Tech Center News®

WARREN, MICHIGAN

VOL. 41 NO. 31 **Covers the Tech Center and the Immediate Area** **APRIL 10, 2017**



l-r, Jim Danahy, GM director Engineering - Chassis; Guttilla; Multimatic CEO Peter Czapka; and Kiefer.

GM Celebrates its Top Suppliers

of its best global suppliers during its 25th annual Supplier of the Year awards ceremony on March 31 in Orlando, Fla.

GM recognized more suppliers this year than in any year since the first Supplier of the Year event, said GM spokesman Nick Richards.

Automotive suppliers from 15 countries received GM's Supplier of the Year award for going above and beyond GM's requirements, providing customers with the most innovative technologies and the industry's highest-quality vehicles.

More than half of the suppliers were repeat winners from 2015, including global filter supplier Mann+Hummel, which received the exclusive Silver Anniversary Award for consistent performance. It has been named a Suppli-

GM Boasts of Strong March Vehicle Sales

March was a good month for General Motors, saleswise.

GM, which grew its retail sales faster than any other full-line automaker in 2016, outpaced the industry once again in March. The company also gained retail share in the first quarter of 2017, said GM spokesman Jim Cain.

The economy is strong and we see more growth ahead for our brands," said Kurt McNeil, U.S. vice president of sales operations. "More people are working, consumer confidence is at a 16-year high, fuel prices are low and Chevrolet, Buick, GMC and Cadillac have a wave of new crossovers to compete in the industry's biggest and hottest seg-

At Buick, crossovers are expected to account for more than 75 percent of retail deliveries in 2017, up from 66 percent in 2016, driven by the Encore, Envision and Enclave, Cain said.

GMC, which has the highest average transaction prices (ATPs) of any non-luxury brand, will launch the all-new 2018 Terrain in late summer, complementing the

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General Motors recognized 118 er of the Year 22 times in the program's 25-year history, Richards said.

> "We have the privilege to work with and recognize the industry's most capable suppliers," said Steve Kiefer, GM vice president, Global Purchasing and Supply Chain. "Through their valued partnership, we will continue to deliver the products, services

and experiences our customers deserve.'

In addition to naming its top suppliers, GM recognized AGM Automotive, LLC; Comau, LLC; LG Chem; LG Electronics, Inc.; Magna Exteriors; Means Industries; Multimatic; and Sam Shin Chemical Co. with the Innovation

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New Technologies Make Better Seating Possible

When people think about what they want in their cars, nice seats tend not to be the first thing they think of, but when a seat is uncomfortable, people really notice.

Bonny Thomas is a seat comfort engineer for Fiat Chrysler and she spoke about the importance of car seats at last week's 2017 Society of Automotive Engineers (SAE) World Congress at Cobo Center.

"Cars today have all kinds of technology that do all sort of things, but at the end of the day they still have to have comfortable seats," Thomas said. "Don't think for a second that the OEMs take seats for granted. They have invested time and money and energy making sure that our seats have a broad appeal to people with a variety of different body types.'

Thomas said that in the 1950s even the front seats of vehicles were bench seats. Now they are always bucket seats. Another change from the 1950s is the shape of the average American.

"Body shapes have changed in the past few decades," Thomas said. "In the 1980s we took a lot of data about body shapes, and even since then body shapes have changed. That data doesn't



Jennifer Badgley

reflect how people are right now. Keeping up with that is a challenge."

Another challenge OEMs face, Thomas said, is what people expect from seats. The standard of comfort people demand from even the less expensive vehicles is much higher than in the past. So cost becomes a factor.

While seat adjustment technology has come a long way, OEMs have to be careful that they don't make systems too complicated.

"You want to be able to finely tailor to an individual's personal

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Mascarenas, Bahash, Goldstein, Weinert, Holland and Kotagiri talk about developing innovative corporate culters at an SAE panel discussion.

Developing Innovative Strategies Key to Auto Success

by Jim Stickford

The auto industry is changing and it's innovate or die. And that was one of the major topics of discussion at 2017 Society of Automotive Engineers (SAE) World Congress held in Cobo Center lat week.

At a panel discussion titled "Establishing a Culture of Innovation" experts from several large auto companies and auto suppliers talked about new processes of innovation.

The panel was chaired by Paul Mascarenas, a special venture partner at Fontinalis Partners. The panelists were Jim Holland, vice president, Vehicle Component and Systems Engineering for Ford; Lisa Bahash, senior vice president, Automotive Transportation at Jabil Engineering Solutions: Viv Goldstein, director of Innovation Acceleration at GE; Mike Weinert, vice president of Advanced Technology & new ideas in viable commercial does a company be inclusive in Engineering for Deere and Company; and Swamy Kotagiri, president of Manga Electronics, and executive vice-president and chief tecnology officer for Magna International.

Mascarenas started off the discussion by asking the question what exactly is a corporate culture of innovation. Goldstein said that at GE it's about creating things that are both new and valuable. That requires a corporate culture dedicated to supporting innovation. And that isn't easy.

"You can't say to people now you can wear jeans, be more innovative," Goldstein said. "To drive innovation we look at two things, mind set and the mechan-

Mind set deals with how they bring together people in an environment that is creative and where it's safe to fail. Mechanics deals with the process of turning products. GE is still a business, Goldstein said.

Kotagiri agreed with Goldstein that letting people know it's OK to fail is important. But it's also important to fail fast and cheap.

"You have to be able to move fast when an idea works," Kotagiri said. "We create islands of innovation within the large corporate structure. And when a creative idea is being brought to fruition, we provide the people with the help they need. That could be legal, or financial or lo-

gistical." Holland said that experimentation is important. And so is being able to move an idea through the development cycle quickly.

That's not always easy at Ford. Mascarenas said it's important not to have one group that's considered the innovators and another group that just slogs through doing their jobs. How

generation new ideas.

Bahash said that's an interesting area of conversation because she's seen a lot of situations where R&D have come up with ideas where they then have to try to sell those ideas to the corporate suits.

She said it's important to think about what is driving change within the industry and develop products along that line. What a company wants to avoid is trying to adapt products to a changing markets. That can be hard when a company has financial requirements - coming up with something new while still meeting the current needs of clients.

Weinert said it all comes down to leadership. The bosses need to understand that innovation requires risk and people that will put themselves out there.

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Deadline: Thursday 5:00 p.m. for the next edition of Monday

William Springer II, publisher Lisa A. Torretta, operations Jim Stickford, news

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TARDEC Working On Ways to **Test Technology**

AM General and the U.S. Tank Automotive Research Development and Engineering Center (TARDEC) have entered into a new partnership to develop and demonstrate an autonomous driving vehicle that may revolutionize how soldiers, sailors, airmen and Marines, along with equipment and supplies, are transported inside U.S. military AM General facilities, said spokesman Jeff Adams.

Under the Applied Robotics for Installations and Base Operations initiative (ARIBO), AM General and TARDEC are currently developing an autonomous vehicle, with demonstrations expected to begin this Spring at the U.S. Military Academy, West Point, Adams said.

The ARIBO program allows current civilian robotics technology to be examined in vehicles in a semi-controlled environment such as military bases like West Point which have restricted roads, predefined routes and restrictive operations for favorable conditions.

The program's aim is to advance the state of military robotics while simultaneously addressing U.S. military base needs by creating reliable military robotic technology and reducing operational and personnel costs, Adams said.

The American-made AM General vehicle is ideally suited for this initiative which will demonstrate the ability to augment the Academy's existing transportation system, which consists of a 24/7 shuttle service transporting cadets and other military personnel to/or from the Academy hospital," said AM General Executive Vice President, Kevin Rahrig.

"Imagine what having a fully autonomous wheelchair accessible vehicle would mean to individuals with disabilities. This partnership with the Army could be the first step in transforming transportation for millions of people."

During testing, the autonomous program at West Point will examine:

- Vehicle safety, performance and reliability;
- · Acceptance of robotic technologies by government users and non-users;
- Time and money savings;
- Energy efficiency;
- Navigation and mapping ability.

"The West Point demonstration uses AM General's vehicle to not only demonstrate an autonomy kit, but to highlight the idea of robotics for military and civilian use." said Alex Jimenez, project leader for TARDEC's ARIBO program.

"The best robotic systems in the world will not find traction until users are comfortable with the systems. West Point is a prime location to address the acceptance aspect of robotics by having future Army leaders see and experience these robotics first hand."



Students and faculty advisers from eight selected AutoDrive Challenge universities pose alongside a Chevrolet Bolt EV they will work on.

GM Works with Business, Academia on Autonomous Tech

Business and academia got to- new platform to engage industry gether at the 2017 Society of Automotive Engineers (SAE) World Congress meeting last week at the Cobo Center.

SAE International and General Motors revealed the eight North American universities who will compete in the upcoming Auto-Drive Challenge.

This new autonomous vehicle design competition is a threeyear challenge to develop and demonstrate a fully autonomous passenger vehicle. The competition's technical goal is navigating an urban driving course in an automated driving mode as described by SAE Standard (J3016) level 4 definition by Year 3, said GM spokesman Chris Bonelli.

The universities are:

- Kettering University;
- Michigan State University;
- · Michigan Tech;
- North Carolina A&T University;
- Texas A&M University;
- University of Toronto; • University of Waterloo;
- Virginia Tech.

"SAE International is excited to expand our partnership with GM to build the future STEM workforce through the AutoDrive Challenge," said Chris Ciuca, director of Pre-Professional Programs at SAE International. "Building on our success through programs like Formula SAE, the AutoDrive Challenge launches a





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and academia in working towards a common goal of preparing the brightest young minds for the future of autonomous technologies.

Throughout the three-year competition, students will focus on autonomous technologies and allow for modification and testing, Bonelli said. They will work with real-world applications of sensing technologies, computing platforms, software design implementation and advanced computation methods such as computer vision, pattern recognition, machine learning, artificial intelligence, sensor fusion and autonomous vehicle controls.

"GM is very excited to work closely with these eight universities over the next three years," said Ken Kelzer, GM vice president of Global Vehicle Components and Subsystems. "The students and faculty at these schools bring deep knowledge and technical skills to the competition. We are proud to help offer these students the hands-on experience necessary for them to make an immediate impact on the automotive world when they graduate."

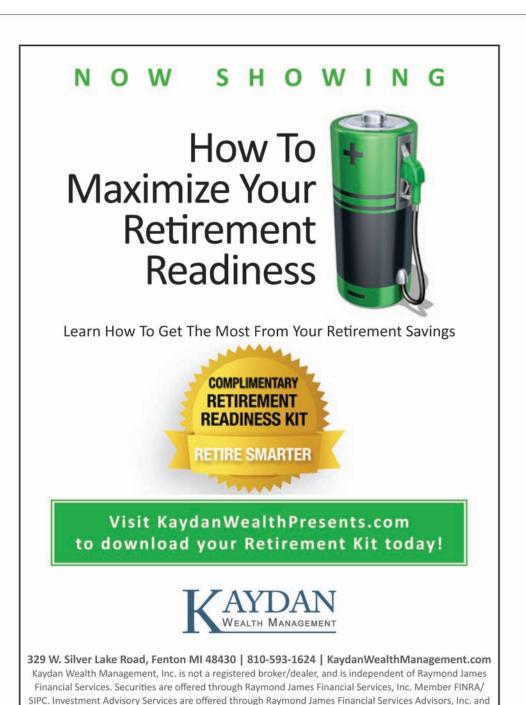
GM will provide each team with a Chevrolet Bolt EV as the vehicle platform, Bonelli said. Strategic partners and suppliers will aid the students in their technology development by providing vehicle parts and software. Throughout the AutoDrive Challenge competition cycle, students and faculty will be invited to attend technology-specific workshops to help them in their concept refinement and overall autonomous technical understanding.

Beginning in fall 2017, Year 1 will focus on concept selection for university teams by having them become familiar with sensing and computation software. They will be tasked with completion of a concept design written paper as well as simple missions for on-site evaluation, Bonelli

These simple missions can include straight roadway driving and object avoidance/detection. The Year 1 final competition will be hosted at GM's Desert Proving Ground in Yuma, Arizona.

In Year 2 the teams will refine their concept selections into solid system developments and will have more challenging dynamic events for testing on-site, including dynamic object detection and multiple lane changing.

Year 3 will culminate with final validation of design and concept refinement. They will navigate complex objectives of on-site testing, including higher speeds, turnabouts and moving object detection.



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APRIL 10, 2017 COVERS THE TECH CENTER AND THE IMMEDIATE AREA PAGE 3

Tech Center Employees Preparing for Kids' Day

employees will have the opportunity to see just what it is that their parents do.

April 27 is Kids/Earth Day at the Tech Center, said Katie Murphy, an Engineering Group manager who works out of the Tech

"Kids/Earth Day are celebrated at different GM sites annually," Murphy said. "At the Tech Center we will be hosting different events around the campus. They will educate the kids about the environment and let us show our children just what we do."

There will be different STEM events that are designed to encourage children to consider STEM careers, Murphy said. There will be vehicles on display around the campus.

"We have something called the 'Makers Fest,'" Murphy said. "People bring things they've made outside of work and show the children what they've done. Last year we had a bicycle, guitar and flying drone. The makers sit and explain to the children how they made the various items. It gives parents a chance to be

Murphy is also a member of Club GM, and that organization will be raffling off about 60 gift bags that contain various items, including Nerf guns, Barbies and model cars.

'We at the club go around to day.'

The children of Tech Center local businesses and seek donations of items," Murphy said. "We then raffle off the bags. All the money raised from our different efforts throughout the year go to charity. In this case, the money raised from the raffle goes to the Clinton River Watershed Coun-

Visiting children will also be educated about environmental issues, Murphy said.

There will be special displays informing children about the various different plants around the Tech Center Campus, Murphy

"We will also have bee hives set up and the children will be told about the role bees play in the life cycle of plants," Murphy said. "We'll even let the kids try on the bee suits beekeepers use. The kids will wear the suits, but we will keep them away from the

"I'm allergic to bee stings, so I've never had the urge to try on a suit, but I understand that kids

Club GM will also be selling the 2017 Earth Day t-shirts.

"Every year we seek out Earth Day design submissions from children," Murphy said.

"We have a bunch of people get together and judge the designs. The one picked is turned into a t-shirt and it's that shirt that Club GM sells on Kids/Earth



Chevrolet and baseball have returned to downtown Detroit this spring.

Chevy Steps Up to Plate at Comerica Park

It's spring and that means baseball and Chevrolet are returning to Comerica Park.

They are celebrating Opening Day of the Major League Baseball (MLB) season by placing this year's showcase vehicles a top the fountain at Comerica Park, said GM spokeswoman Afaf Farah. A new 2018 Equinox and a 2018 Silverado 2500HD will sit high above the Chevrolet Fountain behind center field for the coming baseball season.

"Chevrolet is proud to help kick off the 2017 MLB season by continuing the tradition of showcasing our vehicles in the center field fountain at the home of the Detroit Tigers," said Paul Edwards, U.S. vice president, Chevy Marketing. "This year, we have chosen to display the all-new Equinox and the HD Silverado because they are among the most versatile, durable and capable vehicles in the Chevrolet lineup and we know that they are tough enough to withstand the unpredictable Michigan weather."

Chevrolet has sponsored the fountain, which features an array of water displays and the sound of a tiger growling after each Detroit home run, for the last eight seasons, Farah said. The brand displays vehicles from its lineup each year.

"We greatly value our partnership with Chevrolet," said Tigers V.P. of Corporate Partnerships, Steve Harms. "The Chevrolet Fountain is a symbol of our community, and a representation of its hard working people. The Chevrolet Fountain is an iconic focal point within Comerica Park, and is truly one of the most unique branding locations of any ballpark in Major League Base-

Seating Foundation of Vehicle Designing

CONTINUED FROM PAGE 1

preferences," Thomas said. "But if you make a system too complicated, people will just quit in frustration because there are so many buttons and switches they will have to use. When that happens, nobody wins. Not the customer and not the OEM.'

Seat technology has gone from the electric in the 1990s to the electroninc today, Thomas said. And that creates its own problems. This technology has a physical presence that has to be taken into account. A seat has to fit properly into a car, and the seat technology has to properly fit into the seat.

That requires great effort on the part of both seat designers and seat engineers.

changes in consumer prefer- aren't getting less wide.' ences. In the past, softer seats were more popular, but it seems that consumers are now preferring stiffer seats.

But with the addition of better engineering and new technology,

the range of adjustments possible for a seat and thus more people can enjoy the comfort.

"As late as the 1970s, women and shorter men used to have to put a pillow behind their backs so that they could reach a car's pedals," Thomas said. "That's changed.'

Jennifer Badgley, a comfort release engineer who works out of the GM Tech Center, spoke on the same panel as Thomas. She said that seat engineers must also work with body engineers and designers because of outside fac-

"Lightweighting is very important," Badgley said. "One of the ways to make a vehicle lighter is to make it narrower, thus reducing the overall size of the vehicle. That means seats have to be And, Thomas said, there are smaller at a time when people

> Part of Badgley's job is to work with vehicle designers in the early design process of new models to make sure that the seats fit the

And part of that job means OEMs have been able to expand finding out what kind of niche the vehicle is aimed at. A Cadillac has different requirements than a Cruze.

When talking about seats, you're talking about design, engineering and marketing," Badgley said. "When people don't like a seat they will use every line available on a survey form to let you know.'

Fortunately, Badgley said, Computer Aided Engineering (CAE) technology makes it possible to develop a variety of different seating systems in a computer. So technology makes it possible to design seats with the latest seating technology.



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GM Holds Special Dinner Honoring Top Suppliers

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Award for the following reasons:
• AGM Automotive, LLC of

• AGM Automotive, LLC of Troy – implementing a handsfree liftgate with integrated logo lamp, featured on the 2018 Chevrolet Traverse.

• Comau, LLC – creating a flexible robotic body assembly framing system for Pre-Production Operations, improving future vehicle launch quality.

• LG Chem and LG Electronics, Inc. – integrating a 60-kWh lithium-ion battery pack in the award-winning Chevrolet Bolt EV.

Magna Exteriors — developing a multiaxial laser cutting and welding process on painted thermoplastic, enabling lighter weight design of the 2017 Chevrolet Camaro ZL1 fascia.

 Means Industries of Saginaw
 creating a selectable one-way clutch, resulting in more efficient packaging of the new Hydra-Matic nine-speed front-wheel-drive transmission.

• Multimatic has its U.S. sales and engineering headquarters are in Southfield – enhancing the DSSV position sensitive spool valve damping technology for the first-ever application in an off-road truck, in the Chevrolet Colorado ZR2.

• Sam Shin Chemical Co. – developing an innovative material layering process with its 3-D fantastic grille on the Chevrolet Bolt EV.

Michael Guttilla, global vice

president of sales for Multimatic, said this has been one of the most rewarding projects Multimatic has done with GM because of the collaboartive nature of the work, from purchasing through engineering.

"It required us to break down barriers and work together in a new way, which made it very easy to bring our best technology to the table," Guttilla said. "It started with an idea from GM engineers – take Multimatic Formula One suspension technology and apply it to an 'off-roadable' performance pickup truck. In this case the Chevy Colorado ZR2. When this truck hits the market, it's going to absolutely be a killer in the segment."

GM also honored three companies – Aisin AW Co., Ltd.; Con-Form; and Kautex – with its Overdrive Award. The award, first given in 2012, recognizes supply partners for extraordinary leadership in cultural change and commitment initiatives that drive exceptional business results for GM.

The Supplier of the Year Overdrive and Innovation award winners were chosen by a global team of GM purchasing, engineering, quality, manufacturing, and logistics executives, Richards said. Winners were selected based on performance criteria in Product Purchasing, Indirect Purchasing, Logistics, Customer Care and Aftersales.

GM Has Strong March Sales

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redesigned Acadia that went on sale in late summer 2016.

Cadillac will benefit from a full year of production of the new XT5 crossover, which is now the second best-selling vehicle in its segment.

Chevrolet, which grew retail market share in 2015 and was the industry's fastest-growing brand in 2016, is particularly well positioned. Chevrolet had its best March and first quarter retail sales since 2007.

"Chevrolet will have the industry's broadest and freshest lineup of utility vehicles led by the all-new 2018 Equinox and Traverse, plus we have a unique three-truck pickup strategy and a dominant position in large SU-Vs," McNeil said.

"We also have a first-mover advantage in many segments. It will be years before key competitors are able to launch rivals to the Chevrolet Bolt EV, Colorado and Trax."

Highlights (vs. 2016) First Quarter Overview:

• GM's retail sales were 546,838 units, up 1.9 percent, and retail market share was up 0.2 percentage points to an estimated 16.8 percent. The gains were primarily driven by crossovers, which were up 21 percent. Truck deliveries were up half a percentage point.

• Commercial deliveries were up 4 percent, and daily rental deliveries were down 8 percent, or about 6,000 units. Total fleet sales were down 3 percent.

• Total sales were 689,521 units, up 1 percent, and market share was up an estimated 0.3 percentage points to an estimated 16.7 percent.

• Average transaction prices were approximately \$34,000, in line with last year's first quarter. March Overview:

• Retail sales were 203,113 units, up 5 percent, and market share was up 0.6 percentage points to an estimated 16.1 percent.

• Total sales were 256,224 units, up 2 percent, and market share was up an estimated 0.4

percentage points to 15.9 percent.

• Commercial deliveries were up 3 percent driven by a 67 percent increase in Malibu deliveries and strong pickup and large van sales. Daily rental sales down 18 percent, or more than 5,100 units. Fleet sales were down 9 percent.

Brand Highlights (vs. 2016):

• Chevrolet crossovers on a retail basis in March, the Trax was up 51 percent, the Equinox was up 26 percent and the Traverse was up 24 percent.

• For the quarter, Trax retail sales were up 54 percent, the Equinox was up 16 percent and the Traverse was up 7 percent.

• Bolt EV sales in the quarter were 3,092 units, with limited availability. The days to turn is exceptionally low at 14 days.

• Cadillac XT5 retail sales in March were 22 percent higher than the outgoing SRX, and ATPs were about 9 percent higher.

Baltimore Latest City to Receive Mayen Service

BALTIMORE (AP) – General Motors is launching its Maven car-sharing service in Baltimore.

The Baltimore Sun reports that starting March 5, a fleet of 40 Chevrolets and GMCs can be rented at 20 locations across the city.

The service, already available in cities like Washington and New York, uses a mobile application to display the make, model and pricing of the available cars at lots around the city. Users submit their credit card and driver's license information, and the app uses Bluetooth to let them unlock and start the reserved cars.

Vehicles may be rented by the hour or day. There are no membership or application fees, and gas and insurance are included.

Maven spokesman Scott Hall says Baltimore's growing population and notorious lack of parking make it a prime market for the service.

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APRIL ISHERE AND WE HAVE SOME HAVE S

True Diversity Helps Create Innovation

CONTINUED FROM PAGE 1

"If you want innovation, leadership must own it," Weinert said.

Holland agreed, saying it starts at the top but everyone needs to feel that it's OK to innovate, "not just the cool kids."

Goldstein also agreed, saying that in order to create an inclusive culture where everyone is involved from the top down to the bottom up.

"That can be uncomfortable for leaders," Goldstein said. "We get to where we are because we know the answers to questions. Now we must be the people asking the questions. What do our customers needs? At GE we have a lot of great technology and it's easy to put that technology first and not ask what do our customers need."

Bahash said it's also important to understand that innovation requires a practical side to things.

"It's great to be fast in terms of coming up with new ideas," Bahash said. "But You also need people who know how to execute, who know how to commercialize ideas."

Kotagiri said innovation doesn't always have to be a huge new idea. Sometimes small improvements really pay off. Holland said management needs to get out of the "not invented here" mind set. Leadership must be receptive to outside ideas.

"The ability to outsource and the ability to open source innovation is important," Goldstein said. "And that can be very difficult for management. Let me give you an example. In one of our jet engines we have a bracket that was designed by a teenager. He had no aeronautics experience but he had an idea. And it was this lack of experience that allowed him to think outside the

box and look at a problem in a new way."

When the question of the pace of innovation came up, Bahash said regulations can often be a catalyst for innovation. New requirements in terms of mileage and emissions have forced companies to come up with creative solutions. The result of regulations has been great improvements to the internal combustion engine.

"If you want innovation, leadership must own it."

Mike Weinert,Deere and Co.

Kotogiri said that the democratization of information, the ability of technology to disperse ideas to a wide variety of people is something that's only happened in the past few years. But this has had a huge impact on development of new ideas.

Goldstein agreed, saying that start-ups use this new technology to their advantage. They are nimble and they are focused. They have limited resources, so they work hard to get value for every dollar spent.

"A few years ago when startups began nipping at our heels, we started looking at how they operate," Goldstein said. "One thing we saw was that they weren't afraid to fail and when they failed they failed fast and cheap. We larger organizations have much to learn from that mindset."

Bahash said companies have

also be willing to disrupt their own business – come up with a new idea that will replace the old way of doing things.

Weinert said it's also important to have a timeline. Discipline is still important. A company has to have its ideas worked out before implementation.

"Making it up as you go along gets to be very expensive," Weinert said. "So we look at improving programs on a smaller basis before we start. It's all about speed. You want to stay fast, but also stay small. When you look at India and China, they can move very quickly because they have small groups dedicated to making improvements."

Goldstein agreed, saying GE has found it best to have small teams dedicated to one task. They have focus. When they would bring in 30 people to a project, these people would have other pulls on their time and would only dedicate 10 percent of their efforts to the project. It is better to have five or six people dedicated to a project when they can devote all their time to it.

The question of diversity came up. All the panelists agreed that having people with different perspectives and different ways of thinking really pays off. But diversity must be real.

"Good diversity isn't 'hey these people look different from me, but they think like me, I love diversity." Weinert said. "Companies need to practice tolerance and openness. I travel a lot see engaging new ways to look at things. If a company can embrace that, they will succeed."

Holland said an advantage to being a large multinational is that they can work with people from all over the world and get all kinds of different perspectives. Size can be an advantage.

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