the Team continues its work on expanding ACM/School relationships. Please plan to attend!

## Progressive Manufacturing

● The Progressive Manufacturing Team met on January 25<sup>th</sup> at Kaman Precision Products (KPP) (Middletown) during which retiring President John Kornegay hosted a discussion on “*Sustaining Lean; The Leadership Challenge*”. It should be noted the much of the material presented by John was the product of KPP’s Lean Manufacturing Manager, Mike Toussaint, who was away from Connecticut on KPP business.

Many within ACM are experienced and successful implementers of Kaizen, yet realize a real challenge in sustaining improvements. KPP’s approach, a four Phase process of ‘Evaluation’, ‘Planning’, ‘Conducting the Event’ and ‘Future State Implementation and Sustainment’ was presented in detail. A tour of a KPP assembly department, to see actual results, completed the meeting.

John described ‘leadership’ as a frequent missing link, suggesting “if leaders aren’t consistent, you will confuse the organization”. KPP has instituted a Standard Lean Leadership System” addressing standard work of leaders, visual controls and daily accountability along with a lean discipline. He also offered a number of useful publications for lean leaders, and specifically, “*Creating a Lean Culture*” by David Mann. John advised “when working in a batch system, leaders focus on results results and results! However, in a lean system, leaders must focus on the process, the process and then, the results”.

Slides of KPP’s presentation are available on the ACM website; go to Members Only, Progressive Manufacturing and download [Sustaining Lean KamanPP Presentation to Lean Team 1-25-11.pdf](#).

● The next meeting of the Progressive Manufacturing Team will take place on Tuesday, March 8<sup>th</sup> at the offices of Connstep in Rocky Hill.

This meeting will focus on “Value Stream Mapping for the Aerospace Job Shop Environment”. Connstep’s lean specialist, Roy Laun, will discuss making Value Stream Mapping work in the aerospace sector when inventory levels of product are relatively low. Roy will present a software package, *eVSM*, and demonstrate its use. Please plan to attend and be an active participant in the discussion, sharing your use of, and experiences in applying, value streaming mapping techniques within your company.

● ACM member John Kravontka, President, Fuss & O’Neill Manufacturing Solutions (Manchester, CT) offers a ‘single point lesson’ (*right*) as a visual best practice to foster spreading of ideas leading to improved safety, quality, lead times and profit. John may be reached at [JKravontka@FandO.com](mailto:JKravontka@FandO.com) or 800-286-2469x5399.

### Staying Lean in the Long Term

Heed these seven principles for maintaining “Lean Leadership System”

1. Routinely follow your std wk, ensure your people follow theirs.
2. Keep an eye on your visual controls; make sure they are *accurate and up-to-date*.
3. Hold *brief* daily accountability meetings to compare *actual* performance against *expected* outcomes.
4. Use Gemba walks to *teach* subordinates about lean processes.
5. Foster ongoing conversations about the processes and examine areas for improvement
6. Focus of fixing processes with the biggest gaps between actual and expected results.
7. Take steps to avoid burnout and “*Celebrate*” achievements.

### Lean Leadership System

- The practices and tools used to monitor, measure, and sustain a Lean Enterprise.
- The practices which identify where actual performance fails to meet expected performance;
- The deployment of Lean tools to raise the level of process performance. To continually learn and challenge

The elements of the lean leadership system are,

- standard work for leaders
- visual controls,
- daily accountability process
- discipline.



X	Basic Skill
O	Counter Measure
O	Accessibility
X	Safety
X	Mistake Proofing
X	Productivity

#### Pre Use Ladder Inspection



Pulley and halyard should move freely and be secure

**Ladders should be visually inspected prior to use. These are examples of what to inspect.**



Rungs should be secure and free from damage





Locks and Dogs should be free moving and return into the locked position

All ladder components should be free from damage



Pawls should be free moving and return into the locked position over each rung



Durable shoes should have good grip surfaces

**A Message from John Shook of the Lean Enterprise Institute  
commenting on  
“NASA: Toyota Problem Not Rocket Science”**

NASA just released its highly anticipated report about the Sudden Unintended Acceleration (SUA) charge in Toyota vehicles. ([www.nasa.gov/topics/nasalife/features/nesc-toyota-study.html](http://www.nasa.gov/topics/nasalife/features/nesc-toyota-study.html)) The verdict is in. And Toyota's electronic throttle control system is fully exonerated. The ten-month study by 30 NASA engineers found "no evidence that a malfunction in electronics caused large unintended accelerations," according to Michael Kirsch, principal engineer and team leader of the study. This means that that the reports of SUA were caused by "pedal misapplication," otherwise known as driver error.

So the events that led Toyota to recall 10 million vehicles may go down in industrial history as the biggest mountain of a crisis ever made out of the smallest molehill of a technical glitch. We now have verifiable facts, rather than conclusions drawn by politicians, media pundits, and lawyers based on assumptions, innuendo and fear.

Adding to the clarity provided by the NASA (commissioned by the U.S. NHSTA) report is a forthcoming book titled *Toyota Under Fire* by Jeff Liker and Tim Ogden which sheds even more light on the gulf between facts, and the way in which opportunists jumped to conclusions, throughout the entire crisis. I followed the story as it unfolded about as closely as anyone could, but still found reams of insightful new information in *Toyota Under Fire*.

These new resources clearly show how events spiraled out of control. The pivotal event that sparked the recall crisis was the tragic death of the Saylor family in a loaner Lexus in San Diego in 2009. The story of that accident quickly spread through the media, and was interpreted as SUA due to electronics.

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### **Consolidated Purchasing**

- The next meeting of the Purchasing Team will take place on Thursday, March 3<sup>rd</sup> at 8:00am at Yarde Metals, Southington. Following the Team's meeting, Yarde will host a tour of their modern distribution facility.
- Suppliers having Agreements with ACM are:

	<u>Supplier:</u>	<u>Key Contact:</u>	<u>Telephone:</u>
Shop Supplies, Abrasives, Cutting Tools, etc	<b>Turtle &amp; Hughes</b>	Dave Howard	203-497-1555
Raw Materials: Nickel, Cobalt, Titanium – Sheet, Plate & Bar Stock	<b>Aerodyne Alloys</b>	Kirk Smallidge	860-508-1271

### **News from ACM Members**

Please forward significant company news and announcements to Allen Samuel at [alsamuel@acm-ct.org](mailto:alsamuel@acm-ct.org) for posting on the ACM website and publication in the UPDATE

## **“NASA: Toyota Problem Not Rocket Science”**

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What actually happened is that a dealer placed a too-large all weather floor mat, one intended for an SUV, in the loaned passenger car without attaching it down. This entrapped the accelerator pedal, causing the accident. This event, and subsequent public attention, then snowballed into a global crisis for Toyota, with congressional hearings, public apologies in countries around the world, and 10 million (give or take a few million) recalls.

The technical charges leveled at Toyota took on a life of their own, quickly becoming "truth" in the public eye. Again, these reports show that there has never been a single confirmed case of electronically caused SUA, in any vehicle of any make - ever. More to the point of Toyota's specific issues: 1. there have been two documented cases of a serious accident due to "floor mat entrapment" (the one that resulted in the accident referenced above and a Camry accident in 2007 that killed one person) and 2. the "sticky pedal" problem in the U.S. is based on a handful of technical field reports from Toyota which include only twelve vehicles (others are surely out there but no more have been confirmed, and others are surely out there on vehicles of all makes and models). Sticky pedals do not cause SUA, they are simply slow to return to idle position (and tests showed the stopping distance with the sticky pedal was the same as with a normal pedal). For that, 10 million recalls.

So . . . case closed? Not so fast. On the technical side, NASA's findings may have exonerated Toyota of the most serious problems that the company has been accused of in recent years. And yet we cannot let the company off so easily. There is still plenty of evidence that the company has not been operating at the same levels of wall-to-wall excellence for which it became famous. And, I think it is okay for us to maintain high expectations of Toyota.

Toyota is a company with a special relationship with problems. The essence of the Toyota Way is commitment with respect: commitment to excellence and continuous improvement with respect for people and truth. Toyota's profound contribution to the pursuit of excellence is a wholesale commitment to exposing and dealing with problems. So, for many, Toyota's ongoing crisis has been a bit of a conundrum. If there was no technical problem, what has Toyota apologized for? Toyota's response has befuddled many from beginning.

This crisis has also called into question other aspects of the company's recent performance and decisions, including its rapid expansion over the past decade. The speed of the company's growth outpaced its ability to develop its organization and the people in it. That much is obvious, and many observers have named that fact as the "root cause" of the troubles and the company has admitted as much. But, why did the company DECIDE to grow so fast? And, having so decided, what was so hard about developing its people and organization to keep up? Hmm, now exploring those questions might lead to some interesting insights.

From the beginning of this crisis Toyota was seeking a technical answer to the problems and maelstrom that was emerging around it. As the NASA report shows, Toyota was essentially correct in its technical assessment of the problem. Toyota engineers were of course on the case from the beginning. Toyota engineers are trained to see problems EVERYWHERE. All the time, everywhere. So, to the engineers who were making the judgments, there seemed to be no need to rush. In fact, to rush would be precisely the wrong response. All evidence that they had in front of them pointed to the conclusion that there was no technical (the focus of their concern) problem. For further certainty or possibly a different conclusion, more facts were needed. Years of disciplined problem-solving and acculturation told them to never rush to a conclusion - examine the facts, determine causality and judge accordingly, then determine a course of action.

But the nature of the problem quickly shifted from a technical issue to one of a very different kind: Human (customer and employee) behavior, customer expectation and feelings, nuance of communication and trust. As Toyota continued to focus on the technical side of the issue, it seemed uncertain of what to think of the growing concerns of its customers.

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## **“NASA: Toyota Problem Not Rocket Science”**

--continued from Page 8--

That's why I believe that Toyota is indeed to be held totally accountable - no excuses - for the mess it found itself in. With problems large or small, it's not the problem that matters; it's how you respond to it. And Toyota didn't respond well in the early days of its crisis. The company will pay a huge price for that for years to come. Robert Cole, who has spent a career studying quality, in a pre-publication draft of an article states: "It doesn't matter how much the media hyped the problem or the politicians politicized it. Customer perception is the final arbiter. Therefore, those customer perceptions translate into a serious quality problem for Toyota." (Cited with permission from the author)

So, essentially, that is where Toyota stumbled, where it all begins and ends - with the customer. Toyota's engineers were "right" - there was nothing seriously unsafe in their vehicles (virtually nothing from an engineering or manufacturing standpoint), but events evolved so that the problem swiftly became one not of engineering but of listening to and respecting the customer. Customer first. Parts of Toyota were doing their best to listen to the customer. But, those parts of the company weren't being listened to by the people making the decisions.

Customers were concerned and fearful. Toyota's actions weren't sufficient to allay those fears. "Customer perception is the final arbiter" - end of story.

So, what does all this discussion mean to each of us on a day-to-day basis, in the most practical terms? Let's go back to the beginning, to the runaway Lexus in San Diego, for a remarkable sequence of events. The vehicle in question was a loaner, that is a vehicle loaned to drivers' whose vehicles were in for service. As it turns out, the exact vehicle in question had experienced the exact same problem with a different driver just days before the Saylor's accident. In that previous case, with much effort and alarm, the driver was able to stop the vehicle. He removed the floor mat and went about his business with no further problems with the car. But, then, as reported by Liker and Ogden, an amazing and ultimately tragic set of events occurred.

*"When he returned the car to the dealer, Bernard warned the after-hours receptionist that there was a problem with the vehicle's floor mat and that it had caused the car to accelerate out of control. He recalls telling the receptionist: "I think the mat caused it, you need to tell someone." His warning went unheeded. Apparently the receptionist thought that Bernard would tell his story to a service technician; Bernard thought that the receptionist would pass the story along. Three days later, Mark Saylor climbed into the car, still with the wrong floor mats, unsecured, and drove off."*

So, what didn't occur is as remarkable as what did occur. The service technician who could have corrected the problem after the first incident never got the news because two people made assumptions about who would tell him. There is much more to the story, but you should read the full account in Liker and Ogden's book.

So, the receptionist is the butterfly whose wings didn't flap, resulting in a massive crisis. But, make no mistake - the lesson here has NOTHING to do with placing blame on her. If the learner hasn't learned, the teacher hasn't taught. If Toyota has defined itself by its special relationship with problems, that must extend to the relationship that each and every member of the organization has with problems.

Hence the deeper lessons to be drawn here about the Toyota Way and the Toyota Production System. Toyota's aspirational practices remain exemplary and serve brilliantly as a north star for any individual or organizations seeking similar levels of excellence. But, true excellence doesn't stop at the end of the assembly line or confine itself to the engineer's lab or the executive suite. Excellence extends everywhere. From engineers to receptionists. It is as strong as the weakest link the chain of providing customer satisfaction. Anything we can call the "Toyota Way" or "Your Way" is the actualization of how we do everything we do, everywhere we do it: designing, making, selling, servicing, HR policy-making, legal compliance-ensuring. Opening and closing our doors every day for our employees and customers. It all counts.

John Shook, Chairman and CEO  
Lean Enterprise Institute, Inc.